

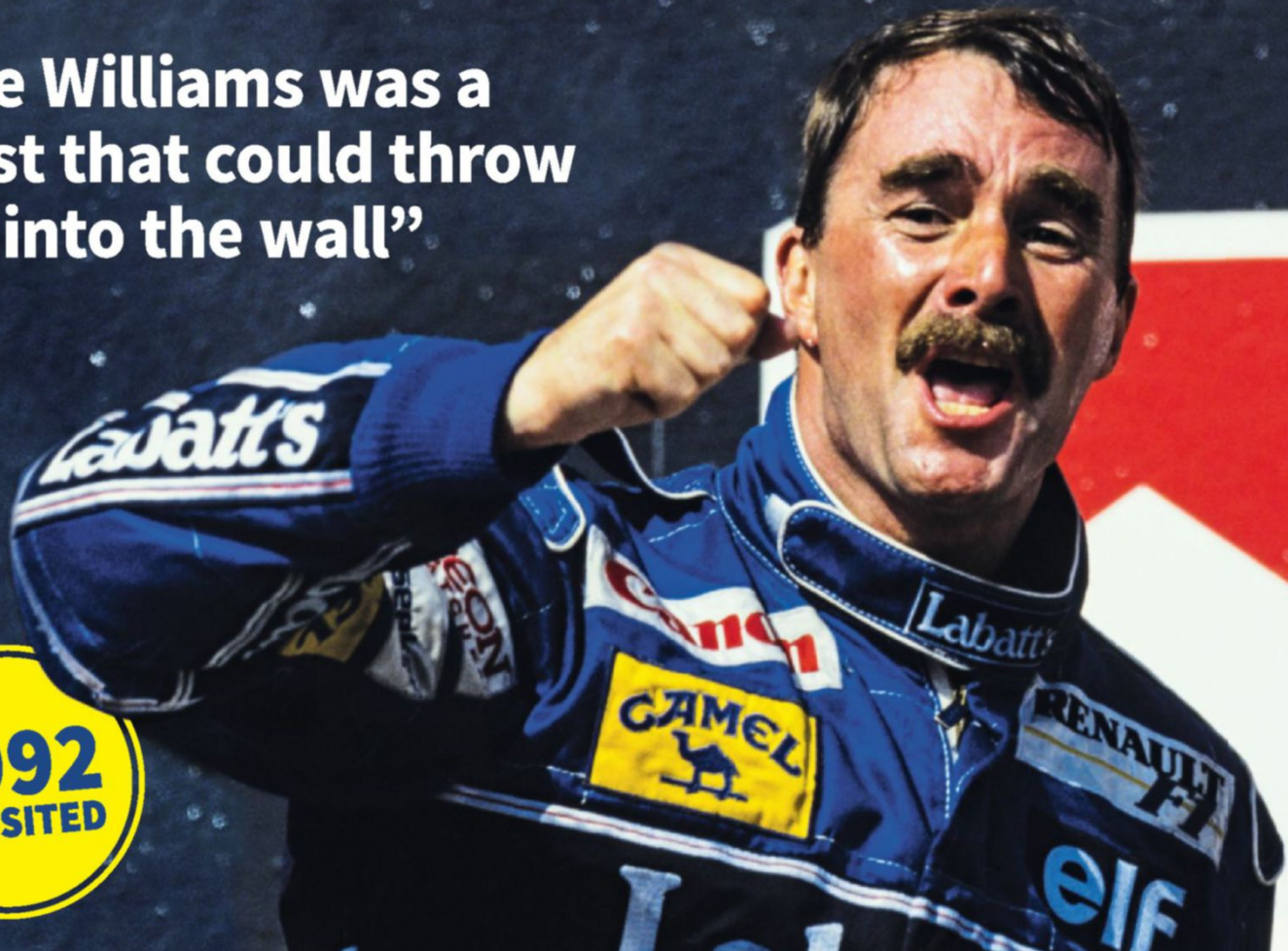
ROEBUCK IS BACK! HIS TAKE ON F1 2017

 **AUTOSPORT**

NIGEL MANSSELL

HOW I CONQUERED F1

“The Williams was a beast that could throw you into the wall”



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The year Mansell stood on top of the world

NIGEL MANSELL HAD TO WAIT A LONG TIME BEFORE securing the Formula 1 crown. Twenty-five years since his record-breaking 1992 season, we decided it was time to look back with the man himself.

In our cover feature by Adam Cooper, Mansell recalls the challenges and the successes that led to the Hungarian Grand Prix and that elusive title. It's also clear that, although time has healed many wounds, Mansell is still understandably frustrated that he didn't get the chance to defend his crown.

Fittingly, Williams starts its 40th-birthday celebrations at Autosport International this week and the famous F1 team will bring a Williams FW14B – along with several other landmark cars – to Birmingham. Other anniversaries covered in our preview of the event include Ford's famous RS500 touring car hitting 30 and the half-century of junior racing's greatest category, Formula Ford.

While many of us prepare to head to Birmingham, Mercedes has still yet to confirm its replacement for Nico Rosberg. Valtteri Bottas remains the favourite and, in our piece on page 46, Ben Anderson and Scott Mitchell debate whether the Finn really is the best option for the Silver Arrows.

One man with a firm opinion on who should partner Lewis Hamilton is Nigel Roebuck. We welcome back one of F1's most experienced and popular writers this week and do like his suggestion on page 38...



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“You climb that mountain, you’re standing on top of the world, as a world champion... It’s truly fantastic. And then I had that terrible phone call”

Twenty-five years ago Nigel Mansell finally conquered Formula 1. The next day he was out a job. This is his story

By Adam Cooper, Special Contributor

[@adamcooperF1](#)

He lost at the last race in 1986, came close in '87, and was runner-up for a third time in '91. Then 25 years ago Nigel Mansell finally secured his place in the history books by winning the world championship at the age of 39.

It had been a long slog and he endured a lot of pain along the way, both real and metaphorical. He also had to silence the critics who doubted that he would ever reach the top level.

“It feels like 150 years ago and then it feels like yesterday,” says Mansell. “It’s extraordinary as we all get older, isn’t it? You get a lot wiser, and I think that’s why I feel so blessed and happy now in later years. At least we’ve been there and done it. And I have some wonderful memories.”

Mansell’s road to the title began in late 1990. Frustrated by life at Ferrari alongside

Alain Prost, he announced his retirement at Silverstone, but just a few weeks later Frank Williams persuaded him to return from his two-year Maranello stint as replacement for Thierry Boutsen.

Gearbox issues hampered the team in the early part of the season, but things soon came together. Mansell scored five wins and finished runner-up to Ayrton Senna. Team-mate Riccardo Patrese won twice, while logging four poles to Nigel’s two, and showed impressive pace.

Meanwhile Williams was working away on its active ride programme, overseen by promising young software specialist Paddy Lowe. Mansell was no fan of such systems, having been frustrated with previous experience of them at Lotus and Williams.

“Going back to 1988, at Silverstone it was so awful we changed the car back to passive, and I came second in the rain. Obviously I

wasn’t there to see the progress that happened in the next couple of years, but when I did drive it again it was still, shall we say, very good at times and extremely awful at times. And it was very dangerous too.

“But the crunch came in 1991, of course. You have to put all your eggs in one basket and say if we really want to go for the championship we’ve got to trust it. Can we put all the effort and thrust and develop something that might be better overall? It was a very difficult decision.

“We had a test and I said I’d race it as long as there’s a fail-safe system, where it just drops onto solid blocks of suspension, so it doesn’t throw you off the circuit into the barriers – not forgetting the barriers were very close to the edge of the track then. What I didn’t want to do was lose my life in a potentially fantastic car. What’s the point if you’re not here anymore? So a big decision >>



Three broken toes from Adelaide '91 shunt meant Mansell raced in pain all year



Above: Mansell took pole for 14 of the 16 races; right: Monaco battle with Senna is the stuff of legend

was taken, and we went that route.”

Patrick Head and aero wizard Adrian Newey developed an upgraded Williams FW14B for the start of the season, while the FW15 was intended for introduction later in the year. Meanwhile Mansell had a busy winter. In the chaotic wet 1991 finale in Adelaide he had injured his foot, and only when he returned to his new base in Florida did he realise how serious it was.

“Hitting the wall splintered three toes in my left foot. I knew as soon as I hit the wall that my foot was smashed; I just sat there momentarily in shock, with searing pain.

“The hardest decision I took in my whole career was when we came back to America and went to hospital to get checked out. It

to get as fit and as light as I could, because I knew it would probably be the last chance I'd have to try to become world champion.

“I'd got a contract for 1992 – I'd asked for three years but they'd only given me two – and this was my whole life in front of me, I was coming to the end of my career. When you smell it, feel it, taste it, you can't leave. It was a bit like what Nico Rosberg did, to put everything into last year. My whole life, my whole being, was all about getting the job done. Just because I had a broken foot, it wasn't going to get in my way.”

The Mansell who turned up for testing at the start of 1992 was fitter than ever. “Riccardo never believed how light I was, I made such a big effort on my weight.

“My whole life was all about getting the job done. A broken foot wouldn't get in my way”

turned out to be worse than I'd anticipated, because I needed surgery. I said, ‘Before you do that, how long is the recovery?’ They said, ‘A minimum of 12 weeks’, and I said, ‘You've got to be kidding!’

“We had some real argy-bargy about it. With the litigation in America, once you've gone into the system they wouldn't release you, because it needed emergency surgery to correct the splintered bones. So I got a doctor to sign me out; I explained to him I just couldn't afford to have the operation because of the downtime, and I'd work out a way of walking and doing my job. And hence even to this day I've got carbonfibre inserts in my shoes.

“The winter was very difficult, because I couldn't walk and couldn't run properly. I had to devise a system so I could do my job, and I had to train around the clock

Back then the car and driver were not weighed together, so if you were heavy you actually had a disadvantage as soon as you went out of the pitlane. I slimmed down to the minimum weight I could possibly do.

“If I had stayed in the Isle of Man, would I have won the world championship? The answer is I don't know. I think I would have had a lot of problems trying to train through the winter in the cold and damp on the Isle of Man, whereas in Florida 70-80F heat actually assisted the whole training and weight-loss campaign.”

From the off the FW14B proved to be good – so good that it would be used for the whole season, while the FW15 was postponed until 1993.

Mansell started the season in perfect style, dominating in South Africa, Mexico and Brazil, each time leaving his team-mate

far behind, in part because he was much more comfortable with the active-ride system than Patrese (see page 13).

“Riccardo was really, really upset at how quick I was. By the time we did Mexico he was really unhappy. In Brazil I went out and was almost two seconds a lap quicker. He was saying my car was special – he wasn't convinced his car was the same.”

Mansell put a stop to that by asking to swap cars and proving he was still quicker in Patrese's car. “It meant that the team-mate atmosphere was fantastic, because Riccardo just went, ‘OK, I've got to sort myself out’. We used to help one another, we were fantastic team-mates, it was really good. It just showed how strong the team was in the support of both drivers.”

Mansell then won in the rain at Barcelona, picking up his pace when he realised he was

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being reeled in by Michael Schumacher, who had been trying different lines.

“The thing is in a race you can go to sleep sometimes by just ticking the laps off, and you can be very tight in the car when you are trying to achieve something special, if you’re just trying to play the percentages, which I was at that time. I didn’t want to make any mistakes on the lines I was taking. The active was pretty great in the dry, but it didn’t give you the same feel in the wet, so it was very challenging. If you remember in that same race Riccardo had quite a big shunt – that’s because he couldn’t feel the car, he lost the back end.”

He scored his fifth straight win at Imola, and looked set to make it six in Monaco, leading the first 70 laps from pole before fate intervened and a wheelnut came loose. A quick visit to the pits allowed Senna to get



ahead, and there followed some spectacular action as Mansell tried to find a way past the Brazilian in the closing laps.

“With the regulations the way they are now Ayrton would have had six stop-and-go penalties! If he had been behind me I’m sure he would have given me a puncture or run into me. Do I have regrets about how I drove? No, because I was a sportsman through and through. I drove fairly and correctly.

“Would I have liked to have won Monaco? Absolutely. But it was a great race, and at least I came second. That was the most exhausting and painful race I did in 1992, and my foot... I couldn’t walk after that race.”

In Montreal Mansell missed pole for the first of only two occasions in 1992, starting third behind Senna and Patrese. He quickly passed his team-mate but at the end of the 15th lap he went off at the final corner >>

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when he tried to slip by the Brazilian. "He suckered me in and he made me pay the price. Knowing and understanding how Ayrton did what he did... He was very courageous, very talented, and extremely naughty at times."

Mansell bounced back with his sixth win of the year in France, giving him renewed momentum as he headed to his home race at Silverstone. He'd scored a hugely popular victory the previous year, and expectations were high. A stunning pole lap gave the crowd what it wanted.

"Silverstone was monumental, having hundreds of thousands of people come, the track invasion, and doing the most incredible qualifying lap. Patrick said, 'There's no way you'll get in the 1m18s'. I took that as a personal challenge, and put a lap together. Going flat round Stowe and Club... What can you say?

"We were having a debrief in the motorhome and I was talking to Patrick and Frank. I didn't know Riccardo was behind me, but he grabbed me up between the legs. I was just about to turn round and punch whoever it was and he said, 'I just had to feel how big they were! I've seen how fast you've gone through some of the corners'. It was a special weekend for all sorts of reasons. If there's one race a year you'd like to win it's your home grand prix. Silverstone, as with Brands Hatch, the fans in England are just wonderful."

A win at Hockenheim gave Mansell an 86-40 point advantage over Patrese, which meant that he headed to Hungary with a chance of securing the title at round 11, with five races still to run.

"Not that I appreciated it at the time, but the anxiety level from the family, the people in the team and the fans as well couldn't be more heightened. I tried to approach it exactly the same and just do a solid job."

For the second and final time in 1992 Mansell missed pole. He started alongside Patrese, and after the Italian retired he finished second behind Senna. It was enough to secure the title. Nobody had ever clinched it so early, although Schumacher would improve on that record 10 years later, winning after 11 of 17 races in 2002.

On the podium Senna famously pointed out that Mansell might now realise why



Mansell picks his way through the mass of jubilant British fans after his victory on home turf

Ayrton behaved as he did, albeit expressed in more colourful terms.

"I'd been a bridesmaid three times, so to be up there on the podium with Ayrton whispering in my ear... I just looked at him, and he was hugging me at the time. All these years I've accepted the fact that what he was whispering was justifying how he behaved, and saying how great it is to be a world champion, 'That's why I'm such a...'. Something I won't repeat to anybody! It's taken years for it to sink in, but I figure that's why some people behave the way they do.

"You climb that mountain, you're standing on top of the world, as a world champion. It's truly fantastic. And it truly was for 24 hours, and then I had that terrible phone call. You realise that you've done everything to achieve your goal, and then you're not required anymore. Interesting."

The negotiations over the 1993 Williams line-up were very complex, and there are still clashing views over exactly how it played out. What's clear is that Prost was coming and Senna was lurking in the background. Given that he held all the cards, Frank Williams had his own ideas regarding Mansell's potential salary. The

day after winning the title the celebrating champion received a call from the team's commercial boss Sheridan Thynne, outlining the latest offer.

"He was a perfect gentleman, a consummate professional. He was just very apologetic and said he didn't agree. He eventually resigned from Williams over it as well. I understand the bigger picture now, as time goes on. Renault was the engine partner, and Elf was French.

"I was born in an era where there was a whole number of chosen ones, who could walk into any team and get the best of the best. It was Alain Prost, it was Nelson Piquet, it was Michael Schumacher, it was Ayrton Senna, and they were all multiple world champions. From their point of view they're entitled to it, aren't they? Alain did it at Ferrari and then he came and did it at Williams; there are no surprises, really.

"I wasn't told until very late on. I don't need to tell you all the rumouring and the stories and untruths. To this day I'm fairly straightforward, all I need to do is to know the truth so I can make a plan.

"Because of what was going on I totally detuned, and basically lost a lot of love and respect for F1 at that time. You're doing a very dangerous job, and you think, 'What's it all about?' Because it's such a game."

Williams had hoped to eventually finalise a Mansell/Prost line-up, but at Monza Nigel made a dramatic retirement announcement. Even as he began to read his prepared statement, the team tried to resolve the situation with a last-minute offer. It was too late - Mansell already had his heart set on a future in the USA.

"As world champion the one thing you want to be able to do is defend your world championship in the manner that you >>>

Mansell bounced back from a "naughty" Senna move in Canada with victory in the French Grand Prix













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Mansell's moment of glory in Hungary



won it, and that was taken away from me. The greatest thing was that I'd achieved what I'd achieved, and as Paul Newman said, 'Look at the incredible new adventure we're going to have together in Indycar.'

Mansell retired in Italy with gearbox issues, won in Portugal, and stopped with an engine failure in Japan. In the Adelaide finale he led until a nudge from Senna.

"Ayrton deliberately hit me up the back and knocked me off. He was very pleased on how he executed that, apparently! That's very sad. As much as I respected and loved Ayrton as a great, courageous, incredible champion, for him to stoop to those levels to try to win just tarnishes it a little bit. I respected him enough not to do it to him at Monaco and a number of other places, but he stooped below the bar a number of times, which was a great shame."

The season thus finished on a low, but the numbers were impressive: in 16 races he'd logged 14 poles, nine wins, three second places, and four retirements. And, at last, he had a world championship.

"For me, first and foremost, it was indescribable relief, both from the point of view of achievement and pain. I've never been in so much pain for so long. When we flew back from Australia I was admitted to hospital immediately and had an operation, which was then a little bit more complicated because of the damage I'd done to my foot.

"Regardless of what I might be doing in 1993, it was the achievement of actually winning the title – the golfers call it getting the monkey off their back when they win their first major. When you reflect in later years, and realise after all the challenges



and stresses, to be one of an incredible, elite club – there are seven billion people in the world, and how many world champions have there been? To be part of history is something to be incredibly proud of."

There's no question that Mansell had the best car in 1992, but then so too did Patrese. Mansell's contribution has been somewhat taken for granted down the years. "I was surprised at times when I went out and won some races, and I read the press and it was as though I wasn't there! I was thinking, 'I won that race, but I'm hardly mentioned'.

"I don't want to keep saying 'back then', but the driver had so much input on everything, whereas now they have a somewhat different role. With so many engineers it's become button-pushing management, the way the cars have evolved.

"And 14B was still a beast that could throw you into the wall at any time, especially with the transition from a

'That's why I'm such a...?' Senna's podium confession to new champ Mansell revealed why he behaved like he did

certain speed to another speed. I think that's what Riccardo always had a challenge with, because he didn't have the suicidal commitment I had, I guess."

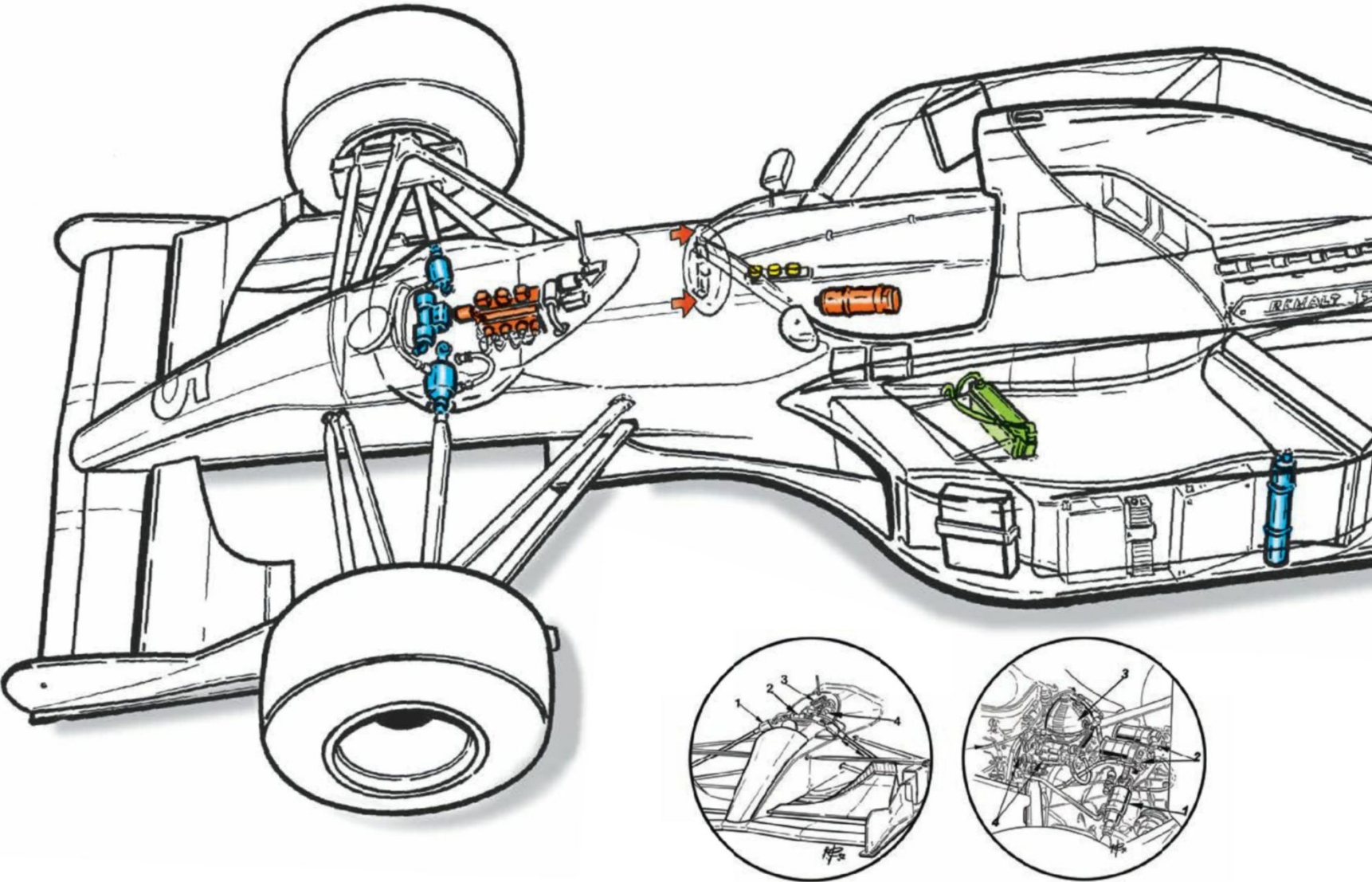
A quarter of a century on, Mansell is keen to praise the team: "Of course it was a great car, but I would say half the great car that the Mercedes is today. The thing that made the difference, to win the world championship you don't just have to have a great car and a great engine and a great team, and a driver who's doing his job – you have to have everything. The car is part of it, but won't get it done for you on its own.

"It's also the blend between the mechanics, the engineers, and the actual running of it, ensuring when the pressure builds, nothing breaks down, not just mechanically but personalities don't break down, mistakes aren't made. To work at that level is something incredibly special, and Williams did a fantastic job in 1992. Working with my engineer David Brown was very important as I had total trust in him.

"Dickie Stanford, the chief mechanic at that time, was absolutely brilliant, and he was totally instrumental, as was Patrick, and Adrian. I could trust them implicitly, hence I was always able to be totally committed, as was everyone else working together at that time. The commitment and contribution of my team-mate Riccardo was fantastic, and was also pivotal to the success of Williams. We pushed one another harder and harder and harder.

"It is a great compliment to the team that Sir Frank and Sir Patrick have been recognised for their greatness and commitment over so many years." ■

SECRETS OF THE WILLIAMS FW14B



The key to the success of the Williams FW14B was its active ride system, designed in essence to provide a stable platform for the superb aerodynamic package created by chief designer Adrian Newey.

Under Patrick Head's direction, it took years of toil from engineers Simon Wells, David Lang and Paddy Lowe, plus test drivers Mark Blundell and Damon Hill, to get the system to the point where it could be raced reliably and effectively. One of the biggest challenges was to convince a sceptical Nigel Mansell to get fully on board.

"Nigel had experience of active ride at Lotus, and was a bit negative," Head recalls. "Not so much about performance, but

reliability and safety. The FW14 was a good car, but we were seen off by Senna and McLaren at Suzuka at the end of 1991, so we thought we'd have to lift our game.

"By that time the active car was starting to do better lap times than the passive car and delivering the promise that was always seen theoretically. In Australia we actually went as far as flying an active car out there, with the thought that we might race it.

"There was a lot of trying to persuade ourselves whether we were trying to be too clever by half, which is what we were in 1988 – after losing Honda we tried too hard, and gave ourselves too many engineering challenges. We didn't want to repeat that. So we always thought, 'Let's give it a go in

FRONT SUSPENSION

- 1) Hydraulic actuator connected to the pushrod link
- 2) Third damper and roll damper
- 3) Electronic control
- 4) Sensors

REAR SUSPENSION

- 1) Hydraulic actuator connected to the pushrod link attached to the gearbox case
- 2) Double accumulator
- 3) Hydraulic liquid reservoir
- 4) Hydraulic pump

the first couple of races, then have a think if we need to convert back'.

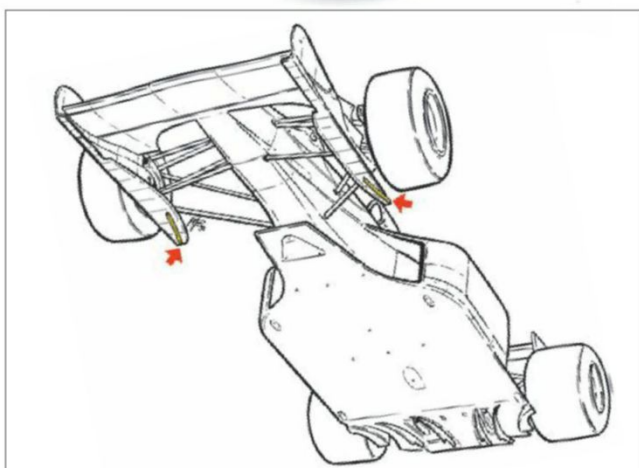
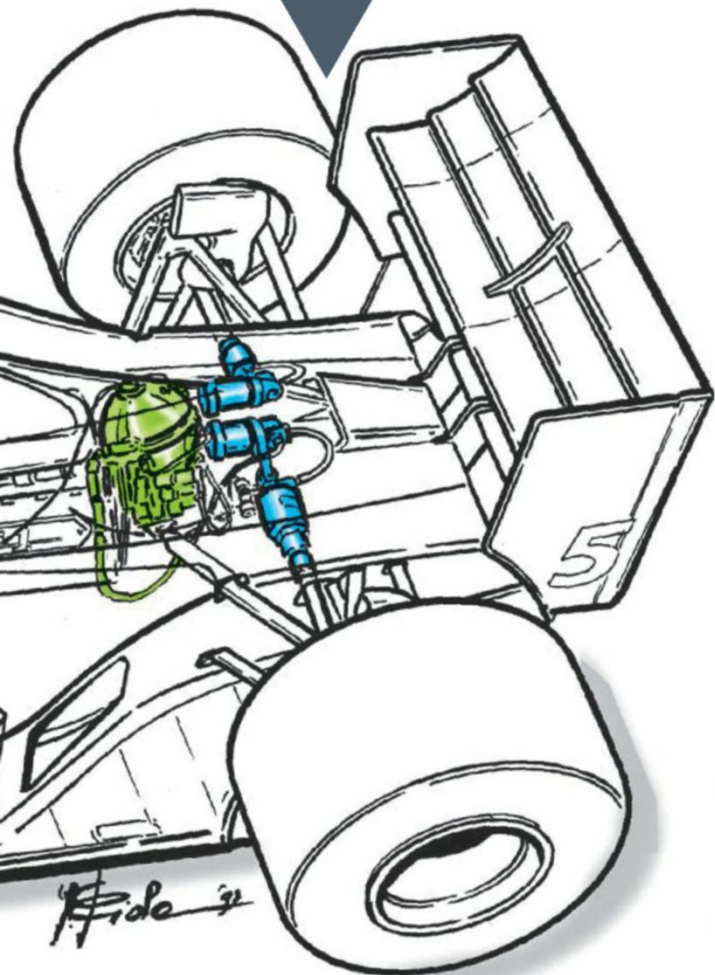
"We started work on the 15 towards the end of 1991, and it was intended to be the '92 car, but we decided to start the season with the 14B. With the 14B it was a relatively straightforward conversion from off to on, whereas the 15 was a committed active car, with no either/or. However, we seemed to be so strong, and thought, 'Maybe we don't need to bring the 15 in this year'.

"The 14B was a good car; it was just an add-on improvement to the 14. Apart from the bulges around the actuator and the top of the front pushrods, you couldn't see a lot of difference from the outside. We added ABS during the year. It was extremely

WILLIAMS FW14B

16 RACES 10 WINS
15 POLE POSITIONS
11 FASTEST LAPS
2 TITLES (drivers' and constructors' 1992)

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expensive, but it worked very well. "What was interesting is that we did almost no aero development. We didn't have to. We were working on the 15, and that was ready very early. Adrian rightly was not impressed with our quarter-scale windtunnel. Because we didn't need to we didn't use it very much, and meanwhile we pushed the button on building a bigger-scale tunnel." ■

View from underneath shows how clean the aero was; big wing extensions were able to go all the way round the front tyre to better deflect the airflow around the outside



WHY MANSELL GOT MORE OUT OF THE WILLIAMS FW14B THAN PATRESE

Nigel Mansell made a huge leap in terms of performance relative to Williams team-mate Riccardo Patrese from 1991 to '92. Having been relatively evenly matched, the Briton was able to extract far more from the active-ride FW14B. There's a clear explanation for this.

"Although there was feed-forward in the software, it was mostly a reactive system," says Patrick Head. "The driver would turn in, there would be load transfer from the inside to the outside that would make the car start to roll and the system would correct that.

"So there was a slightly uncertain bit on corner entry, which didn't give total-confidence feedback to the driver. Nigel worked that out and was of the type that he was prepared to ignore the first milliseconds, whereas Riccardo liked instant feedback from the car."

"At the transition from certain speeds there was a quirk," Mansell explains. "When you went over certain bumps and you had the air attach and reattach under the car, the car always had to respond to that gap being squashed

down, so the aerodynamics would be consistent, then volatile for a short period of time, then consistent again.

"It was about having the trust and the ability, strength wise, to catch the car in the middle of the corner when it tried to spin on you. Back then we didn't have power-steering. Having great upper body strength, I found I was able to catch the car in the middle of the corner, and having... well, not total trust, but trust in my ability to give it a go, I could go round the corners quite a bit quicker than Riccardo at times."

Head concedes more could have been done to make Patrese comfortable.

"It was a pity in a way because actually they were very alike on performance if not results in 1991," he admits. "But when you got to '92 and the active car there was a very definite gap between Nigel and Riccardo. I think it would have been nice if we'd spent a little bit more time trying to understand exactly what Riccardo didn't like, and sorted that out. As a driver he was just as quick as Nigel."

MANSELL v PATRESE 1991

5	WINS	2
2	POLES	4
72	POINTS	53
6	FASTEST LAPS	2
6	QUALIFYING*	9

MANSELL v PATRESE 1992

9	WINS	1
14	POLES	1
108	POINTS	56
8	FASTEST LAPS	3
14	QUALIFYING	2

*Excludes Belgian GP



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THE RACING SEASON STARTS THIS WEEKEND at Birmingham's NEC, with Autosport International.

Since 1991 the show has brought the best of motorsport – from karting and national competition through to world championships such as Formula 1 – together under one roof every January.

This year's show will mark the start of the 40th anniversary celebrations for the Williams Formula 1 team, and feature iconic cars from its history and key personnel including 2017 rookie Lance Stroll and 1997 world champion Jacques Villeneuve.

"Autosport International is at the heart of what both

drivers and fans love about racing," Villeneuve says. "It is an opportunity to indulge in all things motorsport.

"I'm very excited to share my stories and my experiences of my life behind the wheel, 20 years on from winning the Formula 1 world championship. I'm also looking forward to meeting the fans who have supported my racing career for over 30 years."

There'll be plenty to see and do over the four days, with Thursday and Friday dedicated to the industry before doors open to the public. Here's a taste of what you can expect from Europe's biggest motorsport show this weekend.

S. BLOXHAM/JAT





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MARTIN BRUNDLE

Racer-turned-F1 commentator takes to the stage on Thursday.

MIKE COSTIN

Cosworth co-founder joins Classic Team Lotus and its celebration of the Lotus 49 on Thursday.

DAVID CROFT

Sky Sports F1 commentator will host shows in the Live Action Arena.

VIC ELFORD

Porsche sports car ace and ex-F1 driver with the 911R in which he won the first ever rallycross, in the Live Action Arena.

DARIO FRANCHITTI

Indy 500 and IndyCar legend stops in on Saturday.

JOHNNY HERBERT

Three-time grand prix winner will talk all things F1 on Saturday.

ANDREW JORDAN

2013 BTCC champion is launching the livery of his new WSR BMW 125i Sport.

ALLAN McNISH

Three-time Le Mans winner and Audi Formula E project leader dissects 2016.

LAURENT MEKIES

FIA safety director and F1's new deputy race director, delivering the Watkins Lecture on Friday.

MATT NEAL

Three-time BTCC champion looks back on more success for Honda.

LANDO NORRIS

Rising star on winning the 2016 McLaren Autosport BRDC Award and what comes next.

GORDON SHEDDEN

The Scot became one of only seven drivers to have won three BTCC titles in 2016.

ROB SMEDLEY

Williams F1 head of performance engineering to discuss 2017's technical challenges on Sunday.

LANCE STROLL

Set to make his F1 debut in 2017, Williams's latest recruit will take to the stage on Saturday.

NICK TANDY

Le Mans winner is at the NEC on Friday, amid preparations for his 2017 Porsche WEC campaign.

COLIN TURKINGTON

Recapping a big first year in the BTCC for Team BMR's Subaru Levorg.

JACQUES VILLENEUVE

Outspoken 1997 Formula 1 world champion visits Birmingham on Sunday to reflect on his success.

CLAIRE WILLIAMS

Williams F1 deputy team principal set to start the squad's 40th-anniversary celebrations on Sunday.

MALCOLM WILSON

Will likely be smiling on stage on Thursday, after signing Sebastien Ogier for the 2017 WRC season.



FRANCHITTI



VILLENEUVE



STROLL

SHOW INFORMATION

JANUARY 12-15, BIRMINGHAM NEC

Open 9am to 6pm each day (January 12-13 are trade days only)

TICKET PRICES (Saturday and Sunday)

Ticket type	Advance price	Door price
Adult	£33	£36
Child (6-15)	£21	£24
Paddock Pass	£44	£47
Child Paddock (6-15)	£31.50	£34.50
VIP Club	£125	£125

All tickets include a seat in the Live Action Arena and entry to the Performance Car Show. Accompanied children under six get **free access**

For more information visit autosportinternational.com

ROUTE-FINDER

BY CAR

The NEC is easily accessible from junctions 6 and 7 of the M42, which connects to the M6, M40 and M5. The A45 also passes the NEC. Alternatively, you can type B40 1NT into your satnav.

BY TRAIN

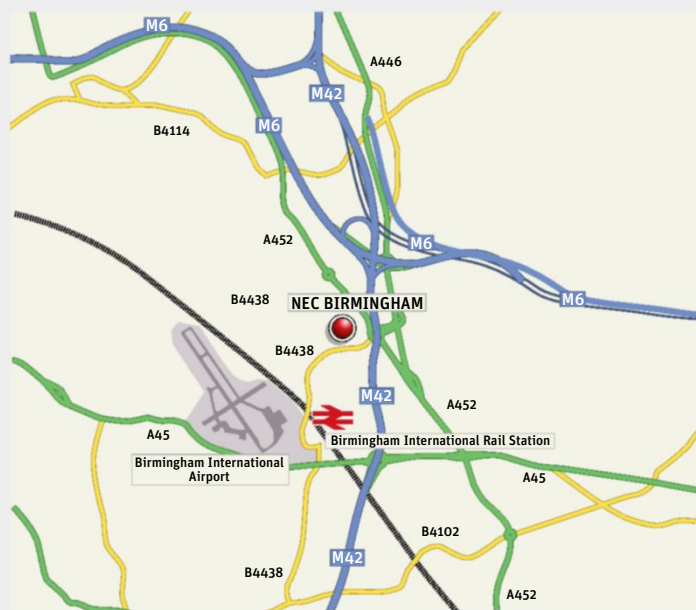
The NEC is a few minutes' walk from Birmingham International Station. Connections from Birmingham New Street run regularly and take 10 minutes. New Street has excellent links to all major UK cities.

BY PLANE

The NEC is a short drive from Birmingham International Airport. The easiest way to reach the venue is by the Air-Rail Link, a free shuttle service running every two minutes between 0515 and 0200. For scheduling call 08445 766000 or visit birminghamairport.co.uk.

BY COACH

National Express runs regular services to Birmingham city centre and the airport. For information visit www.nationalexpress.com.





FORD'S ICON

The RS500 won races and titles around the world, and its 30th birthday will be marked by a special display at Autosport International

By Kevin Turner and Matt James

[@autosport](#)

More than arguably any other car, Ford's turbo saloon springs to mind when talking about touring car racing's most spectacular machines. With over 500bhp and limited tyre sizes, the RS500 always had more power than grip, something that tended to get more pronounced as it voraciously ate its rubber during races. That, along with regular flame spitting, made the cars memorable to watch even if they weren't battling wheel to wheel.

In 2017 the RS500 is 30 years old and a number of examples will form a special display at Autosport International (see opposite) to celebrate. This tin-top icon has a history well worth savouring.

Ford had already tasted success with the XR4Ti and RS Cosworth in the mid-'80s, but the RS500 moved the Group A game on. A bigger intercooler, improved aero, better suspension and twin injectors helped turn the 350bhp RS Cosworth into the 500bhp RS500 and immediately made all other

Above: race and road versions of the RS500 will celebrate the car's 30th birthday in Birmingham this week

frontrunning Group A cars obsolete.

The car came too late to stop BMW's Robert Ravaglia taking the 1987 World Touring Car crown, but thereafter Ford was unstoppable, at least in terms of overall race wins. Eggenberger-run works RS500s won all but three of the 11 European Touring Car rounds in 1988 as Ford swept to the manufacturers' title. Elsewhere, Klaus Ludwig won the DTM in his RS500, Dick Johnson took the first of his turbo-powered Ford Australian Touring Car >>

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ON HITS 30

RS500s AT AUTOSPORT INTERNATIONAL

Up to 14 Ford RS500s will come together to celebrate the car's birthday in Hall 19 as part of the Performance Car Show element of Autosport International this week.

Several road versions of the homologation special – one of the most prized halo cars of the '80s – will be on display, and the racing models are out of the top drawer.

Arguably the most famous car for British fans will be in an unfamiliar livery. Chassis 0288 will appear in Birmingham in the Mobil colours it wore when competing in Australia in 1989, but it is the car Andy Rouse used to dominate the '88 British Touring Car Championship. Racing in Kaliber colours, Rouse won nine of the 12 races, including a famous duel with the Eggenberger-run works machine of Steve Soper at Brands Hatch, on his way to the Class A crown.

Rouse's car will be joined by another BTCC racer from the same season. Chassis 0388 was built for Laurence Bristow's 1988 attack by Andy Rouse Engineering and was a podium finisher before heading to Japan for the '90 season. One of the most original racing RS500s around, the car will appear in its '88 CAM colours.

Australian tin-top legend Dick Johnson was one of the RS500's best exponents and one of his cars – DJR1, in its Shell Ultra Hi livery – will travel to Birmingham. Johnson took back-to-back Australian Touring Car Championship crowns in RS500s in 1988-89 and also starred at the Silverstone Tourist Trophy in '88.

The RS500 also made an impact in the DTM and Manuel Reuter's car, which helped him to second in the German series in 1987 behind Eric van de Poele's BMW, will be at the show.



Andy Rouse's dominant 1988 RS500 will be at ASI

LAT



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Ludwig took the 1988 DTM title for Ford

“I remember racing at 163mph on a public road. There weren’t many cars you could do that in”

Chris Hodgetts

championships, and the car won every single round of the British Touring Car Championship. Indeed, after Andy Rouse took the machine’s first series victory at Donington Park in September 1987 no other car would win a BTCC round until the move to the single-class two-litre era at the beginning of 1991. As Malcolm Swetnam, former team boss of the Trakstar RS500 team, says: “If you didn’t have a turbocharged Sierra you weren’t going to win.”

Chris Hodgetts, who raced RS500s after taking two BTCC titles from the smaller classes, believes the Fords were a mixed blessing.

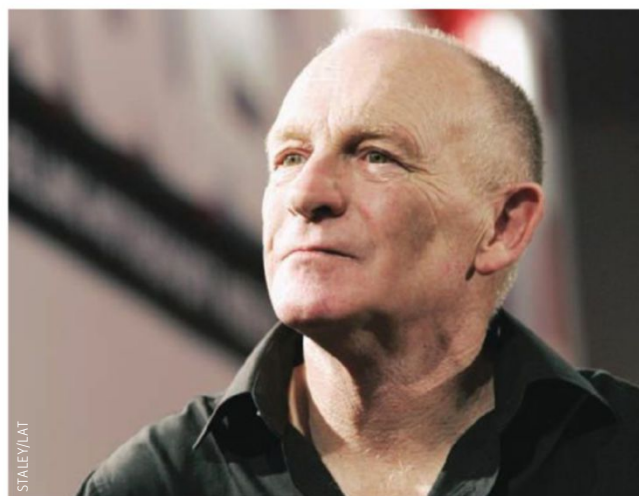
“They were awesome cars at the time,” he recalls. “You knew you were stepping into something a bit special when you got in one. But it was also quite a frustrating time, because although the cars were seen as off-the-peg racers, they weren’t. Unless you were in an Eggenberger or Andy Rouse Engineering car, it was hard to get right to the front.

“There were issues of being on the right tyres and having the right tuning, and you needed all of those bits to be in place before you could attack properly. They were very physical to drive, but you got the satisfaction when you got it right.

“When I was driving the Brooklyn-backed car, in 1988 and ’89, I remember racing at Birmingham and going past a mosque at 163mph on a public road. Just amazing really – there weren’t many national racing cars you could do that in.”

Although power remained the main obsession throughout the RS500’s competitive life, work did take place on trying to make it handle better – or at least look after the tyres. Perhaps the most interesting was an early experiment with active suspension.

“In 1989 I did a couple of rounds in the JQF-run car, which was sponsored by Fina, and Gerrit van Kouwen had raced it earlier in the year,” explains Hodgetts. “That was a development car, really, and it had a very



STALEY/LAT

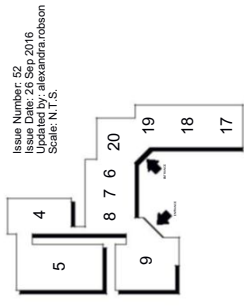
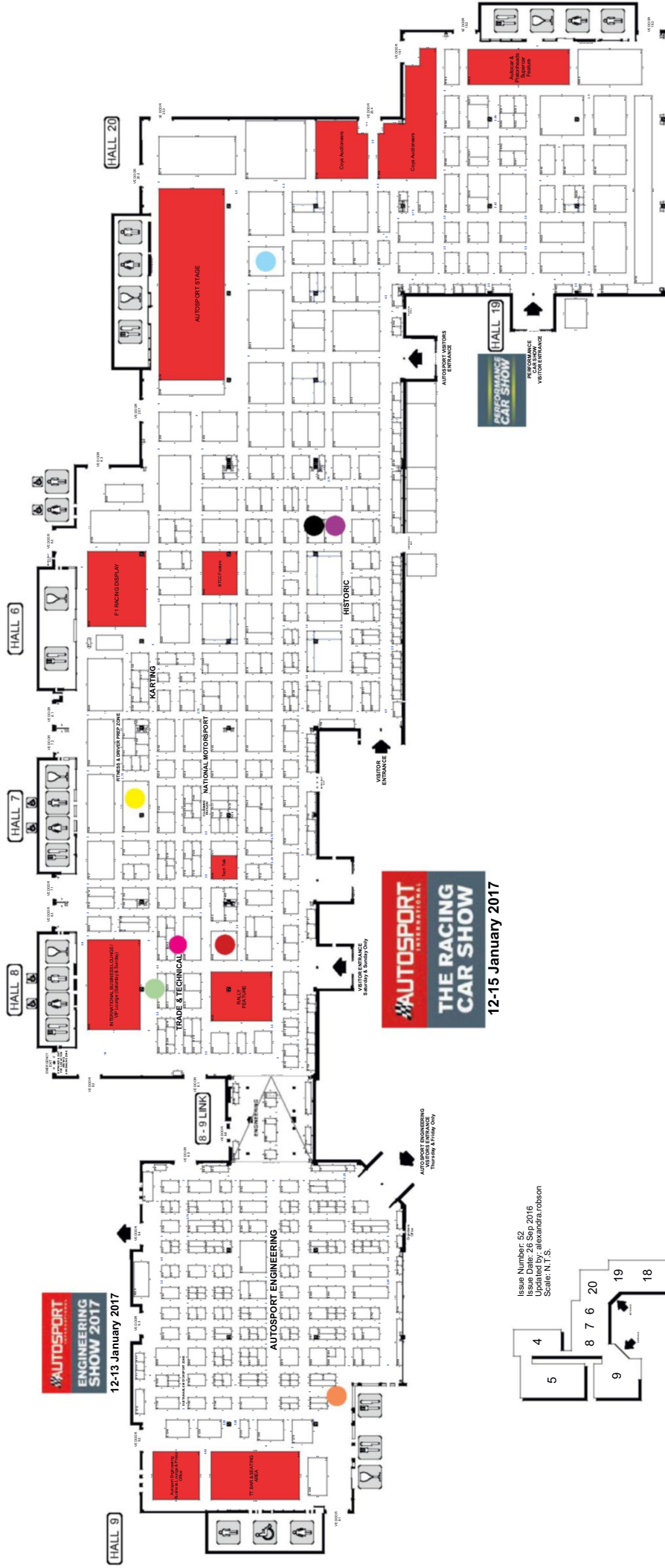
Hodgetts liked the RS500, but argues you needed everything to be right to be quick

primitive version of active suspension on it. I finished fifth with that car at Silverstone at the end of the season.”

Battling without such help was Karl Jones, one of the underfunded RS500 BTCC drivers during the era. He agrees that there were many differences between the various versions, but still has fond memories.

“Those really were the best touring cars that there have ever been, but at the time, we were just racing what was put in front of us,” he says. “They were demanding cars, and I had come straight from doing several seasons in front-wheel-drive cars. My first test was at Boreham on the way up to Oulton Park [round two of 1988] – and it >>

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Indespension
Stand 8440

Indespension have added to their range of trailers with their new car transporter Evolution. Available in open and covered, tilting deck and fixed deck, with numerous options, a high degree of customisation is available. The innovative design utilises the full width of the trailer to provide additional loading weight, whilst the ultra-low mudguards from low vehicles. Visit stand 8440 to see the rally feature to see the Evolution and talk to our experts.

750 Motor Club
Stand 7130

The 750 Motor Club is the UK's leader in affordable motorsport, currently managing 20 different circuit race formulae for sports racers, single seaters, tin tops and historic vehicles. Visit us to find out more about 2017's M3 Cup Championship, Hot Hatch Championship and Club Enduro's visit to Spa Francorchamps.

Reis
Stand 6750

Every motorsport insurance policy is different. As a specialist broker, Reis Motorsport Insurance understand the complexities and variables that need to be considered with this cover. Reis can arrange tailored policies for competitors, teams and enthusiasts at all levels from hobby through to professional, for competition cars, personal accident and commercial schemes for business.

CES Europe
Stand E180

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was wet. I remember being sideways everywhere because the Tarmac at Boreham wasn't great. I wondered what I had let myself in for. Also, after about three laps, you were covered in sweat. The turbo was right in front of you, and the exhaust went down the driver's side. You were in a cooker.

"Our car suffered a bit because it had rally suspension on it – it was all we could get hold of, and we just couldn't get the car low enough to get the performance out of it. It certainly made the car lively and Thruxton soon became my favourite track. It really was balls-to-the-wall stuff. At Noble the car would bounce about 12 feet across the track when you were on a really fast lap. It was a white-knuckle ride.

"I remember going to Thruxton at the start of 1989. We hadn't been there since the year before, and on my first timed lap I put the car on the front row next to Andy Rouse. When I got out of the car, I was shaking with pure adrenaline. I think that was probably more satisfying than any of the results I got from the car – which weren't many!"

Power increased throughout the RS500's era and the cars never looked easy to drive, particularly when the tyres inevitably went off during a race.

Tim Harvey, who won two BTCC races as well as the 1989 Macau Guia race in the RS500's heyday, nevertheless remains a fan. "As a racing car, probably the [earlier] Rover SD1 was better, but in terms of fun the RS500 was unparalleled – 560bhp and 175mph was pretty exciting," says the 1992 BTCC champion.

"The balance of the car was dominated by the power and the turbo lag. You're not talking about a finely honed handling machine, it was a hammer to crack a nut, but immense fun. There aren't many cars that take people's breath away on the pitwall.

"Everybody was fixated with power. I remember at the old Grand Prix circuit at Silverstone going through the fast version of Club in fifth gear and having wheelspin."



Such tyre torture often made the rubber a deciding factor. In 1990, Robb Gravett (Yokohama), Rouse (Pirelli) and Harvey (Dunlop) engaged in a BTCC title battle in which the tyre war played a significant part.

"Tyres made more difference than anything because no tyre was going to handle that sort of power easily," recalls Harvey.

Gravett and Yokohama won out, an RS500 driver finally taking the overall BTCC crown after previous Class A top runner Rouse had twice been denied by the championship's idiosyncratic class-based scoring system.

"The best tyres for the car were the Yokohamas, and I didn't realise how much they could transform the car," adds Hodgetts. "I raced an ex-Andy

Jones was spectacular in his 'rally' RS500 in the BTCC, but results were hard to come by

Rouse Engineering RS500 in Japan in 1990 and it was sensational. It really brought the most out of the car."

By then the Ford's dominance was such that the impending end of its Group A homologation helped encourage the birth of the new regulations, a formula that would become known as Super Touring. It was simply impossible to see a way of continuing the existing category without the bewinged Sierra in the BTCC.

In Germany, the more sophisticated DTM rules and factory efforts from BMW, Audi and Mercedes had ended the RS500's domination early, while the ETCC had died after 1988.

In Australia, following two Bathurst 1000 successes (and one taken away post-race) the Ford came up against the era's ultimate turbocar: Nissan's Skyline GT-R. The four-wheel-drive monster was too much for the sideways Ford, but the RS500 – in John Bowe's hands – was still able to win the penultimate round of the 1992 Australian championship, the last season before the rules changed and finally ended the great Ford's contemporary front-line career for good.

Fortunately, RS500s can still be seen racing today. Their battles with the later, more sophisticated and better-handling '90s machines in the Super Touring Car Trophy are often among the highlights of events such as the Silverstone Classic. They aren't really capable of winning, but the spectacular way well-driven turbo Fords make their way around a circuit is a good demonstration of what made them so memorable three decades ago. ■



Turbo Fords can mix it with Super Tourers in the right circumstances



RACING'S GREATEST JUNIOR CATEGORY

WOODING

Formula Ford was launched in 1967. To celebrate the category's 50th birthday, the Historic Sports Car Club will bring together some special cars in Birmingham

By Kevin Turner, Editor

[@KRT917](#)

▼ LOTUS 51

Right at the start of the Formula Ford story is the Lotus 51. Chassis 104/AM119 was one of the first cars supplied to the Jim Russell

Racing School in 1967. Having spent much of its life in the US, the car on display in Birmingham was acquired by Lee Penson and restored in the UK.



▲ MERLYN MK11A

'Magic Merlyn' is a legend. First raced by future double F1 world champion Emerson Fittipaldi, the car that will be on show became a championship winner in 1970 driven by Colin Vandervell. He sold it to another future grand prix star, Jody Scheckter. Frank Sytner, who would go on to become a British Touring Car champion, also raced it.

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◀ **ROYALE RP24**

Future touring car star David Leslie won the 1977 British Automobile Racing Club FF1600 title in this RP24. Before his death in an aircraft accident in 2008, Leslie had restored the car and raced it at Silverstone's Walter Hayes Trophy extravaganza.

LOTUS 61 ▶

The angular 61 was a potent weapon in Dave Walker's hands in 1969, winning nine races. Exported to South Africa that year, the display Lotus 61 came back into the UK in 1988. Since then it has been raced and hillclimbed, and is now owned by Nigel Adams.



CROSSE 32F ▶

Crosle Cars will provide a 32F, painted in Nigel Mansell's 1977 livery. Mansell had an extremely successful season in a sister car, despite a serious accident, before stepping up to F3. Crosle built 140 examples, making the 32F the company's most prolific design.

▼ **ROYALE RP26**

The RP26 was the first car designed by future F1 engineer Pat Symonds when he joined Royale in 1978. Over 100 were built and professional racer-turned-Super Nova team boss David Sears, Le Mans winner Andy Wallace and grand prix driver Roberto Moreno were among its exponents. The car on display will be raced by period FF1600 star Rick Morris in Classic Formula Ford in 2017.



◀ **RAY JL16K**

The popularity of the original Formula Ford concept is underlined by the fact that several constructors still build chassis powered by an engine designed almost 60 years ago. Ray is one, with Jonathan Lewis providing the car raced by Miles Johnston.

VAN DIEMEN RF88

The RF88 on display was driven by Michael Schumacher in 1988 and was a frontrunner in the German and European championships. After passing to Derek Hood of JD Classics, it was acquired by current owner Richard Wilson.



◀ **REYNARD 89FF**

Van Diemen and Reynard had a fierce FF1600 rivalry in the late '80s. After Derek Higgins took the British title in 1988, Reynard hit back with the 89FF. Irishman Bernard Dolan snatching the crown. Future Indy 500 winner Gil de Ferran was also a winner in an 89FF.

VISIT THE STAND

Go and see this special display in Birmingham's NEC at the Historic Sports Car Club stand in Hall 6, stand 6710. A number of former FF1600 racers will also be attending, including Ray Allen, Julian Bailey, John Bright, Geoff Lees, Rick Morris, John Village, Andy Wallace and Jim Walsh.

WOLFF'S PACK

A year on from its launch, Dare To Be Different is going from strength to strength

By Lucy Morson

[@autosport](#)

Susie Wolff believes her Dare To Be Different initiative has “made a real impact” in its first 12 months, having reached more than 30,000 female students since it was launched at Autosport International 2016.

Former Williams Formula 1 test driver and DTM racer Wolff sought to use her standing as a role model to create a platform to continue to encourage young girls and women to “dare to be different”, and aspire for careers in the infamously male-dominated world of motorsport.

“When launching Dare To Be Different in partnership with the Motorsport Association in January last year, our aim was to inspire and motivate young girls and women, driving forward future talent and boosting awareness of the motorsport industry,” says Wolff, who retired from the cockpit in late 2015.

“The first year of Dare To Be Different has been a huge success. Over the past 12 months, we have delivered seven headline events at race tracks around the UK, reaching more than 32,000 pupils.”

Original plans consisted of five major events in 2016, but the early success led to two more being added, in the lead-up to the



British Grand Prix and Wales Rally GB. These headline events targeted schoolgirls aged eight to 11, encompassing different aspects of motorsport such as racing, fitness, engineering, and dealing with the media.

“While the emphasis is on fun, our big ambition for the events is that they are educational, informative – and, most importantly, inspiring,” Wolff says.

“I’ve thoroughly enjoyed attending the events, meeting the girls and seeing the

Dare To Be Different has reached over 32,000 pupils since its launch at ASI 2016

genuine joy, excitement and interest on their faces throughout the day.”

Wolff’s 2017 started with receiving an MBE for her services to motorsport, and plans for Dare To Be Different include holding even more events this year.

Other developments include the introduction of a three-tier system that aims to focus on different ages, while continuing to pay attention to all facets of motorsport. That includes offering a wide range of taster days for younger girls and looking into creating opportunities for more tailored work experience and careers advice for older members.

One year in, Dare To Be Different has nearly 500 members in its growing community, spanning a variety of ages and interests within motorsport.

It has also hosted two community events – one at the Silverstone round of the British GT Championship and one at Brooklands Museum – open to all members and providing opportunities to network and create contacts in the industry. The aim of the community is to offer a place for



Damon Hill has backed Wolff's D2BD initiative

S. BLOXHAM/LAT

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See the new M-Sport livery in full at ASI

KEEP YOUR EYES PEELED

Sebastien Ogier's life after Volkswagen in the World Rally Championship will start at Autosport International.

The four-time world champion's new M-Sport Ford Fiesta RS, built to the WRC's heavily revamped 2017 regulations, will be on the Cocker mouth firm's stand in Hall 20 on Thursday, when new boss Malcolm Wilson attends the show. Ogier's new ride will be shaken down on Friday, before going in the transporter on Saturday, bound for the Monte Carlo season opener.

New British Touring Car Championship colours will also be on display, including the title-winning Honda squad showing off its 2017 livery, and Andrew Jordan doing the same with his new WSR BMW 125i Sport, while Motorbase is set to announce the second of the three drivers for its Fords.

The F1 Racing/Motorsport News feature will again host cars from a host of Formula 1 teams, joined by James Hunt's maiden grand prix winner – the Hesketh 308B from the 1975 Dutch Grand Prix – and Jaguar's maiden Formula E challenger amid an array of machinery from other disciplines.

There'll be cars to check out wherever you look within the NEC, including dedicated displays honouring the Lotus 49, Ford Sierra Cosworth RS500 and Formula Ford.

The Performance Car Show will host some of the finest road cars, including the Ferrari California T Handling Speciale, Jaguar F-type SVR Convertible, Porsche 911 GT3 RS, McLaren 570S GT4, Ford GT, Aston Martin DB11, Lexus LC 500 V8 Sport and new Honda NSX.

MITCHELL ADAM



members to communicate, connect, support and inspire one another, with its online presence moving from Facebook to a dedicated website this year.

"I believe we have made a real impact and I look forward to building momentum on our success in 2017 and for generations to come," Wolff says.

Dare To Be Different can be found within Hall 6 during Autosport International 2017.

D2BD events are planned to be fun as well as educational and inspiring

GET INVOLVED

Autosport International isn't just about looking and listening. There are plenty of interactive activities to work into your time at the NEC.

On your way to the Live Action Arena and the show featuring a section honouring 50 years of rallycross, check out the Ginetta passenger rides and the indoor karting track. GoMotorsport returns with free AutoSolo passenger rides

outside Hall 17 and there will be a wide array of simulators to sample.

If you are planning your own 2017 motorsport season, key race organisers, tracks and series will be on hand, along with constructors and suppliers. You'll also find areas dedicated to historic competition, karting, oval racing, careers in motorsport, fitness and preparation, and much more.



Ginetta lays on passenger rides



Test yourself in the simulator

A-Z OF EXHIBITORS

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195mph Ltd www.195mph.com	6 6954	Bridgwater and Taunton College	7 7220	Dodo Juice Car Care	9W 9007	Gripper Differentials Ltd	9 E1072
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3S Media Ltd	9 E1018	Britcar	20 2641	DRD Racing	10 10612	GTROC	9W 9250
3trpd	9 E347	British Historic Kart Club	6 6132	DRDCC	9W 9215	Gymkhana	9W 9242
40 Years of Williams	20 2250	British Motorsports Marshals' Club	7 7214	Drenth Motorsport Gearboxes	9 E348	Hadleigh Castings Ltd	9 E1030
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A R E Dry Sump Systems	9 E496	British Rally Marshals Club	7 7332	Drive Southwest & Network Wheels	9W 9150	Harper Adams University	7 7110
A1 Team Wear Limited	10 10120	British Rallycross Championship	7 7450	Driven Racing Oil	9 E860	Hauser Racing	9 E730
A9 Lubricant Technology	8 8706	British Superkart Association	6 6400	DTA FAST	9 E282	Hawk	7 7634
Abarth	20 2660	Brooklands College	7 7100	Dunlop MSA BTCC Feature	6 6440	HB Bearings	9 E873
Absolute Alignment	7 7752	Brown & Geeson Ltd	6 6460	Dunne Motorsport	6 6840	Hedtec	6 6612
ACL Bearing Company (Australia) Pty Ltd	9 E340	Brown & Miller Racing Solutions	9 E970	Dymag	8 8405	Helix Autosport Ltd	9 E990
ACT Performance Products Ltd	9 E30	BRSCC Fiesta Junior Championship	7 7156	Dynojet UK	9 E540	Henleys Love Sweets	9W 9004
Active Simulators	6 6050	Bruderer Ltd	9 E1014	Earls Performance Products	9 E760	Henrics	20 2942
Active Simulators	9W 9010	Bruntingthorpe Proving Ground	9 E180	EBC Brakes	8 8240	Hewland Engineering	9 E1160
Advanced Fuel Systems Ltd	9 E481	BTB Exhausts & Prototypes	9 E1070	EcuTek Technologies Ltd	9 E493	Hexagon Metrology Ltd	9 E1040
Aero Tec Laboratories Ltd	8 8247	BTN Performance	9 E82	EEC Performance Systems	9 E741	HiSpec Motorsport Ltd	8 8600
AeroCatch	9 E886	BTRDA	9W 9110	Eibach UK	9 E1260	Historic Sports Car Club (HSCC)	6 6710
Aerocom Metals Ltd	9 E1073	Capricorn Automotive GmbH	9 E560	Electric GT Holdings Inc	6 6250	Historics Collection	6 6865
aFe Power	6 6700	Car Audio & Security	19 19450	Elite Racing Transmissions	8 8615	Holinger	9 E680
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Akrapovic	20 2650	Carbon Tec	8 8711	Engine Parts (UK) Ltd	9 E961	HRX Srl	6 6660
Albins Performance Transmissions	9 E61	Cartek Motorsport Electronics	8 8244	Envy Car Care	19 19200	Ifor Williams Trailers	6 6505
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Alcon Specialist Brakes & Clutches	9 E1250	Casada	9W 9002	EVO & Octane magazines	6 6845	Indespension Ltd	8 8440
Alphateq Ltd	9 E1034	Caseler s.r.o.	9 E746	EVO Corse	9 E1065	Induction Technology Group Ltd	9 E362
Alutight - Perma Grit	6 6938	Castle Combe Circuit	7 7430	ExcellR8 Motorsport	7 7520	In-Excess UK Ltd	7 7640
Amalgam Collection	6 6860	Central Motorway Police Group	9W 9320	Exo Sports Cars Ltd	19 19140	Integro	8 8200
Anglo American Oil Company Ltd	20 2500	CES Europe Ltd	9 E1180	F1 Model Helmets	6 6895	Intercomp	8 8300
AP Racing	9 E380	CGR Automotive	9 E947	F1 Racing Feature	6 6020	International Motor Sports - Rallying	8 8435
Aries Motorsport	7 7164	Charles Taylor Trading Limited	10 10530	F1 Racing Specials	6 6210	Intrax Suspension BV	6 6640
ARP Automotive Racing Products	9 E670	Children's Air Ambulance & Agouti M'sport	7 7152	Ferodo Racing	9 E986	Intrepid Kart UK	6 6120
ARR Craib Scottish Rally Championship	7 7552	Chris Bayley Automobilia	6 6816	Ferrea Racing Components	9 E570	iracing.com	6 6510
Arrow Precision	9 E762	Circuito Ascari-Circuito Guadix	6 6245	FEV Fire Suppression	8 8305	Isoclima SpA	9 E960
ASNU (UK) Ltd	9 E140	CKW Tools	10 10592	FF Corse	7 7600	ItalianRP Clutches & Conrods	9 E646
Association of British Kart Clubs	6 6410	CL Brakes	9 E485	FLITIM Srl	9 E641	Jenvey Dynamics Ltd	8 8700
AST Suspension	8 8618	Classic Sports Car Club	6 6852	Flint & Flame	6 6959	JK Marketing	6 6905
Athena	9 E484	Classic Team Lotus	20 2270	Force Racing Wheels	8 8245	John Monkman	6 6909
Aurora Bearing Company	8 8330	Clickheat	19 19032	Force Technology Ltd	9 E647	John Monkman	6 6920
AutoAdrenalin.co.uk	19 19730	CNC Heads	8 8205	Ford RS Owners Club	19 19620	JT Innovations Ltd	9 E787
Auto Finesse	20 2860	Cobra Seats Ltd	6 6645	Ford-Mania	9W 9340	Juicy Details	19 19000
Autocar & Pistonheads Supercar Feature	19 19460	CompBrake Motorsport	7 7200	Forge Motorsport	9 E74	Juno Racing Cars	7 7560
Autodromo Internacional do Algarve	6 6253	Competition Supplies Ltd	9 E992	Formula 1000 Rally Club	9W 9130	K&N Filters (Europe) Ltd	6 6570
Automotive Brands	6 6903	Complete Kit Car	19 19341	Frap Ball Joints Technologies	9 E872	KA Sensors Ltd	9 E486
Autosport Bearings and Components	9 E441	Coops Drift	9W 9120	FreeM - Free Minds Srl	6 6215	Kent Performance Cams	8 8400
Autotel Race Radio	7 7325	Co-ordsport Ltd	9 E1060	Fuchs Lubricants UK	9 E494	Kepston Ltd	9 E861
Avatar Sports Cars	19 19420	Corbeau	20 2200	Fun Cup UK	7 7360	Kimberley Media Group	8 8555
Aviaid Dry Sump Systems	9 E286	Costco Wholesale	19 19533	Funk Motorsport	8 8206	Kims Motorsport Galleries	6 6704
BAC	19 19110	Cosworth	9 E748	G and T Tools	6 6855	Kingston University London	7 7102
Baked For You	9W 9008	Coventry University	7 7210	G E Precision Ltd	9 E1140	Koden Motorsport	6 6550
Bal Seal Engineering	9 E946	Coys Auction	20 2780	G&S Valves	9 E844	KTS Turbo Billet X	7 7750
BARC	7 7017	Coys Auction	20 2780B	Garagista UK	19 19005	Kulite Sensors	9 E449
Base Performance Simulators	8 8201	Craftsman Tools Ltd	9 E1134	Gary Feakins Racing	7 7431	Kwiktrak (UK) Ltd	6 6476
BB Engineering Supplies	6 6922	Cranfield University	9 E64	Gazeboshop	7 7710	Lakesea Zestino Tyre	19 19300
BBS Motorsport GmbH	9 E395	Custom Cages	9 E330	Ginetta Cars	4 4020	Landsail Tyres	19 19010
Bianco Auto Developments	7 7540	Dare To Be Different	6 6251	Ginetta Cars	6 6430	Lane Motorsport	9 E391
Bicknell Developments Ltd	9 E1061	Darren McNamara Audi Quattro	8 8740	Gluon	19 19241	Laser Lines Ltd	9 E272
Bikers Lock	10 10060	Davanti Tyres	6 6405	GMR Design UK Ltd	19 19250	LAT Images	20 2248
Blue Sky Engineering UK Ltd	9 E863	DazsModels	6 6825	Go Kart Party	9W 9160	LCS & S	20 2920
BMR Racing	6 6000	DazsModels	6 6835	Goldstar Onboard	8 8730	Leather Genie	6 6926
BMW Car Club GB	19 19540	DBA	7 7633	Goodridge (UK) Ltd	9 E260	Legend Cars	6 6246
BMW Racing Drivers Club	7 7230	DC Electronics	9 E181	Gosnays Engineering Company	9 E949	Leicester Castle Business School	7 7115
BPG Motorsport	10 10310	DeatschWerks Fuel Systems	9 E962	Grand Design Systems	9 E1146	Liberty Walk	19 19160
Braille Brakes	19 19440	Demon Tweaks	6 6540	Grand Prix Racewear	6 6220	Life Racing Ltd	9 E1080
Brembo SpA	9 E580	DEN Motorsport	6 6705	Grandstand Motor Sports	7 7754	Lifeline Fire & Safety Systems/	
Bremsen Technik (UK) Ltd	9 E135	Dimsport Srl	9 E870	Great British Sports Cars	6 6566	Old Hall Performance	9 E185
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Link Engine Management	9	E398	Ohlins Racing AB	6	6670	Rimstock Team Dynamics	20	2640	Tillett Racing Seats	6	6565
Lista UK Ltd	7	7500	OPEN MIND Technologies AG	9	E1071	Ringspann (UK) Ltd	9	E470	Tilton Engineering Inc	9	E548
Litchfield	6	6575	Optimax Image Inspection & Measurement	9	E1048	road2racemodels	10	10030	Tim Byard	9W	9015
Lotus Cup Europe	19	19520	Optimum G	9	E240	Rob-Co Tooling	10	10260	Time Attack Championship	6	6760
M.E.RIN Srl Bladder Fuel Tanks	9	E75	Oval Racing Display	9W	9050	Robert Bosch Ltd	9	E475	Titan Motorsport	8	8230
MacG Racing Ltd	19	19210	Owslebury Crankshaft Service	9	E963	Royal Purple - Advanced Lubricant Solutions	8	8455	Titan Motorsports USA	9	E71
Maha UK Ltd	9	E472	Oxford Brookes University	8	8150	RRR Engineering	9	E446	Total Headtuners	19	19350
Mallory Park Circuit	7	7339	P1 Racewear	7	7650	Rupes	19	19100	Total Seal Piston Rings	9	E772
Marches 4x4 Motorsport	7	7050	Pandamonium Racing Ltd	7	7740	RX Racing Ltd	7	7014	Toyo Tyre (UK)	20	2600
Marcos Owners Club	19	19510	Pankl Northbridge	9	E572	Sabelt UK	9	E882	TPC Automotive	19	19150
Mazda Road to Indy	9	E130	PDP Masters of the Airbrush	20	2940	Sadev	8	8620	TPS WeldTech Ltd	9	E242
McGard Deutschland	8	8640	Perfect Bore Manufacturing Limited	9	E1130	Samsonas Motorsport	7	7610	Tractive Suspension BV	9	E1084
McGill Motorsport	10	10010	Performance Audi magazine	19	19230	Santa Pod Raceway	7	7460	Travel Destinations	6	6630
McGill Motorsport	10	10110	Performance Engine Components	9	E533	SBD Motorsport Ltd	8	8315	Trelleborg Sealing Solutions	9	E948
McGill Motorsport	8	8450	Performance Projects Ltd	9	E343	SBP Health	7	7160	Trident Racing Supplies Ltd	9	E649
McGill Motorsport	9W	9030	Performance Racing Industry	9	E480	Schroth Racing	6	6650	Triple X Trading	6	6673
McGill Motorsport	9W	9040	Peter Lloyd Rallying	7	7335	SCS Delta	9	E786	Triple X Trading	7	7755
McLaren-Honda	20	2672	PFC Brakes	9	E660	Semog Racing Products	7	7530	TRS Motorsport	9	E432
Meduza	19	19430	Pilbeam Racing Designs Ltd	9	E883	Serck Services Motorsport	7	7350	TTV Racing	9	E790
Memento Exclusives	6	6822	Piper Cams	8	8605	Shark Performance	19	19240	Tuned UK	9	E892
Memorabilia Giant	20	2905	Pirelli UK Tyres Ltd	6	6150	Shmee150/Mr JWW	19	19630	Tunni	6	6932
MEV Limited	20	2945	Pistal Racing	9	E1046	Show Research	9W	9005	Turatello Race Trailers	6	6740
MG Car Club	7	7434	Planet Kart Cross	8	8650	SignatureRV.co.uk	20	2580	Turbosmart	7	7630
Midland Motor Movers	6	6620	Plex Tuning	9	E274	SiliconHoses.com	9	E499	Turbosystems - Coolerworks	8	8232
Millbrook Proving Ground	9	E51	PMI Europe	9	E684	Simpson UK	7	7300	Turismo	19	19251
Millers Oils	7	7320	Polaris	19	19340	Smarts 4 You Racing	7	7162	Type-RA.com	9W	9232
Milltek Sport Ltd	8	8540	Pop-up Banners Ltd	6	6305	Smiths High Performance	9	E780	UK Carbon Cleaning	19	19232
Milltek Sport Ltd	8	8708	Porsche Cars GB Ltd	20	2545	Snooper	6	6606	University of Wolverhampton	7	7120
MINI Challenge	20	2870	Porsche Club Great Britain	19	19660	Sol Rally Barbados	7	7400	Urban Automotive	19	19130
Mintex	9	E491	Powerflex	9	E890	Sole Mates	6	6907	V2 Sport	6	6672
Miracle Shabby	10	10610	Powerflow Exhausts	20	2900	SPA Design	9	E241	Vac Motorsports	9	E360
Mission Motorsport	9W	9230	PRAGA-Export s.r.o.	6	6555	Spax Suspension	9	E78	Vac Wash	19	19400
Moetefindt Fahrzeugbau GmbH & Co KG	19	19330	Praxair Surface Technologies Limited	9	E1165	Specialty Fasteners & Components Ltd	9	E887	Variohm-Eurosensor	9	E280
Monogram	6	6601	Precision Technologies	9	E248	Spedeworth Motorsports	10	10550	Vintage Metal Signs	6	6820
Morris Lubricants	6	6934	Premier Fuel Systems Ltd	9	E690	Spijtda	6	6810	Viraver Technology	9	E648
Motec Europe	9	E170	PRG Trailers	6	6520	Sporttec	9W	9134	Vision Plus	10	10320
Motec Europe Ltd	9	E65	ProFormance Metals Ltd	6	6515	SST Technology/Lentus Composites	9	E980	Vital Equipment Ltd	7	7660
Motor Sport magazine	6	6721	Prototype Cup/GT Cup	6	6770	Stand 21	6	6530	Voyager Innovations	19	19201
Motor Sports Association	20	2840	Quaife	8	8500	Stanford Marsh Ltd	9	E1135	VP Racing Fuels	8	8550
MotorDesign Sweden AB	8	8233	Questmead Ltd	9	E490	Steve Tappin Books	6	6936	Walker Motorsport	10	10180
MotorDrive Seats	6	6850	Quickjacks	8	8320	Storm Sportshomes	9W	9142	Walker Motorsport	10	10190
Motorsport Safety Fund	7	7334	R.M. Toys Ltd	10	10250	Super B	9	E471	Walkers - Tekofibra	9	E784
MotorsportAuctions.com	6	6475	Race Engine Technology	9	E287	Super One	6	6415	Waveney Precision Ltd	9	E1033
MotorsportDays.com	7	7216	Race Tech	7	X7520	SuperPro Europe Ltd	8	8325	Wavetrac Differentials	9	E1064
Motul (Witham Motorsport)	7	7550	Race Tech	9	E42	Supertech	9	E546	Weatherweave Ltd	6	6200
Mountune Racing	9	E964	Race Technology	7	7315	Surf & Turf Instant Shelters	7	7250	Westfield Sports Cars Ltd	19	19035
Movaltec - PSI - CV	9	E770	Race to the Finish F1 Memorabilia	20	2910	Swanflight.com	6	6450	Westlake Tire	7	7330
MRF Motor Sport Tyres	20	2550	Race to the Finish F1 Memorabilia	20	2916	Swift Group Ltd	6	6240	Westwood Cylinder Liners	9	E862
M-Sport	20	2540	Racecar Engineering magazine	9	E290	SXS Racing	7	7260	Whiteline	7	7632
MStyle	19	19215	RaceChip Chiptuning GmbH & Co KG	19	19120	System Store Solutions Ltd	9	E840	Wicked Artz Cartoons	9W	9003
MSV	20	2670	Race-Keeper	9	E346	Syvecs Ltd	9	E284	Willans	9	E58
MTEC Brakes	7	7310	Racelogic	7	7535	TBRacing	6	6600	Wiltshire College	8	8155
Mylaps Sports Timing	8	8705	Raceparts	9	E390	TE Connectivity	9	E440	Woodford Trailers	6	6870
Nankang Tyre UK	20	2620	Raceworld	10	10230	Team Whittingham	9W	9330	WOSP	9	E60
National Autograss Sport Association	10	10510	RACINGLINE	19	19020	TecMate	8	8216	Wrights Auto Supplies - Coventry	6	6812
National Autograss Sport Association	9W	9060	Radical	20	2740	Teesside Karting	4	4010	www.dogstrust.org.uk	9W	9000
National Motorsport Academy	6	6260	Rally Design - Wilwood Brakes	8	8345	The Awning Company	6	6300	www.vantage97.com	6	6856
Newman Cams	9	E847	Rally For Heroes	9W	9155	The British Womens Racing Drivers Club	6	6830	X-92	6	6605
Newton Equipment Ltd	9	E1081	Rat Sport	6	6928	The Chocolate Fondue Company	9W	9009	Xtrac Ltd	9	E162
Next Big Step	9W	9210	RCE	6	6101	The Dreamcar Event	9W	9350	Xtreme Clutch	7	7631
NGK Spark Plugs (UK) Ltd	20	2850	Reis Motorsport Insurance	6	6750	The Italian Job	9W	9216	Yamazaki Mazak UK Ltd	9	E1240
Niche Vehicle Network	20	2760	Renapur	6	6901	The Motorsports School	7	7215	Yellow Speed Europe	8	8741
Nicky Grist Motorsports/Stilo Srl	6	6470	Repack-S	9	E283	The Racecar Centre	6	6610	Yellowcog	7	7158
Nicomar Floor Mats	6	6622	RetroRacer	6	6131	The Silverstone Real Ale Company Limited	9W	9001	Yokohama	20	2750
Nitron	7	7512	Reverie Ltd	8	8610	Think Automotive Ltd	9	E270	Young Calibration Ltd	9	E232
Noble Automotive Ltd	19	19310	Revival Race Shop	7	7411	Thrill Pic Media Ltd	7	7714	Zeitronix Inc	9	E393
Noble Owners Club	19	19610	Revotec Ltd	9	E599	Thyssenkrupp Bilstein Tuning GmbH	20	2700	Zenos Cars Limited	19	19320
North Yorkshire RS500 Specialists	19	19650	RG Racing/Alfano	6	6205				ZF Race Engineering	9	E620
Obp Motorsport	7	7545	Richard Pegg	10	10520				Zircotec Group	9	E590

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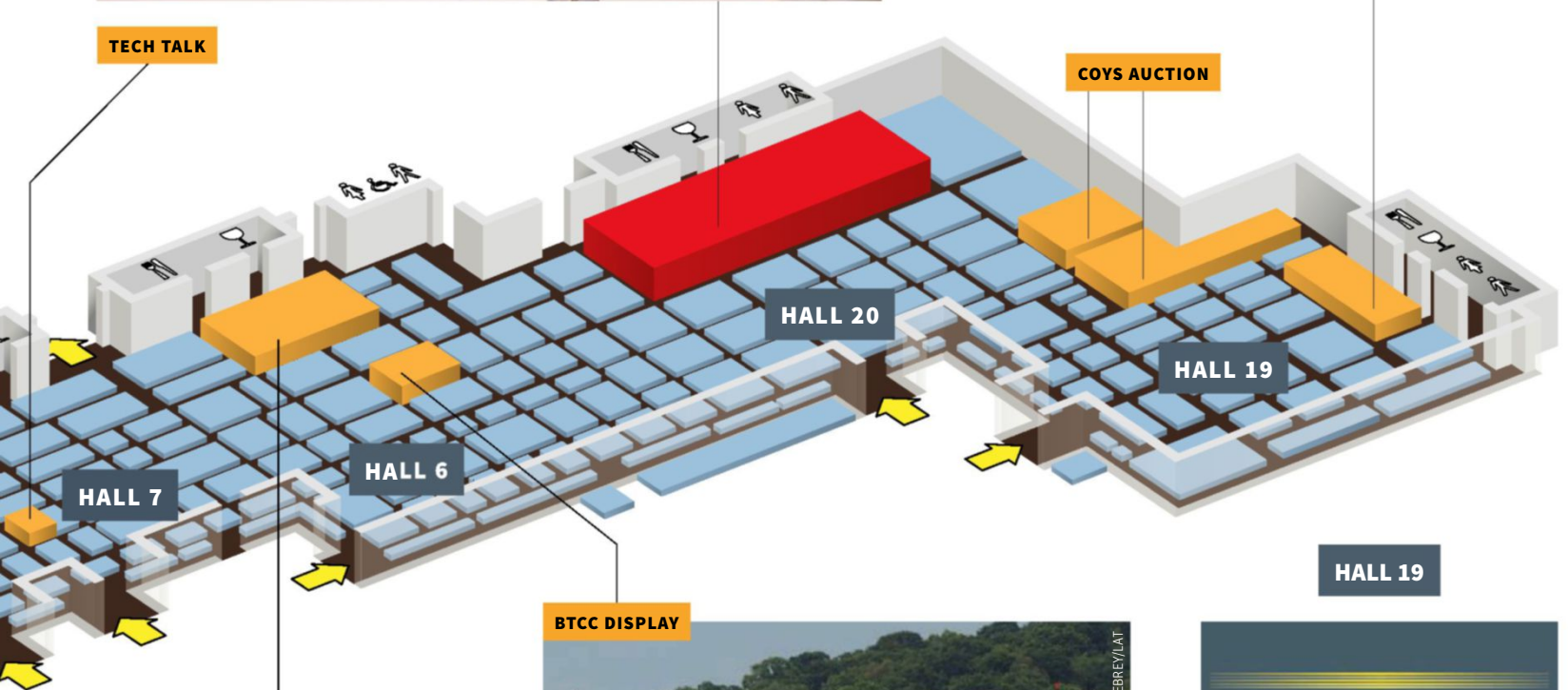


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FORMULA 1

Silverstone's new

THE SAGA OF HOW TO SAVE THE BRITISH Grand Prix has taken a new twist. For years hopes have been pinned on finding a new owner for Silverstone to secure the investment it needs to finance its long-term Formula 1 deal. But now circuit owner the British Racing Drivers' Club has changed tack and is targeting F1's new commercial-rights holder – and even some government support – to ensure that the race is not lost.

Silverstone's contract for the British GP runs until 2026, but last September BRDC president and ex-F1 racer Derek Warwick said that the race was too expensive for the club and circuit to run.

Then early in the new year reports emerged of a letter dated December 19 from club chairman John Grant to members, warning of the "potentially ruinous risk" of hosting the race and stating that "the Board is considering whether we should give notice before the 2017 BGP (as required) of our intention to exercise the break clause in the BGP contract at the end of 2019".

Several different parties have been spoken to regarding a sale of the circuit. But now the forthcoming change in Formula 1's promotional ownership has made that sale less crucial for the BRDC.

Club chairman John Grant told Autosport

that Liberty Media's increasing involvement in F1's commercial rights could be a step in the right direction for Silverstone. Liberty's deal to take a controlling interest in F1 is believed to be imminent, with shareholders expected to rubber-stamp approval at a meeting scheduled for January 17.

"A few things are going in our favour," said Grant. "The impending change of F1 ownership should be helpful medium-term. Liberty seems genuinely sympathetic to our point of view.

"We need a rebalancing of the economic equation. We need the GP to be profitable for the risks to be manageable. We're exploring lots of ways and talking to a number of parties."

One area that could provide assistance is the public sector, even though traditionally government money has not been available to help Silverstone.

"There are strong arguments for public money to be used, but we understand F1 is seen as a rich sport," said Grant. "I don't think a straight cash handout would be politically possible, but some other form of public support may be.

"The grand prix generates a lot of income for the local community and provides a fantastic shop window for our thriving British motorsport industry."

The BRDC's main
fear is a big drop
in attendance



push to save the British GP

Less pressure

Grant believes that the BRDC's financial position is now looking stronger, thanks to deals such as the one to host a World Rallycross round from 2018 and approval of funding for its £20million Heritage Experience.

"We got support from the Heritage Lottery Fund and now local councils and enterprise partnerships have got together to provide much of the balance of the required funding," he said. "This is a big step forward because it should attract half a million new visitors to Silverstone every year. And that provides a stronger business case for the hotel, which has been on our wishlist for years.

"With all these things starting to go our way our general feeling is more optimistic, so we're feeling under less pressure to have to do a deal immediately [to sell Silverstone]. We've turned our attention to the grand prix because we have to make a decision before the next GP about exercising the break clause or not."

Even if the break clause is activated, Grant believes there would still be a chance to save

the race. "We haven't made a decision yet, but if we do exercise it we don't see that as the end – it would be a basis for further negotiation," he added. "We would not see it as irrevocable."

Why change is needed

There are two main problems affecting the future of the British GP and Grant believes that, with the Circuit of Wales project remaining in its planning phase, Silverstone is the only viable option.

"We very much want to keep the GP," he said. "There should be a British GP and it has to be at Silverstone. If you can't make it work at Silverstone, in our opinion you won't make it work anywhere else in the UK.

"We only have two issues. First, the GP loses money. Even in a good year it doesn't cover its share of site overheads. In effect, we're having to subsidise the GP with grassroots activities, which is the wrong way around. The problem is the cost goes up every year [thanks to the 5% multiplier applied to the fee Silverstone pays to host the GP]. We can't just keep jacking ticket prices up by more than inflation every year and

expect the same number of people to come.

"The bigger issue that we are really worried about is the risk of a big drop in attendance, like Hockenheim experienced a few years ago. Even a 20% drop we couldn't handle, and the real issue is the risk of a couple of bad years."

Donington's view

When asked if Donington Park would consider trying to host the GP if Silverstone did pull out, circuit MD Christopher Tate said: "Absolutely not. We've set a very clear target of keeping the trace of the circuit as it is. We've no interest in hosting modern, high-speed single-seaters because we'd have to completely change Donington Park."

Tate also criticised the basis on which circuits have to run GPs, but agreed that Liberty seems willing to change deals to help.

"The business model makes no sense to anyone," added Tate. "Hopefully there will be a totally different business model and Liberty has made all the right noises about heritage events [such as the British GP]. I do think the new owners will understand where it all fits in because they are media savvy. It can't continue on the basis it is."

KEVIN TURNER AND DAMIEN SMITH

"Things are starting to go our way. We're optimistic"



FORMULAE
GUTIERREZ SET FOR ELECTRIC DEBUT

HAAS FORMULA 1 refugee Esteban Gutierrez will make his Formula E debut in 2017.

The Mexican was announced as the electric single-seater series' newest driver at a press conference in Mexico City on Monday of this week.

Gutierrez, who lost his Haas seat to Kevin Magnussen after failing to score a point in the American team's rookie season, said: "I'll do the Mexico race, and probably others in preparation for the 2018 season."

It remains unclear which team Gutierrez will race for, but Faraday Future Dragon Racing is an option, with the likelihood that Loic Duval loses his seat.

The new Audi DTM driver will miss the Paris and Brussels races as the dates clash with the Lausitzring and Norisring DTM rounds.

Gutierrez, who will become the eighth former F1 driver on the FE grid, could compete as early as next month's Buenos Aires race. His switch is believed to have been fast-tracked in order for him to get up to speed before the Mexico City ePrix on April 1.

Autosport owner Motorsport Network has acquired a stake in Formula E. It was driven by fan interest and the scope to generate unique content, chairman Zak Brown said. It follows Motorsport Network's acquisition of Motors TV, Autosport, F1 Racing, Motorsport News and LAT Photographic.

SCOTT MITCHELL



FORMULA 1

Honda opts for Mercedes packaging style for engine

HONDA IS POISED TO ADOPT SIMILAR POWER-UNIT packaging to that of Mercedes for its 2017 Formula 1 engine, as part of a major revamp of the design.

McLaren technical director Tim Goss confirmed last week that there would be a new layout and architecture for 2017, as Honda takes advantage of unlimited modification scope following the scrapping of the development-token system.

Although no details of the redesign have been revealed, sources confirm that Honda F1 chief Yusuke Hasegawa has agreed to move away from the 'size-zero' concept used for the past two years. That design — aimed at making the engine packaging as tight as possible — featured a split turbine and compressor situated within the confines of the V-bank of the internal-combustion engine.

Honda now believes that the drawbacks of that concept

outweigh the advantages, so will make its engine larger and adopt the Mercedes route of locating the compressor at one end of the engine with the turbo at the other.

A connecting shaft through the V-bank will connect the two elements of the turbocharging system, a design that also mirrors Mercedes' approach. The water intercooler will be moved to a niche between the chassis and engine, which will significantly lower the power unit's centre of gravity. Honda is also expected to adopt a multi-jet injector system to spray fuel inside the combustion chamber, a design similar to the turbo-jet ignition system used successfully by Ferrari.

Improved combustion efficiency is one of Honda's key targets for 2017, after making huge strides forward with its Energy Recovery Systems last season.

FRANCO NUGNES



GP2

Carlin calls time on GP2

CARLIN HAS BECOME THE LATEST team to leave the GP2 Series, which has just 10 squads confirmed for 2017.

The team has cited the end of its existing contract with GP2 as the ideal time to quit the category after six years to concentrate on its commitments in other single-seater series, which include four championships in Europe and two in the US.

Carlin's departure follows that of Status Grand Prix last spring — both

teams struggled to attract budgeted drivers for 2016, and Status threw in the towel on the eve of the season.

"We've come to a point where we have fulfilled our contract with GP2 Series, a championship in which we have enjoyed great success," a Carlin source told Autosport. "The time has now come to move on to focus on other areas of our race programmes."

Although Carlin never reached the supremacy in GP2 that it has enjoyed in

the past in Formula 3, Formula Renault 3.5 and GP3, the Farnham-based squad did notch up eight wins and four pole positions from 2012-14 courtesy of future Formula 1 drivers Max Chilton, Jolyon Palmer and Felipe Nasr.

GP2's 11th team is listed simply as 'TBA' on its website, raising question marks over the projected return of Hilmer Motorsport, which was announced last November.

MARCUS SIMMONS



FORMULA 1

Manor falling down?

THE COMPANY THAT OPERATES THE Manor Formula 1 team has gone into administration, casting doubt over the future of the squad ahead of the new season.

Staff were told during a meeting at Manor's Banbury factory last week that hopes of finding an investor to save the team have failed. In a statement, Manor said: "Unfortunately the investor was unable to advance a final agreement in a timescale that would have avoided impacting upon the team's 2017 racing programme, and the directors have had no alternative but to place the team in administration."

FRP Advisory LLP has been appointed as joint administrator of the Just Racing Services Ltd company that operates Manor. Manor's predecessor, Marussia, brought in FRP at the end of 2014 when that company collapsed with £35 million worth of debts.

Geoff Rowley, the joint administrator, said that no redundancies of the 212 staff at the team had yet been made, but admitted that there was limited time to find a solution before F1's season-opening Australian Grand Prix on March 26.

"The team's participation will depend on the outcome of the administration process and any related negotiations with interested parties in what is a very limited window of opportunity," he explained.

"No redundancies have been made following JRSL's entering into administration, and all staff have been paid in full to the end of December. The ongoing staff position will

depend on whether new investment can be secured in the limited time available."

Manor owner Stephen Fitzpatrick said that the fate of his team was effectively sealed when Sauber scored points in last November's Brazilian Grand Prix.

Although Manor claimed talks got as far as a heads-of-term agreement with a group of Asian investors, Fitzpatrick suggests that the situation was bleak as soon as it lost 10th place in the constructors' championship.

"When I took over the team in 2015 the challenge was clear: it was imperative the team finish in 10th place or better in 2016," Fitzpatrick said. "For much of the season we were on track, but the dramatic race in Brazil ended our hopes of this result, and ultimately brought into doubt the team's ability to race in 2017.

"The decision to put the team into administration represents a disappointing end to a two-year journey for Manor," he added. "Over much of the last year we have been in discussions with several investor groups, and had finally agreed terms of a sale to an Asian investment consortium in December. Unfortunately time ran out before they could complete the transaction.

"Not wishing to repeat events of the past, we resolved in 2015 not to start any season that we did not know for certain we could complete, so we have taken the difficult decision to put the team's operating company into administration."

JONATHAN NOBLE

IN THE HEADLINES

COUNTDOWNS FOR LAUNCHES

Mercedes, Ferrari, Renault and Force India will launch their new Formula 1 cars on consecutive days next month. Renault will unveil on February 21, Force India at Silverstone on February 22, Mercedes on a filming day at Silverstone on the 23rd, while Ferrari will take the wraps off its new challenger at Fiorano on February 24.

MELBOURNE CHANGES BARRIERS

Melbourne's Albert Park circuit will be revised to accommodate the faster new-generation F1 cars in 2017. The tyrewalls at Turns 1, 6 and 14 have been reprofiled, and Tecpro barriers installed at Turn 12, after FIA data suggested mid-corner speeds would increase by 20-50km/h in mid-to-high-speed turns, braking points would be 20-30 metres later, and lap times three to four seconds quicker.

MONACO GP LIVE ON CHANNEL 4

The Monaco Grand Prix will be broadcast live on terrestrial television in Britain for the first time since 2012, with Channel 4 picking it as one of its 10 live races in 2017. The others are Bahrain, Russia, Azerbaijan, Britain, Belgium, Singapore, Malaysia, the United States and Abu Dhabi.

OSTBERG TO JOIN WRC FROM SWEDEN

World Rally driver Mads Ostberg will join the field from the second round in Sweden in an independent M-Sport Ford Fiesta WRC. The Norwegian will join Martin Prokop in the line-up in all remaining rallies except for Rally Mexico.

KUBICA TO RACE IN DUBAI 24 HOURS

Robert Kubica continues his gradual return to circuit racing this week by contesting the Dubai 24 Hours. The ex-F1 star will drive a Forch Racing Porsche 911 GT3-R as part of a team that also includes Robert Lukas and marque veteran Wolf Henzler. Another ex-F1 driver in the field is Jean-Eric Vergne, who will pilot a GP Extreme Renault RS01 GT3.

UNITED AUTOSPORTS' LMP2 SIGNINGS

European Le Mans Series LMP3 title-winning team United Autosports has snapped up its first two drivers for its expansion into the LMP2 category this year. Swiss Hugo de Sadeleer, a Formula Renault Eurocup race winner in 2016, and American Pro Mazda graduate Will Owen team up at the Ligier squad for the ELMS and the Le Mans 24 Hours.

CHILTON ADDS WTCC PROGRAMME

BTCC returnee Tom Chilton will also continue in the World Touring Car Championship this season. He will remain with the Citroen-equipped Sebastien Loeb Racing for his WTCC campaign, which has no date clashes with the BTCC.

JORDAN REVEALS HIS 2017 COLOURS

British Touring Car driver Andrew Jordan was due to unveil his 2017 livery at Autosport International today (Thursday). Jordan will race the WSR BMW 125i M Sport after switching from the Motorbase Ford Focus team.



Q&A

OLIVER JARVIS



XPB IMAGES

Former Audi driver Oliver Jarvis has joined the factory M-Sport Bentley squad two months on from his ex-employer's withdrawal from the World Endurance Championship. His programme as part

of an all-British line-up with Guy Smith and Steven Kane, which is focused on the Blancpain GT Series Endurance Cup, begins with the Bathurst 12 Hours next month.

What does it mean to land a factory drive so soon after leaving Audi?

Once Audi pulled out, I was trying to find a suitable drive with another manufacturer, so I was delighted to be able to come to a deal with Bentley.

How does it feel as a Brit to sign for Bentley?

Driving for them is something special, and that's not lost on me. I have to say that the 2003 Le Mans 24 Hours-winning Speed 8 is one of my favourite racing cars of all time.

How do you feel about going back into GT3?

I'm not underestimating it at all. GT3 has gone from strength to strength since I last competed in it regularly in 2013. I'll be up against guys like Christopher Mies and Maro Engel, who are driving these things 30 weekends a year.

What will it mean to compete at Bathurst for the first time?

It has been on my to-do list for the past three or four years. I've even stayed up to watch it on TV a couple of times.

Could you get back in a prototype this year?

Le Mans is something I'm looking to do, but if I go back in an LMP2 I want to be fighting for the win.

GARY WATKINS

DTM

Turbulence for DTM as Berger holds off

GERMAN MOTORSPORT HAS BEEN awash with rumours of a political war in the organisation of the country's flagship DTM series.

Stories emerged over the Christmas period that three of the four board members of the ITR, which organises the DTM, are standing down, with some suggesting this was something of a *coup d'état*. Foremost among those quitting his post is Hans Werner Aufrecht. Renowned as the godfather of the DTM, the 78-year-old masterminded the series' return in 2000 and oversaw the new technical regulations that were introduced in 2012, as well as convincing BMW to return. As the boss of the HWA Mercedes team, his squad is running all six cars of the Stuttgart manufacturer's slimmed-down DTM programme this season. The other two are Hans-Jürgen Abt, the chief of leading Audi team Abt Sportsline, and Walter Mertes, whose Formel 3 Vermarktungs subsidiary of the ITR takes care of the Formula 3 European Championship.

That leaves just Florian Zitzlsperger of the existing quartet of board members: the ex-Audi marketing man only joined the ITR last June, when he was appointed as managing director.

It was reported that ex-Formula 1 star Gerhard Berger would join Zitzlsperger at the ITR to run the DTM. Berger's last significant role within the sport was the presidency of the FIA Single Seater Commission, which he left in late 2014.

While the DTM's spokesman was unable to comment to Autosport on the stories, Berger told us that he had been sounded out about the role, but that he was unlikely to take on the job. "They asked me what I am doing and if I would be interested, but I said at the moment

I'm not sure if I would like to enter some adventure – there's nothing concrete," said the Austrian. "It's far from a decision – I know there would be a possibility but I have so many things on my desk that I don't know where to start first!"

Berger added that he wants to see the DTM succeed in the future, not only for the good of the sport but because his nephew Lucas Auer is a regular in the series, and looks likely to contest his third season this year with Mercedes. "I think it's a good platform," he said, "especially because it has existed for such a long time. It's normal in motorsport that things are sometimes stronger, sometimes weaker."

"It has three strong manufacturers and it would be nice to see it going on for a long time to come."

Further complicating the situation is the possibility that in 2019 the FIA's World Touring Car Championship could adopt the new Class 1 regulations, which were written in '12 for a new cooperation between the DTM, Japan's Super GT championship and a putative series in the US. This concept is based around two-litre, four-cylinder turbo engines and was introduced by the Japanese in '14, but the DTM will not bring in the rules until '19 at the earliest and the American series never got off the ground.

It is understood that the FIA should start discussions concerning Class 1, which would replace the current TC1 regulations, this year, and that Aufrecht – as a Class 1 expert – could be invited to be a part of this.

What happens next is unclear, but the DTM's spokesman told Autosport that "we hope to be able to communicate something soon".

MARCUS SIMMONS



DTM

WORLD RALLYCROSS

Solberg gets Volkswagen WRX deal

TWO-TIME WORLD RALLYCROSS champion Petter Solberg will drive a factory-built Volkswagen Polo RX Supercar in this year's series.

The Norwegian will run the car through his own team, with Johan Kristoffersson as his team-mate.

"This is what I have dreamed of," Solberg told Autosport. "We have worked so hard on putting this deal together. It's taken a while to get there, but I truly

believe that we now have such a strong force for this year's championship. I have given up on a lot of opportunities in world motorsport over the past few years to arrive in this place.

"We have seen what VW is capable of in motorsport. To be working with them in World Rallycross is just incredible."

Volkswagen motorsport director Sven Smeets added: "We have been watching rallycross very closely for a while now.

Obviously we are already working with the Volkswagen Andretti team in Global Rallycross, but we were keen to look more at the FIA World Rallycross Championship for 2017. Working with Petter's team and Volkswagen Sweden, we could make this happen. Petter will run the team and we will provide technicians at the races and we will engineer the car."

Kristoffersson in action in the Polo last season

DAVID EVANS



IMSA

Jani tops Daytona, but fears Cadillacs

SPORTSCAR SUPERSTAR NEEL JANI has admitted that he is worried about the threat from Cadillac after his Rebellion Racing ORECA-Gibson topped two of the three days in the Daytona 24 Hours test.

The reigning World Endurance champion believes that the new Cadillac DPi-V.Rs did not show their true potential during the traditional 'Roar before the Rolex 24' three-day test.

Jani, who makes his Daytona race debut this month, was fastest in the first two days of testing, while co-driver Sebastien Buemi's best time on the third day was within one tenth of a second of Ben Hanley's overall test topper in the similar ORECA-Gibson of DragonSpeed.

"I think it was positive," said Jani. "Stephane [Sarrazin] crashed the car before the test and the team just got the new car finished in time for practice one, and the car ran completely without issues all test long. So reliability was good and we all know that's most important.

"In terms of speed we were right up

there, but I wouldn't say we are the guys to beat. The Mazda showed good pace [just 0.02s slower than DragonSpeed, in Jonathan Bomarito's hands] and the Cadillacs... Put it this way, they were surprisingly slow. It was a little unreal when we followed behind them!"

PR1/Mathiasen Motorsports finished the test in fourth on combined times with its Ligier-Gibson, with the two Action Express Cadillacs and Wayne Taylor Racing's similar car occupying fifth, sixth and eighth spots.

In GTLM, the Ganassi-run Ford GTs were first and second in the hands of Ryan Briscoe and Tony Kanaan, ahead of the lead BMW M6 of John Edwards and the Risi Competizione Ferrari 488.

Last year's GTLM winner Corvette Racing withdrew early from the test after the #4 car, driven by Marcel Fassler, caught fire on the morning of the final day, due to what the team described as a "fuel-line issue".

DAVID MALSER



FIFTH COLUMN

Why Bottas may not be the best option

Although Valtteri Bottas is closing in on the Mercedes seat, there is another competitor who would have made for fireworks...

By Nigel Roebuck, Special Contributor

[@Autosport](#)

NINE YEARS ON, HERE I AM, TYPING ‘FIFTH COLUMN’ at the top of the screen once again, and thinking back to the last time, in December 2007. This was the year when three drivers went to the final race to settle the world championship, and the least favoured of the trio, Kimi Raikkonen, nicked the title by a point from Lewis Hamilton and Fernando Alonso.

If Raikkonen remains Ferrari’s most recent world champion, this was one of those years – as with Emerson Fittipaldi and Ronnie Peterson at Lotus in 1973, or Nigel Mansell and Nelson Piquet at Williams in ’86 – when a team, in this case McLaren-Mercedes, lost the title because all season long its drivers took points from each other.

That wasn’t the whole of it, mind you, for McLaren was also riven by dissension between the Hamilton and Alonso camps. Logically Fernando, who had come to McLaren as reigning world champion, was expected to have the upper hand, but Lewis was clearly no ordinary rookie, and Jackie Stewart, ever perspicacious, saw problems ahead when we discussed the forthcoming season: “Undoubtedly Alonso’s the best driver in the world, and he’s up against a new boy – but it’s not going to be as straightforward as people are suggesting. For one thing, Hamilton’s been part of the McLaren family for many years, and for another, given the amount of testing he’s had, probably he’s better prepared for F1 than anyone in history.

“I’ve no doubt that [then McLaren boss] Ron Dennis has made all kinds of promises to Alonso – but will he keep them? It’s going to be difficult for Fernando to make his

mark in the team, because the McLaren romance with Lewis is a very big one...”

Ultimately the Hamilton camp won the day, for at the end of a season pockmarked also by the ‘Spygate’ crisis Alonso and Dennis called time on their agreement, and Fernando returned to Renault, leaving Heikki Kovalainen to partner Lewis.

At Spa in 2008 I interviewed Hamilton, and if it went well I was taken aback by the behaviour of his father, who bounced into the room as soon as Lewis had left, demanding to know what had been said. Had we, for example, discussed... whisper it... Alonso? Well, yes, I said, of course we had, and at that Anthony became almost hysterical: “It’ll have to come out! We” – note the ‘we’ – “can’t talk about Alonso!” I reminded him I was a journalist, not a PR man, and left.

As time went by the animosity between the two drivers dissipated to a point that Hamilton said he considered Alonso the best. When Lewis clinched his title in Abu Dhabi in 2014 Fernando went to Mercedes to embrace him and his family – yes, including Anthony.

Fast forward to the end of last year, to the beginning of this, and Mercedes, having unexpectedly lost the services of its new world champion, Nico Rosberg, has been casting about for a new driver. With all the top ones committed elsewhere, it has hardly been spoiled for choice.

Pascal Wehrlein, for some time a member of the Mercedes family (and managed by Toto Wolff) was a possibility, but rightly considered too inexperienced, and Valtteri Bottas (also



Relations are better now



Bottas is set to take Rosberg's Mercedes seat



Alonso and Hamilton
drew on wins in '07

managed by Wolff) swiftly emerged as the frontrunner. As I write, his signing has yet to be confirmed, but Toto has said that if one of 'his' drivers were to join Mercedes he would of course sever management ties with him. Such has not always been the case, as Flavio Briatore and others can tell you.

It's a fact that Bottas has not lately been thought of as in the days when a Ferrari contract seemed to be looming, but he will, I fancy, prove a more competitive proposition than perhaps the Mercedes number-one driver – and, if Abu Dhabi last November be any guide, team manager – anticipates. In their four years as team mates, after all, Hamilton may have had 32 victories to Rosberg's 22, but it was not the *annihilation* many had predicted.

When Nico announced his shock decision, immediately

“The ideal scenario would have been Alonso with Hamilton”

there began fevered speculation about his replacement. It seems to be the case these days that 'there's no such thing as a contract', but although Wolff said he wasn't keen on the complications, financial and otherwise, of bartering a driver out of an existing deal, that, in the case of Bottas and Williams, is what has proved necessary.

It was only ever a pipedream, but for me the ideal scenario would have been Alonso with Hamilton again. When this proposition was put to him, Lewis – who always thoughtfully leaves his ego where it may be easily found – shrugged it off: “I've been in a team with Alonso before, and I beat him...”

Hamilton has over time become adept at adjusting reality to suit his purpose: last time I checked, in 2007 he and Alonso each won four races and finished with 109 points apiece. I suspect that, for all his outward insouciance, the one man Lewis would not have wished to see at Mercedes – the one man immune to intimidation, who never has off-days – was Fernando.

Would have done wonders for the TV figures, would it not? ❄

ROEBUCK IS BACK

Nigel Roebuck started covering Formula 1 in 1971 and became Autosport's Grand Prix Correspondent five years later.

As well as providing our race reports, Roebuck also started writing his Fifth Column in 1980, bringing insights from – and forthright opinions on – the F1 paddock. He has often provided the voice for fans during some of F1's more controversial and bizarre moments.

Nigel left Autosport at the end of 2007 to join Motor Sport magazine, but has now returned to his spiritual home. He will once again write Fifth Column, which will appear in Autosport magazine and on autosport.com.

Given the extensive changes F1 will experience in 2017, we are sure Nigel's experience will enhance our extensive F1 coverage.

KEVIN TURNER





THE RACE IS ON

2017 again sees the Renault UK Clio Cup provide thrills and spills live on ITV4 alongside the British Touring Car Championship while we also look forward to our new Renault UK Clio Cup Junior championship which looks set to take racing for 14 to 17 year-old drivers to a new level.

Come and see us on the BARC's stand at Autosport Show International (12-15 January, Birmingham NEC)

or contact Will Fewkes, Renault Sport UK Motorsport Championship Manager, Tel +44 (0)7894 317477 / Email will.fewkes-extern@renault.co.uk



2017 Renault UK Clio Cup Calendar

Rounds	Date
1&2	Sat 1/Sun 2 April
3&4	Sat 15/Sun 16 April
5&6	Sat 6/Sun 7 May
7&8	Sat 20/Sun 21 May
9&10	Sat 10/Sun 11 June
11&12	Sat 29/Sun 30 July
13&14	Sat 26/Sun 27 August
15&16	Sat 16/Sun 17 September
17&18	Sat 30 Sept/Sun 1 Oct

Circuit

Brands Hatch (Indy), Kent
 Donington Park, Leicestershire
 Thruxton, Hampshire
 Oulton Park, Cheshire
 Croft, North Yorkshire
 Snetterton, Norfolk
 Rockingham, Northamptonshire
 Silverstone, Northamptonshire
 Brands Hatch (GP), Kent

2017 Renault UK Clio Cup Junior Calendar

Rounds	Date
1&2	Sat 3/Sun 4 June
3&4	Sat 1/Sun 2 July
5&6	Sat 22/Sun 23 July
7&8	Sat 9/Sun 10 September
9&10	Sat 23/Sun 24 September
11&12	Sat 14/Sun 15 October

Circuit

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 Donington Park, Leicestershire
 Snetterton, Norfolk
 Brands Hatch, Kent
 Pembrey, Carmarthenshire

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The stage is set

Aggressive new cars; a ‘privateer’ in the form of Sebastien Ogier...
This year’s WRC looks tantalising as the Monte Carlo Rally looms

By David Evans, Rallies Editor

🐦 @daviddevansrally

MARINO FRANCHITTI MAY COME ON A RALLY THIS season. If he does, it’ll be the first time he’s seen a car getting muddy on purpose in just over 13 years. What’s changed?

It’s 2017, so it’s *those* cars.

Given that Franchitti’s interest in rallying had been largely based around Scottish rally mates named McRae or Robert Reid (Richard Burns was warmly accepted as a token Scot), his interest in the sport has waned in recent seasons.

But it looks like that’s changing. “What about Malcolm [Wilson]’s car,” says Franchitti. “If that Fiesta goes half as well as it looks, he’ll have it sorted. It’s fabulous. But come on, let’s talk rallying – who’s going to win it?”

For at least a decade, the reply to that question had to start with one word: Sebastien. This year? The jury’s out. Or at least it is for the first few rallies. By his own admission, it’s going to take Sebastien Ogier time to dial himself into M-Sport’s Ford Fiesta – a car unknown to the Frenchman before last month.

And the problem for him is that there’s no consistency of events in the early part of the calendar. Monte Carlo can range from full snow to bone-dry asphalt; Sweden could be full snow and minus 30, or a chilly gravel rally; next it’s Mexico’s high altitude and gravel; and then it’s Corsica.

Car set-up varies wildly across the first four rallies, leaving Ogier to find

confidence and speed on roads offering a wide variety of grip levels while demanding tailored spring rates, damper settings and differential maps. What’s going to be fascinating in the first four rallies is watching how he deals with that scenario – rarely has the champion had to play himself in and bide his time.

For all of Ogier’s professional career, he’s driven for a manufacturer and wanted for nothing. Now, while there is help from Ford, he’s essentially signed for a private team. M-Sport has built what looks to be a demon World Rally Car, but it may struggle to match the depth of pocket and width of wallet available at, for example, Toyota, when it comes to evolving the car. Then again, all of the teams would struggle to match the financial wherewithal on offer from Tokyo.

It’s unlikely we’re going to see the sort of dominance Ogier displayed in 2013, when he won nine of 13 rounds, but those doubting his ability to battle against the odds would do well to remember the fighting spirit and tenacity he showed to keep building his championship lead last season.

Equally, who’s to say he won’t be even more dominant? Ogier’s still Ogier and, as Franchitti says, if that Fiesta

is half as quick as it looks...

Kris Meeke would be the first to respond to that question. The Northern Irishman, for many, is sitting in the box-seat. His confidence is sky-high after winning in Finland and Portugal last year. And where he didn’t win, he turned in some stellar stage times. And when he wasn’t doing that, he was pounding out the miles in Citroen’s all-new World Rally Car. Nobody lining up in Monte Carlo later this month knows their car better than Meeke does that C3 WRC.

Despite not contesting the full championship last year, Meeke grew in stature and in consistency of speed. What’s crucial for him is that he bags points early and lays solid foundations for the year ahead. The true test for Meeke will be to know when he’s beaten and when it’s best to settle for second place. That’s an art – and a state of mind – in itself.

So, a two-horse race then? Maybe not. Hyundai’s Hayden Paddon and Thierry Neuville both showed enough speed to win rallies last season, but now they need to produce that pace across the spread of a season. In all honesty, Neuville looks the

more likely of the two to pose a threat, not least because of the form he showed in the second half of last season, when he finished on the podium on the last five rallies.

The great unknown for 2017 has to be Toyota. The Yaris WRC has been bolted

together in record time – as has the team itself – and this is likely to show in the Finnish-Japanese partnership’s early results. Reliability and consistency will be key early on, after which the team can focus on finding more speed.

The big question mark at Toyota is over Jari-Matti Latvala. The Finn floundered terribly last season and, if he has struggled to find confidence from a car as finely tuned as Volkswagen’s Polo, you wonder how he’s going to cope with a still-evolving Yaris.

That, Marino, was the long answer to your question – and there’ll be an even longer version in Autosport’s season-preview package next week. If it’s a conclusive answer you want, stick with Ogier. Or maybe go with Meeke...

● One man I won’t have the opportunity to talk to about the forthcoming season is Peter Foubister, who died in November. It was at a celebration of the life of ‘Foubie’ last week that I happened upon Franchitti, who was among the kind of all-star motorsport cast that was fitting for one so well-loved as this magazine’s former editor. 🌟

“The true test for Kris Meeke is to know when to settle for second”

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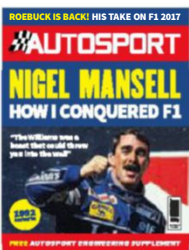
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FEEDBACK

Is it time for BRDC to have F1 'Brexit'?

Are we finally seeing a dose of good sense descending upon Silverstone? I fully applaud the BRDC's announcement that they are considering walking away from the grand prix in 2019. I would go further; I would say they should trigger their break clause ASAP.

For far too long British motor racing has been playing to Mr Ecclestone's clever dealings, the fallout of which affects many aspects of the national racing scene throughout the season.

F1 needs the British GP and Silverstone more than the BRDC needs to pander to Ecclestone's tune and risk going broke. It's a bit like the current EU issue; the EU needs the UK more than the UK needs the EU, but sadly it seems not enough people these days possess Bernie's undoubted skill of knowing when to walk away from a bad deal.

I say the BRDC should free its neck from this noose and get back



to its chief role, that of being the chief custodians of the wellbeing of British motor racing in the round.

Jeff Wyatt
Milton Keynes

(Tyre) contact sport

As revealed by your January 5 issue, in 2017 F1 tyres are 25% wider, yet the cars are just a few per cent heavier.

Presuming similar tyre pressures, this larger tyre-contact area reduces the effective gravitational force by more than 20%.

Despite the increase in aero downforce, I'd imagine using slicks on a damp track, or intermediates on a wet track, will be more challenging than in 2016.

Would Gary Anderson agree I wonder?

David Briddock
Byemail

'Four' wasn't flawed

Referring to your '10 of the worst F1

Looks like the 2017 grid will be reduced to 20 cars if Manor can't find more money

winners' piece (December 15-22), I would say that the Ferrari 625 was not a bad car. I've raced a 500 with 625 engine, which is very similar. The Aurelio Lampredi four-cylinder was strong, but the chassis was less good, typical of Ferrari at that time.

Mind you, some drivers found the Lancia D50 tricky, although it didn't bother Alberto Ascari. Sadly no-one ever asked me to try one.

Tony Stephens
Byemail

Small fry make F1 better

Formula 1 needs its minnow teams – always has, always will. They represent the core spirit of the sport in an age of manufacturer behemoths. They also give us fans a plucky underdog to cheer!

So it was with sadness, but not an awful lot of surprise, that I read of the Manor Formula 1's team's financial woes on your website.

Yes, I know, small teams have fallen by the wayside throughout the history of grand prix racing, and the pinnacle of motorsport is not a charity, etc, but I believe this wasn't about the team's personnel being unable to run a viable racing outfit. It's all about the bonkers way in which money is allocated in the sport. This year's F1 season will be all the poorer without Manor on the grid.

Frances Stewart
London SE12

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Peugeots dominant despite Sainz rav

DAKAR RALLY (INTERIM REPORT)
ASUNCION (PY)-BUENOSAIRES (RA)
JANUARY 2-14

PEUGEOT'S 2016 DAKAR RALLY CAMPAIGN could probably be just about considered dominant, even if the French manufacturer very nearly came up short in its bid for victory, its lead driver Stephane Peterhansel having to fight off Nasser Al-Attiyah and an appeal from rivals over what some believed to be illegal refueling.

But whereas Peugeot's 2008 DKR16 machine was clearly class of the field last year, it was highly uncertain whether the marque could build on that success in 2017 with the 3008 DKR.

After all, main rival Al-Attiyah was tearing up the cross-country scene after switching to Toyota, among his wins a Morocco triumph against Carlos Sainz Sr and the new 3008 DKR. And the regulation changes between the two Dakars favoured the Toyota Hilux, the Japanese car getting a break in air-restrictor size for its normally aspirated engine, while Peugeot's diesel-turbo was hit with a reduction.

In the background of the anticipated Peugeot v Toyota duel – with X-Raid Mini a possible spoiler – was the matter of the 2017 edition's route. The Dakar had come under criticism during its South American era for having become too straightforward, too easy, too much like WRC and not enough like a rally raid. With those complaints especially prevalent in '16, event sporting director Marc Coma promised a

renewed focus on navigation and varying altitude and terrain challenges for this year.

The first two stages, however, proved pretty straightforward. The 39km short special, run in Paraguay as the country's first-ever Dakar stage, was topped comfortably by Al-Attiyah, although his stage win was overshadowed by an ultimately inconsequential engine fire that developed in the Toyota over the final kilometres.

The following Argentina-based Resistencia-Tucuman test, described by Mikko Hirvonen as akin to not even WRC but drag racing, was headed by Peugeot's Sebastien Loeb.

But as soon as the race moved to tougher navigational stages on altitude, the Dakar began to deliver chaos in spades. For Toyota, the third stage – Tucuman to Jujuy – proved disastrous, with all of its lead cars hitting trouble.

Al-Attiyah's crash proved a particularly heavy blow. The Qatari, well on course to retake the lead from Loeb, tore the right-rear wheel off while running off-piste. The car hobbled to the finish line on three wheels, but would go no further.

A day later, as the rally arrived in Bolivia, Al-Attiyah would be joined on the sidelines by Peugeot man Sainz. The Spaniard, pushing to make up for a navigation mistake early on in the Jujuy-Tupiza test, was likewise heading towards the lead of the rally when he crashed his car.

"It was in a corner where we arrive at so fast," Sainz recalled. "Under braking, the car put itself on the side, I touched the inside and I rolled, up and down, and got into a ravine."

Despite the violent nature of the crash, Sainz and co-driver Lucas Cruz managed to get what remained of the car back on track, and were towed to the bivouac by Peugeot privateer Romain Dumas. But it was ultimately for naught.

Sainz aside, Peugeot was looking mighty as its three other drivers Peterhansel, Cyril Despres and Loeb took turns winning stages, with Peterhansel leading as we went to press on Monday. At the same time, all three had their fair share of disruptions. Peterhansel and Despres both gave up a fair few minutes to navigation, while Loeb lost a big chunk of time to an engine issue, fixed with a satellite phone call to a Peugeot engineer.

The ebb and flow left the trio within five minutes of each other, Peterhansel heading Loeb and Despres, and with Toyota man Nani Roma staying in touch with the Peugeots.

Roma isn't too confident of his chances of taking on the French marque, at least until the rally route starts to descend: "I realised it was impossible [to beat them] on speed. At sea level we're competing. In high altitude it's impossible." But the Spaniard, who like Al-Attiyah joined Toyota from Mini, was now clearly the Japanese manufacturer's best hope, as another leading Toyota driver – Giniel de Villiers – had dropped down the order through a fuel-pump issue, two punctures and navigation woes.

On X-Raid Mini's side, Hirvonen had kept up pace through the early days, but his campaign received a big blow when he got lost in the fifth



Peterhansel was leading as we went to press

REDBULL

vine crash

stage, surrendering around 40 minutes to the Peugeots. "We were in a really good position, I was really happy, I was really feeling good," the Finn lamented. His team-mate Yazeed Al-Rajhi, who had arrived from Toyota, was sick prior to the start of the rally, and dropped out of contention due to feeling unwell at altitude.

The order out front would have likely looked somewhat different if the sixth stage, from Oruro to Bolivian capital La Paz, hadn't been called off due to torrential rain. The cancellation of the stage preserved a Peugeot 1-2-3 into the midway rest day in La Paz. And, while the French marque was the odds-on favourite, the race was far from settled.

The two-stage marathon section from La Paz to Salta via Uyuni on Monday was truncated due to the weather, but there was still the almost-1000km 'Super Belen' stage from Salta to Chilecito before the manufacturer's bosses could begin preparing their victory celebrations.

VALENTIN KHOROUNZHIY

RESULTS

POSITIONS AT END OF SUNDAY JANUARY 8

1 Stephane Peterhansel/Jean-Paul Cottret (Peugeot 3008 DKR) 14h02m58s; **2** Sebastien Loeb/Daniel Elena (Peugeot) +1m09s; **3** Cyril Despres/David Castera (Peugeot); **4** Nani Roma/Alex Haro (Toyota Hilux); **5** Mikko Hirvonen/Michel Perin (Mini John Cooper Works Rally); **6** Jakub Przygonski/Tom Colsole (Mini All4 Racing); **7** Orlando Terranova/Andreas Schulz (Mini JCW); **8** Giniel de Villiers/Dirk von Zitzewitz (Toyota); **9** Boris Garafalic/Filipe Palmeiro (Mini All4); **10** Romain Dumas/Alain Guehenne (Peugeot 2008 DKR).



Lagorce prevailed in the snow

Lagorce breaks through

ANDROS TROPHY ISOLA 2000 (F) JANUARY 6-7 ROUND 4/7

EX-LIGIER FORMULA 1 RACER FRANCK Lagorce got his Mazda into the winner's circle after a hitherto tough 2016-17 season.

Series leader Jean-Philippe Dayraut was the winner on Friday. The multiple champ's BMW M2 was on top in the heats, which provide most of the points. Benjamin Riviere took his Mini to super-pole honours, lifting himself to second in the classification before the final. A professional race then ensued in the snowy conditions, Dayraut leading Riviere and the Audi of Olivier Panis.

On Saturday Lagorce topped the heats,

before the Renault of Jean-Baptiste Dubourg prevailed in the super pole, pipping Lagorce by 0.004s. Lagorce got the break on the first lap before Dubourg closed up, pressuring the Mazda all the way, with Dayraut third. In the other Mazda, Nico Jamin replaced Adrien Tambay, who was guilty of an outrageous move on Panis in the previous round.

RESULTS

Final 1 1 Jean-Philippe Dayraut (BMW M2) 8 laps in 6m20.036s; **2** Benjamin Riviere (Mini Countryman) +1.540s; **3** Olivier Panis (Audi A1 Quattro); **4** Jean-Baptiste Dubourg (Renault Clio 3); **5** Olivier Pernaut (Mazda 3); **6** Benoit Treluyer (Audi). **Final 2 1 Franck Lagorce (Mazda)** 8 laps in 6m32.501s; **2** Dubourg +0.641s; **3** Dayraut; **4** Panis; **5** Riviere; **6** Pernaut. **Points 1 Dayraut 462**; **2** Dubourg 446; **3** Riviere 426; **4** Panis 426; **5** Lagorce 412; **6** Pernaut 358.

Tung tastes success again

ASIAN LE MANS SERIES BURIRAM (T) JANUARY 8 ROUND 3/4

THE EURASIA-RUN JACKIE CHAN DC Racing ORECA-Nissan took its second win out of three with Ho-Pin Tung, Thomas Laurent and Gustavo Menezes.

Tung qualified on pole and took an early lead before handing over to Laurent. Menezes drove the final stint, and all looked good until the American was given a drivethrough penalty for overtaking under yellow flags. Menezes emerged just four seconds in front of Andrea Pizzitola in the Algarve Pro Racing Ligier-Nissan, and had to re-extend his advantage before Pizzitola was given a 10s stop-go penalty for exceeding track limits.

Menezes won by almost a lap from Pizzitola, with the other Algarve Pro Ligier third and the Fuji-winning Race Performance ORECA suffering technical problems on its way to fourth.



ARC Bratislava one-two in ultra-close LMP3 battle

Hot battles featured in LMP3 and GT. The 'baby' prototype class boiled down to a close fight between the sister ARC Bratislava Ginettas, with Mike Simpson holding off Konstantins Calko by just 0.177s. Charlie Robertson led early on in the PRT Ginetta that took fourth, while the series-leading Tockwith Ligier of Nigel Moore and Phil Hanson lost 20 minutes with engine issues.

Michele Rugolo overhauled DH Racing Ferrari team-mate Olivier Beretta at the last gasp in GT, only to cop a time penalty for driving too slowly in the pitlane, dropping to third behind Alessandro Pier Guidi's BBT Ferrari. Tom Blomqvist finished fourth in the best of the two AAI BMW M6s.

RESULTS

1 Ho-Pin Tung/Gustavo Menezes/Thomas Laurent (ORECA-Nissan 03R) 154 laps in 4h00m11.765s; **2** Andrea Pizzitola/Andrea Roda/Matt McMurphy (Ligier-Nissan JSP2) +1m22.332s; **3** Michael Munemann/Tacksung Kim/Mark Patterson (L-Judd JSP2); **4** Struan Moore/Fabian Schiller/Giorgio Maggi (O-J 03R). **LMP3 1 Mike Simpson/Darren Burke/Miro Konopka (Ginetta LMP3)**; **2** Konstantins Calko/Neale Muston (G LMP3); **3** Shaun Thong/Hanss Lin/Ryuichirou Ohtsuka (Ligier JSP3). **GT 1 Alex Riberas/Olivier Beretta/Rino Mastronardi (Ferrari 488 GT3)**; **2** Alessandro Pier Guidi/Davide Rizzo/Anthony Liu (Ferrari); **3** Mathieu Vaxiviere/Michele Rugolo/Stephane Lemeret (Ferrari). **Points LMP2 1 Tung/Menezes 69**; **2** Roda 52; **3** Pizzitola 50. **LMP3 1 Simpson/Burke/Konopka 55**; **2** Nigel Moore/Phil Hanson 51; **3** James Winslow/David Cheng 48. **GT 1 Rugolo 52**; **2** Vaxiviere/Lemeret 40; **3** Pier Guidi/Rizzo/Liu 38.



Is Mercedes right to chase Bottas to replace Rosberg?



Yes – it’s the logical move

BEN ANDERSON

[@BenAndersonAuto](#)

I’m sure every Formula 1 fan would love Mercedes to replace Nico Rosberg with the driver they believe to be the absolute best out there. Who wouldn’t want to see triple world champion Lewis Hamilton up against Sebastian Vettel in identical machinery, take on Daniel Ricciardo, renew his 2007 McLaren rivalry with Fernando Alonso, or even reckon with the coming force of Max Verstappen?

But the likely cost of extracting these drivers from their present contracts renders those options unrealistic. What’s more, Red Bull, Ferrari, and McLaren-Honda hardly need to worry about money, being among the best-financed in the field. So Mercedes has shifted towards midfield teams with fruit ripe for picking, at the right price.

Valtteri Bottas is among the best out there, along with Sergio Perez, Nico Hulkenberg, Romain Grosjean, and probably Toro Rosso’s Carlos Sainz Jr too, following his stellar 2016 campaign.

Hulkenberg would have been the ideal fit – German, super-quick, long overdue a shot in a top car. Force India always said it wouldn’t stand in his way, but Hulkenberg signed his Renault deal long before Rosberg’s retirement, which put him firmly out of the picture.

Sainz still lacks experience (the main reason Mercedes is reticent about promoting its junior driver Pascal Wehrlein) and would surely involve tricky negotiations with Red Bull. Perez is a proven podium finisher but arguably not as quick as Hulkenberg, and presents the added problem of unpicking complex contractual arrangements with Mexican sponsors. More trouble than it’s worth potentially, and a much trickier call for Force India given its lack of financial clout.

Bottas has proven himself a consistently excellent qualifier – no-one had a better record versus their team-mate in 2016 than the Finn – so should be more than capable of keeping Hamilton on his toes. He has a better championship finishing record, more points and podiums per races started than the other top ‘midfielders’, and has an even temperament.

He has also shown he is capable of extraordinary things in bad cars. Bottas qualified a poor Williams third on the grid in the wet in Canada as a rookie in 2013, and qualified top 10 (finishing eighth) in the same machinery in the dry in Austin, so is also capable of overachieving, a sure sign of special ability.

Bottas is easy to overlook given Williams’ standing in the pecking order, but he has steadily grown into one of the most quietly effective drivers in Formula 1. He is fast, has the right amount of experience, and is without doubt the best realistic choice for Mercedes in 2017.



No – Mercedes should gamble

SCOTT MITCHELL

[@ScottAutosport](#)

The race to partner Lewis Hamilton quickly developed into a two-horse affair between Mercedes junior Pascal Wehrlein and Valtteri Bottas, who counts Mercedes chief Toto Wolff as part of his managerial team. Wehrlein was one of two Merc juniors in F1 last season but, since he completed a lot of testing for Mercedes and Esteban Ocon only joined him at Manor halfway through the season, Wehrlein had the edge in terms of experience.

Yet it looks very likely Wehrlein will have to settle for a seat at Sauber, his third choice after a probable snub from Mercedes and Force India picking Ocon over him. Is that down to inexperience or the legacy of a reputation for being difficult to work with?

A season in (likely) midfield machinery for Ocon may well be enough for him to be top of the queue the next time Mercedes has a seat to fill. But the Wehrlein situation suggests Mercedes does not have major faith in him, or at the very least has doubts significant enough to be a problem at the moment.

Red Bull has proven that having a healthy stock of drivers of the right pedigree is extremely useful. So while the 27-year-old (hardly approaching retirement) Bottas is deserving of a shot in a race-winning car, and it would not be offensive at all to see Mercedes choose him, Mercedes should put itself in a position where it has even longer-term prospects.

Carlos Sainz Jr isn’t quite a middle-ground between a Mercedes junior and a choice like Bottas, but he’s not far off.

He’s got two seasons of F1 under his belt, and those two campaigns have come in midfield machinery – so not only does he have more experience of wheel-to-wheel combat and driving under pressure than Ocon and Wehrlein, he also has more relevant experience with strong team-mates.

During his season-and-four-races alongside prodigy Max Verstappen, Sainz compared very favourably. He then blitzed the relegated Daniil Kvyat over their 16 races together at Toro Rosso in 2016. That’s given him momentum, a rare and crucial attribute for a youngster in F1 – and he’s got nowhere to take it.

The Red Bull Inn is full and, while Sainz has been given an extra year, where does he go in 2018? He himself has effectively written off an unprecedented fourth year at Toro Rosso.

That it is taking plenty of time to extract Bottas from his Williams contract shows that there is no quick solution to a matter such as this. Why not roll the dice and try and land a driver that, if successful, gives you a decade’s worth of options?



Should Williams have picked Wehrlein over old-hand Massa?

F1's conservatism strikes again

The fallout from Nico Rosberg's retirement has exposed Formula 1's frustrating propensity for picking experienced hands over young talent

By Ben Anderson, Grand Prix Editor

[@BenAndersonAuto](#)

This story was supposed to be over. Felipe Massa said his tearful farewell to Formula 1 last November, draped in the flag of his native Brazil and waving an emotional goodbye to the sport that made him a much-loved star.

Then world champion Nico Rosberg made his shock decision to retire with immediate effect, Mercedes identified

Massa's Williams team-mate Valtteri Bottas as the man to replace him, Williams said he could only leave if it could secure an "experienced, credible alternative" to step into the breach, and now it looks as though Massa will begin to challenge Nigel Mansell as F1's leading proponent of faux retirement.

There is understandable logic to Williams's position. Before he left the team at the end of last month, technical chief Pat Symonds spoke repeatedly about the importance of continuity in driver line-ups – especially heading into the significant regulatory upheaval of 2017.

Symonds was actually referring to the importance of retaining Bottas, something he described in the run-up to Christmas as "crucial" to Williams's chances of future success. It needs a fast and reliable reference point in order to best understand the strengths and weaknesses of its new car, and to help bring rookie signing Lance Stroll up to speed.

But that logic could equally apply to Massa too. At this late stage he is the only credible driver of experience not already

contracted to a rival team. He is a veteran of 250 grands prix, winner of 11, and was briefly set to become world champion in 2008, before Lewis Hamilton squeaked ahead of Timo Glock's Toyota and stole Massa's thunder. Given the dearth of alternatives, Massa is the logical and safe choice for Williams – experienced, known and liked by the team, and capable (on his good days) of putting Bottas under pressure.

But those good days grew further apart in frequency during last season, which makes Massa simultaneously a risky option too. This is a driver who was comprehensively beaten by his team-mate in 2016; a driver that Williams ranked behind Bottas, Stroll, and McLaren's own semi-retired Jenson Button on its original '17 shortlist; a driver who had no other serious options to remain in F1 once Williams decided to let him go.

Massa could come back better and more motivated than ever, or he could struggle to gather the necessary strength of conviction to do it all over again. He was an inconsistent performer for much of last season, so will need to do more than simply make a comeback to fill Bottas's boots. Massa will need to be better.

Williams could have left Massa to his retirement. Originally, Mercedes offered junior driver Pascal Wehrlein, plus a reduction in the cost of Williams's 2017 customer engine supply, in exchange for Bottas. But Williams rejected that offer on the grounds that it needed an experienced driver.

This is a time-old folly of Formula 1 teams. For organisations that are designed to innovate technically, they often seem

LESSONS OF HISTORY WHEN BACKING YOUTH PAYS OFF

SEVEN TALENTED YOUNGSTERS WHO ALL MADE A MAJOR SPLASH IN F1

SEBASTIAN VETTEL

Fastest of all on his first grand prix practice appearance with BMW aged 19 in 2006, Vettel scored points on his race debut for the team in the USA the following season. The next year he was a race winner for Toro Rosso, before becoming a four-time champion with Red Bull aged 26.



FERNANDO ALONSO

Made an impact by consistently overachieving in a Minardi as a 19-year-old rookie, before becoming Renault's test driver for 2002. Gained promotion to the race team and won in Hungary in '03, before becoming a double world champion three years later.



JENSON BUTTON

Williams took a punt on Button in 2000, when he was only 20 years old and been racing cars for just two years. Impressed enough alongside Ralf Schumacher to earn a move to Benetton-Renault and, although he was dropped at the end of '02, a move to BAR-Honda eventually culminated in a title with Brawn in '09, and success with McLaren.



NICO ROSBERG

The precursor to Bottas's own rise to prominence with Williams. Beat Nelson Piquet Jr to become a Williams test driver in 2005; scored points and set fastest lap on his race debut the following year, before going on to become a world champion with Mercedes in '16.



FELIPE MASSA

Massa was fast but erratic as a 21-year-old rookie with Sauber in 2002, but a year as Ferrari's test driver in '03 transformed him. He returned to Ferrari in '06, became a race winner, and almost won the championship in '08.



PETER COLLINS

Made his world championship debut as a 20-year-old in 1952, and four years later became a Ferrari driver after winning the '55 Targa Florio with Stirling Moss for Mercedes. Was a three-time race winner in F1 (not counting multiple non-championship GP successes) before being killed in a crash at the Nurburgring in '58.



MAX VERSTAPPEN

Became F1's youngest ever driver in 2015, aged 17, impressing with daring performances as a Toro Rosso rookie. Replaced Daniil Kvyat at Red Bull after just four races in '16, becoming F1's youngest race winner on his Red Bull debut in Spain. This teenaged sensation belies the need for F1 experience.



Ferrari insists on retaining Raikkonen



Williams rated Button above Massa for 2017

“Wehrlein was F1’s outstanding rookie of 2016. Why pass up that sort of talent?”

distinctly analogue when it comes to drivers. Wehrlein was F1's outstanding rookie in 2016, a driver who lapped within 0.15 seconds of Massa in Q1 at the Austrian Grand Prix, despite driving a substantially inferior chassis, someone whom Mercedes rates among the best young drivers on the planet.

Why pass up that sort of ability? If Mercedes fails in its quest to sign Bottas, you can bet Wehrlein is the man they'll want in the car instead. Wehrlein's capacity to improve will be greater than Massa's, his desire to do so will be greater, and surely the knowledge of a top team that he's gained already by working closely with Mercedes engineers as its test driver is just as valuable (if not more so) to an ambitious squad like Williams, which still has serious ground to cover to return to the front in F1?

Wehrlein will still land on his feet, most likely at Sauber. But this feels like a missed opportunity for Williams as much as for Wehrlein. Often it seems F1 teams are predisposed to overlook the greater promise of young drivers in favour of the devil they already know, even if that devil's best days are already behind them. This sort of thinking has kept Kimi Raikkonen gainfully employed at Ferrari, despite long fallow periods of underachievement.

The recent success Red Bull has enjoyed with Sebastian Vettel, Daniel Ricciardo and Max Verstappen proves that the speed and ability of the driver counts for more than previous levels of experience. Of course it's possible to get better with age, but sometimes it pays more to give youth a chance. 🍀

Did Formula E's Las Vegas experiment really work?

Last Saturday Formula E put on the biggest sim-racing event in history in Las Vegas. There were some problems, but the event offered a glimpse into a currently overlooked area of racing

By Scott Mitchell, Features Editor

[@ScottAutosport](#)

This was an enormous middle finger to the traditionalists. A computer game being treated like real life, with a grand total of \$1million up for grabs just for playing on what was little more than an Xbox on steroids. Twenty professional racing drivers and 10 wannabes all dressed up with nowhere to go except the bucket seat of a glorified toy.

Not exactly.

Last Saturday's Las Vegas eRace was a watershed moment for racing and eSports: a flat-out attempt to showcase what sim racing is about. It flew in the face of convention.

The next step in the blossoming relationship between Formula E and sim racing was not exactly a complete success. The quality of product it delivered was not the pinnacle of sim racing – but it was something that could maybe, just maybe, offer the blueprint for a truly 21st-century kind of racing

First, some context. Sim racing, at its peak, is not a video game. It's very serious. Look at what iRacing, the biggest online racing community in the world, has developed into – a fully fledged world championship based on grand prix racing and licensed Blancpain and NASCAR series with a prize fund of more than \$25,000 up for grabs in each category.

It's a still-developing world, but it is unfair to dismiss the genre as a whole as just a game, just as it's unfair to call Formula E a retirement home for F1 rejects. Of the top 10 on the grid for Saturday's Vegas race, there was only one professional

racing driver: Felix Rosenqvist. Most 'real' racing drivers couldn't hold a candle to the majority of the 'gamers'.

iRacing is the model of what sim racing can be. What was on display in Vegas was far from the finished article. Cloud Sport, a Spanish start-up organisation that has had great success with initiatives such as the SEAT Leon Eurocup sim-racing series, brought everything together. It runs the gaming zone that accompanies the fan area at every Formula E event and was the promoter for the Vegas eRace (and ran the qualifying 'championship' from which 10 gamers joined the 20 professional Formula E drivers in the final). In addition to Cloud Sport, Formula E tied up with gaming behemoth Playseat (for the simulator rigs) and used rFactor 2 software.

So, how did it fare?

Any race in which the polesitter establishes an early lead, heads the field throughout and (eventually) wins isn't exactly a nailbiter. There were elements that made it an entertaining watch, but few of them were at the very front. Save for the fact that there was intrigue (as Olli Pahlkala took the flag first but, in an homage to real-life Formula E races, lost it post-race due to a penalty), the lead battle lacked a real climax. Watching Bono Huis keep Rosenqvist at bay in the closing stages was mildly interesting, but the gap only just about dipped under two seconds and Huis always looked as though he had it in hand.

The really interesting element was the first half of the race, in which a multi-car fight for third broke out. Once Rosenqvist had established second place, Aleksi Uusi-Jaakkola headed a train comprising Graham Carroll, David Greco, Pahlkala >>





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and Enzo Bonito. There wasn't any overtaking of note but it was a nose-to-tail fight, one that culminated in a spectacular shunt involving Carroll, Uusi-Jaakkola and Greco. It wasn't quite Nick Heidfeld and Nico Prost for the win at the final corner of Formula E's first ever race, but it was something.

Shunting aside, the quality on show was quite high. The drivers took it seriously, as you'd expect with such a significant prize on the line, and there were few mistakes: give it a chance and you could respect the level of driving on display.

This is where some in the sim-racing community have targeted their criticism. Feedback of the rFactor 2 software is that it prioritises handling over graphics, and doesn't lend itself particularly well to customised cars and graphics. However good the broadcast – led by real-life Formula E commentators Dario Franchitti and Jack Nicholls – was in substance, the relatively poor graphics meant you could never escape the fact you were watching a virtual race.

While each car was mocked up in one of the 10 real-life teams' livery, it was a crude final product, especially when compared with the likes of iRacing's Grand Prix World Championship.

When the drivers came in for the mandatory pitstop, the cars were just at a standstill in the pitlane. Of course, rFactor's software doesn't contain 'car swaps' like

real-life Formula E and it would be harsh to mark Cloud Sport down for not including that in the mod. But it was part of the broadcast and it made for quite odd viewing to just have stationary cars on screen.

There wasn't much in the way of feedback from the drivers on the handling, but it appeared that the cars were slightly odd to drive. You want the peak of sim racing to be something approaching the quality of the (rFactor-supplied) customer sims available at professional facilities. The suggestion is the initial Cloud Sport mod was not to this level. But tyre temperature, tyre wear, and damage to the suspension when hitting the walls were all real elements factored into the rFactor software.

Pahkala reckons the event "has really pushed the sport to the next level", which may seem like lip service to some sim-racing diehards. The reality is this wasn't as slick a production as iRacing's world series. Given Formula E's involvement, the investment from VISA and the fact it was taking place at the Consumer Electronics Show in Vegas, it's understandable that the event's detractors felt it was a missed opportunity.

To say it was sim racing's last shot at being a serious part of the eSports community is a massive stretch, though. It's difficult to determine exactly what Formula E's objective was, but the outcome was it gave sim racing a chance to be taken in by a new audience. More than 10,000 viewed the broadcast on Twitch – maybe that's not worth \$1million of prize money investment, and all the rest that went with it, but a lot more people will have heard about it. And because of the parties involved, a lot of people who normally turn a blind eye to sim racing paid attention – including this magazine.

"It's huge for Formula E, but it's really massive for all of the sim racers around the world," says Pahkala. "The two worlds belong together and it's good to see the sports develop."

There were bugs, the most significant being the embarrassing situation where the first Vegas eRace was 'won' off-track, when Pahkala was dropped to third after the mod went haywire and allowed him multiple laps with Fanboost instead of one. The pace advantage that gave him was the reason he was able to leap

from being out of the picture to a comfortable victory with the undercut (see below).

Technical glitches off-track also delayed the start of the event by a good 20 minutes or so, and Lucas di Grassi was actually unable to start the final race because of a problem with his rig. The Brazilian praised it as a whole but admits "we have to keep

working in order to continue perfecting the processes and obviously the software. This is important because everybody – irrespective of whether they are a professional race driver or fan – was full of ambition here in Las Vegas."

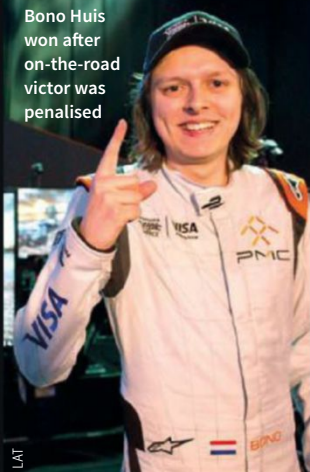
It fell short in terms of representing the pinnacle of sim racing, but that's probably to be expected (even with the partners this had and the money involved). Ultimately iRacing exists to serve sim racers and operates with a business model centred around customers – there hasn't been a watershed moment that's thrust the genre in front of a bigger audience.

The Vegas eRace might not have drawn hundreds of thousands of fans online (a midnight UK time showing will obviously have impacted there) but it has undoubtedly given sim racing a chance in the spotlight. It might not happen on that scale again, but this is part of what Formula E believes is a long-term plan to appeal to a different kind of audience. It's far too early to label it a success or a failure on that front, but it's huge for sim racing that Formula E has taken that chance. 🌀

“Tyre wear and damage to suspension when hitting walls were all real elements”

Victory is the sweetest thing for Bono

Bono Huis won after on-the-road victor was penalised



Could a virtual Formula E race really be anything like a real one? Absolutely. There were crashes, technical problems, post-race penalties – and Felix Rosenqvist was mega.

Bono Huis held off Rosenqvist to win the inaugural Las Vegas eRace, landing its \$200,000 jackpot in the process. But a different driver crossed the line first.

Olli Pahkala took the on-the-road win but was penalised after the race, since a glitch had allowed him multiple laps with Fanboost instead of one. The penalty

dropped him to third behind Huis and Rosenqvist. It was the right decision from the stewards, even though it did ruin the "\$200,000 undercut" tagline that Pahkala's alternative strategy looked as though it had delivered.

Huis built a small lead from pole position in the early stages, while Rosenqvist was comfortably the best-performing professional racing driver in the field and rebuffed a brief attack from Andretti's Aleksi Uusi-Jaakkola to maintain second.

Uusi-Jaakkola's attentions

turned to consolidating third, and he headed a train comprising DS Virgin Racing's Graham Carroll, Renault e.dams' David Greco, Pahkala and Enzo Bonito. At the halfway mark Carroll finally got a run on Uusi-Jaakkola exiting the final corner and moved to the inside into Turn 1, as Greco made it three-abreast on the outside.

Uusi-Jaakkola and Greco touched, with the former then hitting Carroll's left-rear wheel and sending all three crashing dramatically.

As the race progressed,

Huis made a mistake at the front that allowed Rosenqvist to close to within two seconds, but he held on for what would eventually be the win.

Techeetah driver Bonito finished fourth ahead of the recovering Uusi-Jaakkola and Jaguar's Greger Huttu. Three-time World Touring Car champion Jose Maria Lopez was second best of the professional drivers in seventh, as his Formula E rivals Sam Bird, Daniel Abt and Nelson Piquet Jr completed the top 10.

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2017	Count	Venue / Event	Track Capacity	Content	Content	Format	ACD	ALL	ASC	TG/TC63	JAG	COYS Pre-'66
11-Feb		Eastbourne	180	Dinner/Dance	ALL HRDC	Evening	✓	✓	✓	✓	✓	✓
06-Mar	✓	Goodwood	35	Track Day	ACD	Full Day	✓					
30-Mar	✓	Goodwood	35	Track Day	TG	Full Day				✓		
09-Apr	✓	Brands Hatch BRSCC	Indy 34	Race	ACD / ASC	30/15	✓		✓			
09-Apr		Brands Hatch BRSCC	Indy 34	Race	TG/TC63	45/25	✓			✓		
* 23-Apr	✓	Silverstone VSCC	Nat 40	Race	JAG	30/15					✓	
Apr 28-30	✓	Donington Festival	Nat 40	Race	TG/TC63	45/25	✓			✓		
Apr 28-30		Donington Festival	Nat 40	Race	COYS	45/25	✓			✓	✓	✓
28-May	✓	Silverstone BRSCC	Nat 40	Race	ALL/ ACD / ASC	30/15	✓	✓	✓			
28-May		Silverstone BRSCC	Nat 40	Race	TG/TC63	45/15	✓			✓		
11-Jun	✓	Snetterton BRSCC	(300) 45	Race	ALL/ ACD / ASC	30/15	✓	✓	✓			
11-Jun		Snetterton BRSCC	(300) 45	Race	TG/TC63	45/15	✓			✓		
16-Jul	✓	Castle Combe BRSCC	42	Race	ALL/ ACD / ASC	30/15	✓	✓	✓			
16-Jul		Castle Combe BRSCC	42	Race	COYS	45/25	✓			✓	✓	✓
16-Jul		Castle Combe BRSCC	42	Race	JAG	30/15					✓	
* July 28-30	✓	Silverstone Classic	Hist GP 58	Race	ACD	2-part	✓					
24-Sep	✓	Mallory Park BRSCC	30	Race	ACD / ASC	30 /15	✓		✓			
24-Sep		Mallory Park BRSCC	30	Race	COYS	45/25	✓			✓	✓	✓
15-Oct	✓	Donington BRSCC	Nat 40	Race	ALL/ ACD / ASC	30/15	✓	✓	✓			
15-Oct		Donington BRSCC	Nat 40	Race	TG/TC63	45/25	✓			✓		
15-Oct		Donington BRSCC	Nat 40	Race	JAG	30/15					✓	

* Please note these date changes!

KEY:

ACD:  ACADEMY	ALL:  ALLSTARS	ASC:  A-SERIES CHALLENGE	COYS:  COYS TROPHY	TG:  TOURING GREATS	JAG:  COOMBS	TC63:  TC63
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WORK IS UNDER WAY TO ADD TWO new sequences of corners to the Pembrey circuit in Wales in what will be the first major alterations to the track's layout since its inaugural race meeting in 1989.

The first new section will follow the opening Hatchets, Spitfires and Dibeni corners. Drivers will now be able to continue straight on before heading into a new tight left-hand corner, and then a right-hander will take them back onto the existing track.

While asphalt has been laid for this new section, plans are being made to create additional turns on the back straight ahead of the Woodlands corner. There will also be a new rallycross layout.

The track is a popular testing venue and the changes have been made to provide additional challenges to drivers and also encourage more series to race there.

"The reason we looked into this was regarding the younger drivers," said circuit

manager Phil Davies. "When they come and test with big teams there are always going to be different stages of driver experience as talent develops, so these changes are aimed at making it a little bit easier to develop core skills."

Factory BMW GT racer Alexander Sims regularly tests at the venue and approves of the alterations.

"I think the changes look very positive and it will alter the lap a lot. Pembrey only ever had one major braking zone but now you have two very heavy ones, which are great for training drivers and also improving racing," said Sims.

"I think the changes were needed as Pembrey, as much as it was useful for testing, was never really all that relevant to the modern circuits that formulas like F3 race on. It needed a change, and these ones have been done so that the circuit will now offer a much greater challenge, but it will still retain the character and be recognisable as Pembrey."



How the Welsh circuit is expected to look after completion of the work. Dotted sections show original layout

● There are also changes being made at another BARC-operated track, with the runoff at Thruxton's Church Corner being altered. Circuit bosses initiated an investigation after three crashes at the corner in the 2014 British Touring Car Championship meeting. It is understood that the corner itself will be unchanged.

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LMP3 CUP

UK LMP3 Cup gets backing of ACO

THE NEW PROTOTYPE CUP SERIES WILL BE rebranded the LMP3 Cup Championship ahead of its inaugural season this year and will boast a £40,000 prize fund after gaining the support of the Automobile Club de l'Ouest.

The ACO, which organises the Le Mans 24 Hours and regulates LMP3, has agreed to endorse the British series, allowing the use of the LMP3 name and adding the substantial prize fund.

The ACO will offer the 2017 champions a fully paid-up package of entries for the six-round Le Mans Cup contest in '18, as well as free entry into the Road to Le Mans event that supports the 24 Hours.

The LMP3 Cup was launched (as the Prototype Cup) last year by GT Cup Championship

organiser Bute Motorsport and operates for homologated LMP3 machines from six designated constructors: Ligier (Onroak Automotive), Ginetta, Riley Technologies, Adess AG, Dome and Norma.

"It is very gratifying to see that the LMP3 formula developed by the ACO has grown so fast," said ACO sporting director Vincent Beaumesnil. "It now has a global footprint, and the addition of a UK championship will only help to spread that wider."

"We have been in discussions with the organisers at Bute Motorsport for some time and are very happy that they will develop the championship to its fullest potential."

Bute Motorsport director Hannah Wilson

added: "This is a fantastic development for the championship. We have received good interest from teams and drivers alike, so things are shaping up nicely."

"Having the support of the ACO is a fantastic endorsement for Bute and how we do business and will hopefully help us take the LMP3 Cup Championship to the next level."

The series will run with MotorSport Vision Racing and will be contested over six rounds, with five events at UK circuits plus one at Spa-Francorchamps. A pilot race at Snetterton last year attracted eight cars. Teams including United Autosports, Douglas Motorsport, Graff Racing, Tockwith and the new Mectech/RML partnership all intend to run cars this year.

BRDC BRITISH F3

Ahmed targets title after agreeing full British F3 deal with Carlin

BRDC BRITISH F3 AUTUMN TROPHY champion Enaam Ahmed has targeted winning the full championship this year after completing a deal to switch to Carlin for his second season in the series.

The 16-year-old scored one victory – and briefly led the standings early in the season – with Douglas Motorsport in 2016, as well as contesting half of the

Euroformula Open series. He then switched to Carlin for the British F3 Autumn Trophy, taking two race wins on his way to the title.

Ahmed, who is in New Zealand ahead of this weekend's opening round of the Toyota Racing Series, said that Carlin offered him the best opportunity to land the F3 title.

"I wanted to get a deal together for the Autumn Trophy to try Carlin out, and Trevor [Carlin] agreed," said Ahmed.

"I knew I'd do another season in British F3 because there's no sense in continuing to move up if I haven't won anything. Carlin are the best team and they're going to give me the best shot at winning the championship."

"I have some unfinished business. Last year I might have had the speed to win the championship, but not the consistency. I have a good opportunity with Carlin to right that wrong."

Ahmed is Carlin's second driver confirmed for 2017, the team having previously announced British F4 race winner James Pull as one of its line-up.

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BRITISH GT

Lotus duo in McLaren GT switch

LOTUS CUP DRIVERS ADAM MACKAY AND Adam Balon will share a new McLaren 570S GT4 in this year's British GT Championship.

The duo will race for the Track-Club team, which has bought the McLaren for its return to British GT. Track-Club has raced on and off in British GT in recent years – it entered an Aston Martin and a Lotus Evora respectively in 2014 and '15 as Track Group.

Team boss Stephen Docherty said: "We

have been looking at options for the next step up from the Lotus championships that can put our drivers on the path to Le Mans, and British GT is logical.

"Both drivers work very well as a team. Adam Mackay's move from single-seaters to GTs has been exceptional. Adam Balon is a very disciplined, intelligent driver. We want to acquit ourselves well and challenge for podiums and the championship."

IN BRIEF



VSCC ANNOUNCES 2017 CALENDAR

The Vintage Sports Car Club's 2017 race programme will cover five race meetings, starting with a two-day event at Silverstone on April 22-23. Other dates are Oulton Park (June 10), Cadwell Park (July 23), Mallory Park (August 12) and Snetterton (September 17). The Silverstone event includes races from the Historic Grand Prix Cars Association.

MORRIS MAKES FIRST DAYTONA RUN

Seb Morris had his first run in a Daytona Prototype last week ahead of the Daytona 24 Hours. The British GT driver won a fully-funded drive in a Cadillac DPI-VR prototype in this month's event after his Sunoco Whelen Challenge success. Sunoco 200 Challenge winner Max Bladon also got his first run in the Aston Martin Vantage that he will race in the 200-mile support race.

KARTER CANNING TO GINETTA JUNIORS

British karter Tom Canning will graduate to car racing this year, with a drive in the Ginetta Junior series with Douglas Motorsport. The 14-year-old was runner-up in the Rotax Euromax Winter Cup and was third in Super One Mini Max last year. "Karting will always be an important part of my motorsport career, wherever I may go," said Canning. "However, you have to move on to make progression to achieve your dream."

BRIT SERIES KEEP ROAD TO INDY SLOT

The BRSCC National, Scottish and SuperSeries Formula Ford 1600 championships will all have the chance to send drivers to the Mazda Road to Indy Shootout at Laguna Seca for the second successive year. The shootout gives drivers the chance to earn £160,000 towards a season in the USF2000 championship.

KRISTENSEN TO STAR AT RACE RETRO

Sportscar legend Tom Kristensen will appear at the international historic Race Retro motorsport show on Saturday February 25. The nine-time Le Mans winner will attend as part of the three-day event's 15th-anniversary 'Super Show' celebrations.



PORSCHE CARRERA CUP GB

Ginetta winner Orton to Carrera Cup

GINETTA GT4 SUPERCUP frontrunner Jamie Orton will switch to the Porsche Carrera Cup GB this year with Team Parker Racing.

The 36-year-old finished fourth in the Ginetta standings last season and third in 2015, and nearly made the switch to Porsches last year.

"I've done five years in Ginettas and felt nothing

was going to change and it was time to move," said Orton. "I wouldn't do any series where I felt I couldn't win and the goal is to win in the Carrera Cup."

Orton is due to start eight days of testing in March, having sampled the car in 2016, and will continue to be engineered by Alan Muggleston.

He will be partnered by Alex Martin, who for the past two

years raced in the British Touring Car Championship.

● Pro-Am1 title winner Euan McKay and brother Daniel will switch to the Pro class for 2017, moving to champion squad Redline Racing. Former Redline racer Lewis Plato has been confirmed as the first driver for JTR as the team makes its debut in the category.



BRITISH F4

Finn Pasma joins top team in F4

SEVENTEEN-YEAR-OLD FINN PATRIK Pasma has joined top team Carlin for his move to the British Formula 4 Championship.

Pasma got his first taste of British motorsport last year, racing a Mygale in BRSCC National Formula Ford 1600 as well as at the Formula Ford Festival and

Walter Hayes Trophy events.

He is Carlin's first confirmed recruit for the 2017 F4 campaign, having tested with the team before Christmas. "I'm pleased to be racing for Carlin in British F4," he said. "It's a good step for me and is a competitive series with great circuits and a strong field."

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Reynard FF2000 roster includes JJ Lehto's 87SF. Inset: SF78-049 in period



FF2000

Reynard returns to FF2000

ADRIAN REYNARD WILL RACE IN FORMULA FORD 2000 this year in the car in which he won the 1979 EFDA Euroseries title.

Reynard is the driving force behind his eponymous racing car marque – which has won championships in Formula Ford 1600 to Indycars – and recently returned to a design role as part of Ginetta's LMP1 project.

The 65-year-old, who is driving an FF1600 at Hampton Downs in New Zealand this weekend, has been invited to race a chassis he used in the late 1970s by its current owner, UK-based Kiwi James Lovett.

Reynard raced the SF78-049 to fifth in the BARC British Air Ferries Championship and eighth in the MCD/BRSCC Lord's Taverners series in 1978 before his '79 success. The car has been restored by Neil

Fowler Motorsport in its Raceparts UK livery.

"Adrian flew in from the States to test the Reynard on its shakedown at Silverstone and loved it," said Lovett. "I did one session for a taste of slicks and wings, then left him to it. He was enjoying it so much that I thought it would be best if he raced it."

Reynard said: "I expected it to have been tested [previously] so was a bit surprised to find it was essentially brand new. After stiffening the [anti-roll] bars and doing a few other bits, I really got a charge from it.

"I'm sure FF2000s have a lot more grip now than we had on the Dunlops. Those Avons are absolutely amazing; I was getting on the power earlier and earlier. By the end James told me I was down to front-row times. I look forward to seeing what rounds I could potentially fit in."

CIVIC CUP

Civic winner to get MRF single-seater prize in India

THE WINNER OF THIS YEAR'S Civic Cup will be rewarded with a one-off drive in the Indian-based single-seater MRF Challenge.

The 750 Motor Club series has teamed up with MRF, which will serve as the tyre supplier at the tin-top

championship's rounds.

As part of that arrangement, the overall champion of the series – which will run as a single class this season following measures to equalise the performance of the previous Class A and B cars – will win

a fully-funded arrive-and-drive package to contest one round of the MRF Challenge, which is held in India and the Middle East.

The package also includes flights, accommodation and transport. Fully paid-up and registered Civic drivers who

contest six of the seven rounds will be eligible for the prize.

The winter MRF Challenge series is sanctioned by the FIA and uses cars built by Dallara that adhere to F3 safety specification, with a 250bhp Mountune engine plus sequential gearbox.



Civic Cup winner will head to India with MRF prize

JONES

LEGENDS

LEGENDS PRIZE OFFERS BTCC TEST

ONE DRIVER FROM the Legends Cars Championship field will receive a test in a BTCC Toyota Avensis as part of a new prize package for the 2017 season.

The package is being offered by former Legends racer Simon Belcher, boss of the Handy Motorsport British Touring Car squad that runs Rob Austin.

Each Legends driver will be scored on a number of different factors, with a league table created that will not be linked to the points chart.

The top prize is 10 laps at the wheel of the Handy Motorsport Avensis after 15 laps of instruction as a passenger with Austin. Second prize is 15 passenger laps alongside Austin in the Toyota, and third prize is 10 laps with Austin.

Belcher said: "We are delighted to be working with Legends Cars with this fantastic prize. Everyone has a chance, not just the few in with a shout of the title. This prize rewards the most complete and passionate drivers wanting to progress."

Austin took part in the final Legends Cars rounds at Brands Hatch last season and scored a podium.

He said: "Legends Cars is a great championship and is a great place to hone close, competitive racing skills for aspiring BTCC racers."



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A send-off befitting a motorsport legend

By Marcus Pye, the voice of club racing

[@Autosport](#)

AMONG THE COUNTLESS MOMENTOUS motorsporting events that have unfolded within the Royal Automobile Club's magnificent clubhouse in London's Pall Mall since 1911, last Friday's memorial to Peter Foubister will go down in history as extraordinary.

That 300 friends and colleagues gathered to celebrate the life of the former Autosport editor and publisher – taken far too soon on November 18 – said it all.

Any occasion to which Sir Stirling Moss, ex-FIA president Max Mosley and 1981 World Rally champion Ari Vatanen (via his co-driver and Prodrive chairman David Richards) tender sincere apologies for not being able to attend must be very special. But such was the measure of love and respect for Foubie. I know Peter's wife Marion, daughter Gemma and son Rory drew enormous strength and comfort from the company; plus the overriding sense of fun, which he exuded around the world, as highlighted in tributes from friends, colleagues and heroes in a day of smiles and laughter.

The list of attendees was a *Who's Who?* of the sport and industry: triple F1 world champion Sir Jackie Stewart; multiple grand prix victor David Coulthard (the inaugural McLaren Autosport BRDC Award alumnus and tireless ambassador for the scheme); world sportscar/endorance champions Martin Brundle, Derek Warwick and Allan McNish – all Le Mans winners; British rally champions Jimmy McRae and Malcolm Wilson; and TV presenter Steve Rider.

Guided past one of 1995 World Rally champion Colin McRae's Subaru Imprezas in the clubhouse's foyer, the multitude progressed towards a reception in the Mountbatten Room. There, many reunited for the first time in too many years exchanged anecdotes of Foubie. Past Autosport editors

Simon Taylor, Ian Phillips, Quentin 'Q' Spurring, Mark Hughes (not his F1 scribe namesake), Andy Hallbery, Bruce Jones and Mark Skewis would not have missed it.

Nor would fellow golden-era Haymarket stalwarts. Among those I spotted – with apologies to many inevitably missed – were Jeff Bloxham, Annie Bradshaw, Matthew Carter, Adam Cooper, Tony Dodgins, Andrew Golby, Henry Hope-Frost, Peter 'Wingco' Hyde, Simon Maurice, Ralph Morton, Martin Nott, Keith Oswin, Derek Redfern, Simon Sanderson, Rupert Saunders, Damien Smith, Simon Strang, Tony Tobias, Eric Verdon-Roe, Gary Watkins and Chris Witty. Not forgetting Peter's loyal PA Laura Coppin, who ran his diaries and masterminded the Autosport Awards they built together.

Foubie crowned his international career as Motoring Secretary of the RAC, working at Pall Mall and the spectacular Woodcote Park golf club near Epsom since 2010. A resourceful and sociable Scot, renowned people person and team player, who could talk cars, rallying and racing all night in hotel bars, Peter's vision in re-establishing pioneering events like the 1000 Mile Trial and Rally of The Tests (from which the RAC Rally of Great Britain grew) took the private members' club back to its roots, re-engaging many with their sport.

Evolving the multi-faceted London Motor Week around the annual London to Brighton Veteran Car Run for pre-1905 vehicles was another triumph. Indeed, Foubie had received another coveted International Historic Motoring Award on behalf of the RAC team – for the 2015 edition – on the eve of his death. A massive attraction for visitors to our capital each November, the showpiece will henceforth be imbued with his immortal spirit. 🌟

BRUCE BARTELL 1957-2017

HSCC racer Bruce Bartell died last Friday, following a courageous battle with cancer.

The Essex insurance industry pro started racing an ex-Rupert Keegan Chevron B34 in 2008. A testing tangle at Silverstone in '11 wrecked the Classic F3 car, yet left him undeterred. Bartell added the ex-Keith St John Elva Mk7S to his stable in 2012, but was unable to compete from '15 after his diagnosis. He thus fielded the Chevron for son Maxim, who won the CF3 title at the finale.

Last season Max's F3 and Guards Trophy (with Callum Grant) victories at Brands, third at Goodwood in the Elva and pace in Mike Catlow's Chevron B19 sustained his proud father. Our thoughts are with Bartell's family, colleagues and many racing friends.



ALLEN JOINS FF1600 REUNION AT ASI

Ray Allen, winner of the first stand-alone Formula Ford race at Brands Hatch on July 2 1967, and 2016 Festival victor Niall Murray will span the class's 50-year reunion at Autosport International tomorrow (Friday). Numerous Fordsters, including Johnny Herbert and David Coulthard (above), will be on the HSCC stand from 1400.

DON WALKER 1948-2017

The historic racing fraternity will be shocked to learn of the death of omnipresent pit and paddock personality Don Walker last week, following an illness that struck after Jarama in October and hospitalised him for seven weeks.

Described as "the ultimate weekend warrior" by Colin Bennett – the ex-Lotus man who ran Mike Wilds's F3 Dempster Ensign and March in 1972 and '73 – Walker brought an air of calm to his F2, F3000 and FIA Historic F1 teams for 45 years.

A Roll-Royce aero engineer by profession, Walker was looking forward to rejoining CGA Race Engineering in 2017. He leaves wife Anne and son Philip. His funeral will take place at Amber Valley Crematorium, Swanwick, Derbyshire, DE15 1BH, at 1100 on Thursday, January 19.

2016

Rating the 'new'

Taking a look at club racing's newest – or reborn – championships from the 2016 season, before a glance at what's coming up in '17

Compiled by Jack Benyon

Entries by Jack Benyon, Jack Cozens, Robert Ladbrook, Stephen Lickorish



EBREY/LAT

BRDC BRITISH FORMULA 3 CHAMPIONSHIP

★★★★☆

OK, so it's not strictly true that the BRDC British Formula 3 Championship was a new series in 2016. Though the F3 name returned to British shores after a relatively short one-year break, the series was a revamped version of the BRDC F4 Championship, which had run since 2013.

Still, March 23 2016 was a momentous day in the single-seater set-up in Britain. Not only did the decision to rename the championship – taken by the FIA in conjunction with the MSA and MSV, which runs it – give Britain back an F3 championship, but it also paved the way for

MSA Formula to evolve into British F4 (having already been the *de facto* F4 championship in the UK anyway), providing a clear ladder of topline junior single-seater series in the UK for the first time in years.

Dipping its toes in (plenty of) the water of a new era in a soaking Autumn Trophy event at Snetterton in November 2015 showed just what a step up the series was taking after a change of cars to the new Cosworth-powered Tatuus. And then, four months later, it returned to the Norfolk venue with greater status – merited by its winter facelift.

The racing? At times, in 2016, it's fair to say it was sterile, though the event at Spa in

A return of the Formula 3 name and big grids provided a welcome sight in 2016

particular was thrilling – and the championship also delivered a highly entertaining fight for the title that went to the wire, with Matheus Leist eventually emerging on top of a tussle with Ricky Collard to clinch the crown.

Perhaps most importantly of all, though, the championship and its smaller teams that had transitioned over with the change of name were able to stand strong. Lanán's Toby Sowery was a particular highlight in that department, fighting the likes of Carlin and Double R Racing.

All in all, the new F3 format was a huge success in 2016 – and this year's championship is already shaping up to be a competitive one.

MINI CHALLENGE JCW

★★★★☆

Just like British F3, the Mini Challenge isn't strictly speaking new, having run since the turn of the century in the UK, but last year it took a very new direction.

Traditionally the Challenge has run a split class format, with faster supercharged or turbocharged cars sharing a grid with naturally aspirated versions.

In 2016 that format ended, and the standalone JCW Championship was born.

The cars feature 255bhp engines and sequential gearboxes, and have attracted the attention of a number of BTCC squads this year, with Team Dynamics, Power Maxed Racing and Eurotech all signing up.

As opposed to a factory production car such as the Renault Clio, build costs for the JCWs are far less as they're built to order by a third party. Running costs are lower too.

The JCWs have the power, noise, and most importantly the appeal to thrill on the undercard of British GT this year.



WALKER

club championships...



CLUB ENDURO

★★★★☆

For a new series to succeed in its maiden season it needs to have found a niche market. And the 750 Motor Club certainly did that with its new Club Enduro series.

Endurance racing is proving massively popular at the moment, with British GT enjoying full grids and the GT Cup boasting a surge in interest. But the 750MC noticed there was very little on offer for those wanting to

compete in a similar endurance format but on a much more restricted budget.

Unsurprisingly, Club Enduro proved to be a massive success, attracting 24 entries for the first of three 90-minute or two-hour contests in 2016. And just like some of the other new 750MC hits, it too has exciting developments for its sophomore season. An expanded five-round calendar, culminating in a trip to Spa, is likely to prove very popular and cement its place in the UK club-racing scene.

750MC HOT HATCH

★★★★☆

Another category that wasn't completely new for 2016. Instead it was the 750 Motor Club reviving a once massively popular series, which first returned as a class in Stock Hatch the previous year. But we've still included it among last season's newbies since it was the first time it was given equal footing with Stock Hatch as a proper series.

And it didn't take long for Hot Hatch to become a hot series again. With a plethora of different cars competing, it proved to be an instant hit.

The racing was often entertaining and tempted a number of Stock Hatch regulars to make the step up. In fact it was so successful that it has sounded the death knell for Stock Hatch. For 2017, it will be Hot Hatch that will be the main championship – with fitting status.



M3 CUP

★★★★☆

When it was announced – virtually on the same day in the summer of 2015 – that two new one-make series would be launched the following year based around the BMW E46 model, it was always going to be interesting to see which would gain the upper hand. While BMW Racedays' 330 Challenge failed to get off the ground in 2016 (see next page), the 750 Motor Club's M3 Cup certainly did.

Organisers were confident that the allure of the M3 badge would give it the advantage over the rival series and that proved to be the case. There may only have been 10 cars on the grid for the opening Donington Park race, but it was more about quality than quantity with the drivers; reigning Mazda MX-5 champion Brian Chandler and Civic Cup title winner Adam Shepherd were among those to commit. It was certainly a solid enough start.

This year, the M3 Cup will be boosted by gaining championship status.

TO THE GRAVEYARD CHAMPIONSHIPS LOST IN 2016

A glance to your left will (hopefully) provide some context for the successes of some of the championships that were either new or reborn in 2016. Not all were so fortunate, and some were consigned to the burgeoning graveyard of moribund motor-racing championships.

Perhaps the highest-profile category to meet the sword was the B-TEC Development series, dreamed up to provide a training ground for teams and drivers targeting a future in the top-tier British Touring Car Championship. But after being launched in January, the 2016 series met its demise almost as quickly as it had started, with a postponement of B-TEC until 2017.

BARC general manager Ian Watson told Autosport in May: "The idea of starting the series in 2016 was always going to be pushing the boundaries of what was possible to be achieved in the time, and having a further 12 months to get everything in place will I am sure make a big difference."

A six-round series was in the offing for the former BTCC cars, fitted with the older-specification GPRM-built standardised parts, and only time will tell if the series gets up and running for 2017.

A host of other series also fizzled out or disappeared in 2016. The Ariel Atom Cup was absent, despite providing a real challenge and enjoyment for its

competitors. Lack of numbers appeared to be the key cause of its downfall. The Britcar Prototype Series petered out and didn't show the signs of having the sustainability needed to run a championship that expensive.

A turn over the page will show you that this year is set to be an exciting new season with some potentially brilliant new championships. Hopefully it can make up for those consigned to the club-racing graveyard in 2016.

"The B-TEC series met its demise almost as quickly as it had started"



BTCC feeder series stumbled

...and the new national

“LMP3 is doing for prototypes what GT3 did for grand tourers”

STYLES



PROTOTYPE CUP / BRITISH LMP3 CHAMPIONSHIP

Talk about spotting a niche in the market. But Motorsport seems to have nailed it with the introduction of the Prototype Cup (now known as the British LMP3 Championship).

LMP3 is now big business in global motorsport, and could even hit new heights this year since it appears to be on the verge of near-global levels of adoption.

GT racing still rules the roost when it comes to the sportscar career path, with more

manufacturers and series than perhaps any other form of racing. If you own a GT3 car – the first true global GT formula – you can race virtually anywhere on any given weekend.

LMP3 is doing for prototypes what GT3 did for grand tourers. It's cheap in comparison with LMP2 and, while the cars are relatively basic, it's an ideal learning tool.

What the Prototype Cup does is open an extra space in the options for LMP3 teams and owners. Its calendar won't clash with any of the big events, allowing European Le Mans Series

Pilot race was at Snetterton; series kicks off at Donington on April 22-23

teams to dip in and out for testing purposes. Alternatively it allows rising stars the chance to learn prototype racing without the big budgets of a European championship, or an amateur to race his car at his will without the time and expenditure of a European weekend.

There have been concerns that the P3 could be too big and too fast to race well on British circuits, but that remains to be seen. LMP3 creator the ACO has certainly seen the potential, sanctioning it as the British LMP3 Championship.

BMW 330 CHALLENGE

Last season proved to be a bit of a false dawn for the BMW 330 Challenge. The series was scheduled to make its first appearance in June, but this was pushed back, and in the end never actually happened. Now under the auspices of the 750 Motor Club, this series for the 330 version of the BMW E46 should be racing at tracks around the country this season as part of a shared grid with the Super Cooper Cup. The tightly crafted regulations will ensure parity between the cars and BMW one-make series have a reputation for producing closely fought races.



RENAULT UK CLIO CUP JUNIOR

For the first time ever there will be four series dedicated solely to 14-17-year-olds in the UK this year. Renault UK Clio Cup Junior will join Ginetta Junior, Fiesta Junior and the Junior Saloon Car Championship in the teenage racing scene for 2017.

It is expected to slot in somewhere between the Ginetta and Fiesta series in terms of budget, but benefits from full manufacturer backing from Renault. With the same base car as the one used in the successful top-tier Clio Cup, you can expect near-bulletproof reliability and frenetic action on track. What will be fascinating to see will be how popular it proves to be among drivers. With a host of existing Clio teams pledging to run drivers in the junior series too, the signs are good.

race series for

2017

ARMED FORCES CHALLENGE

Everyone loves a feel-good story and the Armed Forces Challenge is certainly one of those. Running since 2006, the series populated with veterans and serving members of the armed forces will receive championship status for 2017. It deserves it.

Partially thanks to running on the 750 Motor Club bill, entries have been strong and a concoction of different machinery ensures an entertaining spectacle on track.

The format is sometimes difficult to follow; drivers will score points on a performance index that takes into account average time and fastest lap times, rather than just the

overall positions, rewarding the most consistent. But that means almost all the crews are competitive and therefore experience an enjoyable weekend. In a club event that's really the point.

Paul Waterhouse – who has raced in the category since 2008 – explains: “The way it's done with a performance index is great because it means you can finish last in the race and still get the points,” said Waterhouse. “It [championship status] is great news. Racing with the Armed Forces Challenge is great fun – it's good to come back to my roots. You can imagine the banter between the three services!”



STYLES



HAWKINS

Z CARS

Creating a new club-racing niche is a tricky thing, but MSVR knows better than most how to carve its own space.

The UK's youngest racing club is quickly becoming one of the biggest, and will expand its portfolio yet further with the dramatically named Z Cars series.

In many ways it may seem a tough sell. The UK is well catered for with BMW championships, since MSVR already runs the burgeoning Production BMW class and multiple clubs run rival series.

We're also well served for small roadster racing – Mazda MX-5s, anyone?

Using the 3-litre Z4 and 1.9-litre Z3 Beemers, MSV is working with PBMW specialist Gary Feakins Racing to get this off the ground. Running two classes means a broader spectrum of appeal for drivers with different levels of budget and skill, and MSV's ability to put out top calendars and slick race meetings will help.

It may still be tough to get many of the same pool of drivers out of their super-popular equivalents. But if anyone can do it, MSVR would be right up there.

SSANGYONG RACING CHALLENGE

Admit it; you've never thought about one of these things taking to a racetrack in anger. And yet this year a host of SsangYong Korandos will do just that as part of a six-event calendar.

Initially mooted as a cost-effective series for young drivers aged 14 and upwards, the SsangYong Racing Challenge had to be revised because it did not hold the correct licence from the MSA. Drivers aged 16 and upwards will still be able to compete in the championship, but that enforced change means that the full plan for 2017 isn't yet clear.

The jury is well and truly out on how successful the SsangYong Challenge will be when it launches, but it's sure to turn heads.



CASTLE COMBE HOT HATCH SERIES

What do you do when one of your series continues to grow and grow? Create a replica, of course. Moulded in the successful image of Castle Combe's Saloon Car Championship, the Hot Hatch Challenge provides a home for an overflow of saloon cars, plus those that were no longer eligible to compete in saloons.

Granted, the gap on the Combe schedule became available with the demise of its Sports Series, but that the club was able to find a solution so quickly is applaudable. Firm numbers for the series – in which front-wheel-drive cars with 2.1-litre engines or below are eligible – are still unclear, but the initial reaction to the series from seasoned Saloons drivers mean there are reasons to be optimistic about the Hot Hatch Challenge.

WHAT'S ON

Tommy Byrne: victim of circumstance or human nature?



TOMMY BYRNE COULD HAVE BEEN one of the special ones. In 1982 there was ample evidence to suggest that the untamed and penniless 24-year-old from Dundalk in Ireland, with a reputation for playing as hard as he raced, had the raw ingredients to become a world champion. Had things gone differently, some argue, Byrne might even have changed the shape of a decade that climaxed with a duel between Ayrton Senna and Alain Prost.

But Byrne never came close to fulfilling that promise. A serial champion in Formula Ford and British Formula 3, he achieved just two grand prix starts with the underfunded Theodore squad. Following an acrimonious row with team manager Julian Randles in Las Vegas, Byrne never raced in F1 again. Like many, he turned to the States in search of glory, but his career fizzled into one long party while contesting the lowly mid-'90s Mexican F3 series. Finally, having been shot at by a friend

during a night out, he realised he'd gone past the point of no return.

Crash & Burn, a documentary inspired by an autobiography co-authored by Mark Hughes, tells the story of Byrne's fall from grace – before he'd even made it there – through a series of frank interviews. He's engaging, likeable and so



Irishman Byrne joined the list of notable Formula Ford Festival winners in 1981

mainlined into his own consciousness that he finds it hard to mask his thoughts. "I didn't think I was the best," he says at one point, without a hint of arrogance. "I knew it."

Byrne argues the partying wasn't as frequent as legend suggests, and explains how his cockiness proved useful armour in a fiercely competitive environment. He tells of how he feels it was the prejudices rife in F1 at the time, and not he, that put paid to his chances.

From how Byrne convinced his mum to get a loan for a home extension by telling the bank manager that his sister was pregnant, and then using the money to buy his first Formula Ford, to his famous test with McLaren in 1982 (which amounted to nothing), the film hits highs as it documents Byrne's attempts to force normality into a life that was far removed from that.

If you love motorsport, any forensic historical work on the topic should be

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HOT ON THE WEB THIS WEEK

You Tube OGIER'S A MAN ON THE MOVE

Search for Test Rallye Monte Carlo 2017

- Sebastien Ogier (Ford Fiesta WRC)

Reigning World Rally champion and ex-VW driver Sebastien Ogier is not hanging about as he limbers up for the first round of the 2017 season aboard his new M-Sport Ford Fiesta WRC. The car looks great and sounds brilliant – roll on January 19!



Byrne failed to qualify for the 1982 Italian GP

fascinating, and this is no exception – although alongside insights from Irish motorsport luminaries like Eddie Jordan and David Kennedy, it would have been interesting to hear McLaren's Ron Dennis tell why he didn't follow up on Byrne.

Its juxtapositioning feels a little forced at times, too. Just as Prost was demonised for the sake of storytelling in the Senna movie, Senna is a bit of an anti-hero to Byrne in this. And while the wealthy Brazilian was the antithesis of Byrne, history tells that the pair were less rivals than the documentary suggests.

Byrne insists he regrets little from his racing career and yet the film gives the impression of a driver fighting the remorse associated with what might have been. The talking heads tell of a man who may have died had he not changed his hard-living ways, and yet Byrne says much of this is decades in the past and he is now thousands of miles along redemption's road.

It's also a film made on a budget. There is no F1 footage and all the historic racing content comes from Byrne's friends' VHS collection. But this, and some colourful caricaturing employed to guide you through Byrne's wilder exploits, actually adds to the enjoyment. You can't help but feel it all works as a perfect complement to the more in-depth book (which Byrne intends to rerelease later this year with additional material).

Byrne's is a story of how single-minded wilfulness can take you to the very opposite polarities of success and failure. However good he was in a racing car, for one reason or another, humanity ultimately defined Tommy's fate. But if the film doesn't quite answer the question as to whether his ill-fated ambition was a victim of circumstance or his own human nature, it provides enough fascinating evidence to leave you pondering for a good while afterwards.

SIMON STRANG

**TV PICK
OF THE
WEEK**

WRC: MONTE CARLO 2015

Motors TV

Friday 2235

Monte Carlo is one of the oldest rallies in the world, and arguably the most iconic on the World Rally Championship calendar. Ahead of next week's event, relive the battle for the 2015 win. Sebastien Loeb gave Citroen hope, before a mistake put him out of contention.

McKLEIN/LAT

INTERNATIONAL MOTORSPORT

DAKAR RALLY

Asuncion, Paraguay to Buenos Aires, Argentina
January 2-14

DUBAI 24 HOURS

24H Series
Rd 1/7
Dubai, United Arab Emirates
January 13-14

TOYOTA RACING SERIES

Rd 1/5
Ruapuna Park, New Zealand
January 14-15

ANDROS TROPHY

Rd 5/7
Serre Chevalier, France
January 14-15

THE ARCHIVE

Polesitter Jean-Pierre Jabouille (Renault RE20) is passed by Gilles Villeneuve (Ferrari 312T5) and Didier Pironi (Ligier-Ford JS11/15) after making a poor getaway at the start of the 1980 Brazilian Grand Prix at Interlagos. Jabouille fought back swiftly, but was forced to retire from the lead when his turbo failed after 25 laps. The race was won by Jabouille's team-mate Rene Arnoux; it was his maiden F1 victory.

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TOP FIVE

FORMULA 1 COMEBACKS

If Valtteri Bottas moves to Mercedes to replace Nico Rosberg, then it looks like Felipe Massa will come out of retirement and return to Formula 1 without actually having missed a race. The Brazilian would not be the first to leave (or commit to leaving) grand prix racing before changing his mind, though. Some, of course, have been more successful than others – you'll probably not be surprised to see seven-time world champion Michael Schumacher missing from this list.



1 NIKI LAUDA (above)

Either of Lauda's comebacks would have guaranteed him first place in this list. In 1976 the Austrian had been given the last rites after his horrific, fiery crash at the German Grand Prix left him in hospital with terrible burns. He returned to the track only a few weeks later, in the Italian Grand Prix, and took his title fight with James Hunt to the final race of the season. But you all knew that, because it's the stuff of legend. To add to the legend, Lauda then walked away from grand prix racing in late '79, but returned with McLaren in '82 and was champion for a third time two years later.



2 ALAIN PROST

After leaving McLaren to join Ferrari in 1990, missing out on the title after the final-round clash with former team-mate Ayrton Senna, Prost's '91 stint with the Scuderia was less successful (he was fired at the end of the season for comparing his car to a truck). He took a sabbatical in '92 before joining Williams and dominating the following year to secure a fourth title, whereupon he retired from F1 on his own terms.

3 NIGEL MANSELL

Part of the story of the 1992 world champion's rise to conquering F1, detailed in this issue (page 4), is his faux retirement in '90. But Frank Williams coaxed him back into the fold for the following season and the world title followed a year later. Mansell left for Indycars, then returned to Williams again in '94 for four races, claiming a pole and a win. The less said about the two-race stint with McLaren in '95 the better...



4 KIMI RAIKKONEN

Two years after winning the world title, Raikkonen was dropped by Ferrari to make way for Fernando Alonso at the end of an unsuccessful 2009 season. The Finn then spent two years in the WRC before returning to F1 with Lotus. While his eventual reunion with Ferrari didn't start well, with underwhelming campaigns alongside Alonso and Sebastian Vettel in '14 and '15, his performance improved notably in '16.



5 ROMAIN GROSJEAN

Has developed into one of the best drivers on the grid yet to win a grand prix – which is one hell of a turnaround from the crash-prone youngster who was sent to AutoGP and FIA GTs after his first F1 stint in 2009, and got a one-race ban for that Spa crash on his first year back ('12). Scored podiums in his comeback season and by the end of the second he was outperforming team-mate Kimi Raikkonen.



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WELCOME

THERE IS VERY LITTLE DOUBT THESE ARE EXCITING times for motorsport. And we're not talking about the drivers or any particular race series here. The industry that puts cars on the track worldwide is at the forefront of a technological revolution, and it is being led from the heart of the UK.

Autosport Engineering, the trade exhibition sector of Autosport International – both sister organisations of this magazine – will showcase many of the companies at the forefront of that this week at Birmingham's NEC. Over the next few pages we focus on some of the companies at the sharp end, pushing innovation to a new level.

The big question, though, is where is this all leading? Is the future electric? Purists shiver at the thought, but there is no doubt that Formula E has caught the imagination of the public and, much more importantly, the major car manufacturers who are investing heavily in the technology.

Formula 1 remains the pinnacle, and as ever breaks through boundaries every step of the way. If there were to be any criticism of F1 as a whole today, it can only be whether it shouts about what it is actually achieving. Fans dislike the lack of noise, but this is arguably part of the sport's failure to flag up its advances properly. The level of efficiency F1 motors have reached in the past three years is absolutely staggering. Look back and you'll see they're going as quick as they were a few years ago with 35% less fuel.

It was said that would take four to five years when the rules were introduced, but such is the pace of development, they've done it already. Who says anything about that? Shouldn't that be a headline, especially with the rapid growth and interest in economy, and in Formula E and electric power in particular?

But, as Formula E sets the engineers new technical challenges, what else of the future? Driverless cars are inevitable, and bring a whole clean sheet of paper to the table. "What's the point?" cry the old-school, but there is no denying it's an exciting time as innovation takes us into the future. One point a key engineer made about driverless cars leaves us with food for thought: "Just think of the figure-of-eight races you used to watch at stock car races as a kid for fun. Now those can be real. Imagine the complexities needed to design and build a car that can avoid accidents at speed – and win. I'd pay to watch that..."



Andy Hallbery

ANDY HALLBERY EDITOR
@hallbean



COVER IMAGE
S Bloxham;
Mauger/LAT

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MAUGER/LAT



ELECTRIC GT CHAMPIONSHIP HALL 9 STAND E6250

ELECTRIC RACING TAKES ANOTHER STEP FORWARD

Formula E kicked off the electric motorsport scene in 2014, and this year heralds the launch of a new race series for cars with a roof: the Electric GT Championship

HYBRID CARS ARE DRIVING OUT OF manufacturers' showrooms in ever-greater numbers, moving from rarity to being accepted as the face of the future, in line with the global push to live in a more environmentally friendly way. It was long thought that motorsport would struggle to match this trend, since electric cars weren't associated with performance, yet both F1 and the World Endurance Championship now harness hybrid power. And now, in January 2017, we have the launch of the second global electric racing formula: Electric GT.

While Formula E blazed the way for electric power in single-seater racers, the Electric GT Championship introduces cars that have a more obvious link with the hybrid cars you can use on the road, since they're based on street-legal production vehicles with only a minimum amount of modification. The model chosen by Electric GT is Tesla's Model S P100D with its battery pack upgraded from 85 to 100kWh.

With 500kg of kerb weight pared away, performance from these zero-emission Electric GT V2.0 racers is 0-60mph in 2.4 seconds. With competition brakes, they will stop better too, while slick Pirelli tyres will ensure that the handling is more sure-footed.

"I'm very excited to be using the Tesla Model S P100D, as it's incredibly quick and innovative," said Electric GT CEO Mark

"It was great fun to experience the potential of E-racing performance cars"
Heinz-Harald Frentzen

Gemmell. "The Electric GT V2.0 design is the fastest way towards the 'Age of Light'"

Former grand prix winner Heinz-Harald Frentzen was impressed when he tested the GT 2.0 at Paul Ricard: "As a long-time Tesla owner, it was great fun to drive one of the first race-prepared Teslas and to experience the potential of E-racing performance cars. Mark and his team are certainly heading in the right direction."

Another former F1 driver, Karun Chandhok, had a run in December. His conclusion: "The car is very balanced despite being in the early stages of development."

Seven rounds are currently scheduled – with two 60km races at each – and 20 drivers are being selected for the EGT Drivers' Club, with ex-GP2 racer Kevin Ceccon, sportscar ace Jeroen Bleekemolen and touring car star Tom Coronel already on the list. Further announcements are to be made at the show.

GREENPOWER EDUCATION TRUST HALL 9 STAND E1255

It's ready, steady, go



THE RISE AND RISE OF EVER MORE environmentally friendly forms of motorsport is leading to an all-time high of experimentation by the best and brightest young engineers. A stellar example of this came when 130 teams from all over the globe entered the Greenpower International kit car final at Rockingham last October.

The challenge provided by Greenpower Education Trust was to design, build and race an electric single-seater racing car. While this gives a clear focus and no doubt a great deal of enjoyment to all those involved, the Greenpower challenge also plays a vital role in engaging the engineers of the future. The United Kingdom alone is in need of hundreds of thousands of new engineers by 2020.

Visit the Greenpower Education Trust stand to discover not just how you and your school or group of young engineers can enter this year's heats (which lead to the international final at Rockingham on October 8) but also how engineering can solve problems faced by society.

GOODRIDGE HALL 9 STAND E260

Sorting the kinks

A GLOBALLY RECOGNISED MANUFACTURER of hoses and fittings, Goodridge's range has expanded every year since Stuart Goodridge spawned it in 1969, when he returned to England after racing single-seaters in Canada.

At Autosport Engineering, Goodridge is expanding that further by launching its latest premium lightweight range. Known as G-Line Ultra, these will maintain all of the quality and versatility of the G-Line XF range but augments them with some innovative features to ensure superior kink resistance, full vacuum resistance and increased standard bore sizes for even greater uninterrupted flow.

Superior kink resistance has been achieved by the use of a patented 316 stainless steel helical wire wound into the external PTFE convolutions. A further benefit is that this increases vacuum resistance to 200C while retaining all the flexibility demanded by top motorsport teams.

The hoses are available with 316 stainless steel or aramid braid to suit any applications.

LIFELINE FIRE & SAFETY SYSTEMS HALL 9 STAND E185

Putting out fires

LIFELINE IS A COMPANY WITH a constant quest to innovate in its fire suppression systems, and it will be unveiling its latest product, the Zero 3620 Firemarshal, at ASI.

This unit is a development of the Zero 3620 and has been designed to meet the increase in demand, since more categories

are required to use systems that reach World Rally Championship standards.

"The FIA is duty-bound to

ensure that motorsport is as safe as it can be," explains Lifeline managing director Jim Morris, "and we took a significant step forward when we introduced the

Zero 3620 and another leap with the 3620 Firemarshal, so we can now offer a cost-effective alternative to the many teams and competitors that require FIA 8865 approval."



BOSCH HALL 9 STAND E475

Digital management

BOSCH IS UNVEILING ITS LATEST performance ECU at Autosport Engineering this week. The MS 7.4 engine control unit manages petrol engines of up to 12 cylinders and features a powerful digital processing core with floating-point arithmetic, plus a high-end FGPA promising ultimate performance and flexibility.

By using a software development process

based on MATLAB/Simulink, this speeds up algorithm development significantly thanks to using automatic code and documentation generation.

The Bosch MS 7.4 is optimised for low and high-pressure injection, has a data logger included, plus optional combustion chamber pressure determination and gearbox control through a Gigabit data interface.

ZF RACE ENGINEERING HALL 9 STAND E620

Light and adjustable

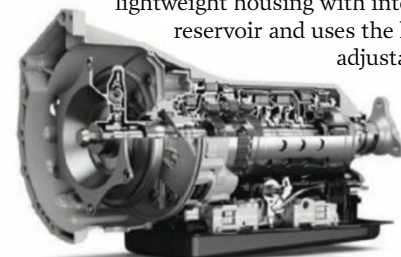
ZF RACE ENGINEERING'S MOTTO IS "THE best for the best", and this is its aim through its range of driveline and chassis products. Highlights of its stand at Autosport Engineering include its latest automatic racing gearbox and Formula Evolution dampers.

The automatic racing gearbox has been designed to eliminate the need for a torque converter, to reduce shift times, and to be 15% lighter than its predecessors. Through being automatic, ZF says it offers improved safety because it removes the possibility of missed gearchanges, with the associated protection of the drivetrain.

The Formula Evolution damper has a lightweight housing with integrated

reservoir and uses the latest height-adjustable monotube

technology. It comes with two-way, three-way, four-way and five-way adjustments.



AUTOSPORT ENGINEERING HALL 9

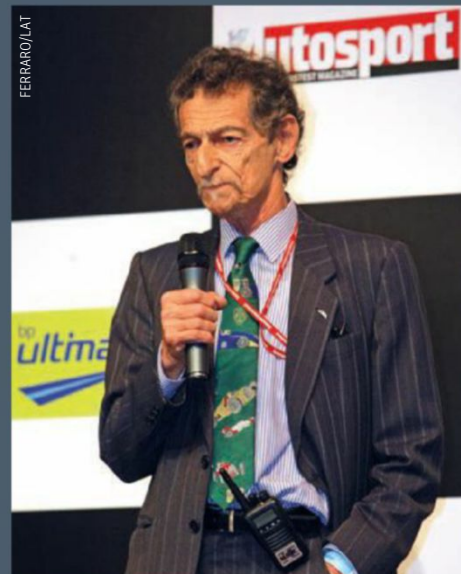
WHERE MOTORSPORT DOES ITS BUSINESS

AUTOSPORT ENGINEERING IS celebrating its 22nd anniversary this year and the man who has been its driving force, Tony Tobias, continues to be excited by this business melting-pot that attracted 27,500 trade professionals last year.

“It’s become the global forum for the motorsport industry,” enthused Tobias (right). “This is where the leading suppliers meet the people they need to meet. Every F1 team sends people to meet representatives of all the leading specialist

firms that they need to see about the latest advances, whether that’s in composites, technology or aerodynamics. People come to Autosport Engineering from all over Europe as well as the USA, Brazil, China and countries like Greece, where you wouldn’t think there’d be motorsport parts manufacturers, but there are.

“Autosport Engineering has become a must-attend event; look down the list of exhibitors [see p28] and you’ll see that none of the leading companies are missing.”



CRANFIELD UNIVERSITY HALL 9 STAND E64

Students taking the next step



AN INCREASINGLY IMPORTANT ELEMENT OF Autosport Engineering is the number of universities presenting their specialised motorsport engineering courses. Cranfield University is at the forefront, thanks to having undertaken research, consultancy and testing for the motorsport sector since the '70s that’s resulted in its broad array of degree courses.

Autosport Engineering also offers students an insight into the cutting-edge careers on offer after graduation. “Cranfield University brought along a group of its undergraduates last year,” said show impresario Tony Tobias, “so that they could show their students what jobs they could get in the industry. The outcomes were fantastic.”

ADVANCED FUEL SYSTEMS HALL 9 STAND E481

Made to measure

ADVANCED FUEL SYSTEMS WILL BE displaying its market-leading range of fuel cells at Autosport Engineering. Uniquely in its market, the company manufactures the composite material and the finished fuel cell simultaneously in its bespoke orders, and this enables it to mould the shape of the cell to its customer’s exact requirements to help with weight reduction, improve durability and increase cell flexibility.

Advanced Fuel Systems isn’t focused only on contemporary motorsport, as fitting fuel cells into historic racing cars to maintain their original appearance is a particular area of expertise.

AP RACING HALL 9 STAND E380

AP Racing’s latest stoppers

AP RACING WILL BE PRESENTING THE latest additions to its range of performance braking systems at Autosport Engineering.

In the world of competition brakes, AP Racing’s Pro 5000 R calipers have long been recognised as a market leader, and the range has been augmented by six new entry-level calipers, all of which feature an integral pad retainer to enhance caliper stiffness, as well as stainless steel pistons and wear plates.

AP Racing will also be unveiling its new World Radi-CAL range of four- and six-piston calipers (right), which offer less mass, improved rigidity and better cooling.

The manufacturer is also updating and expanding its range of master cylinders with the introduction of high-efficiency

centre valve master cylinders. These offer improved seal durability with ABS as they replace the cut-off ports used in conventional systems that can suffer from ‘seal heel nibble’.



ARROW PRECISION HALL 9 STAND E76

Performance engineering

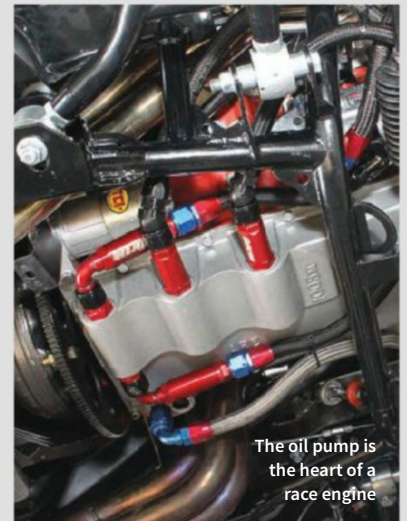
ARROW PRECISION WILL BE DISPLAYING ITS range of race-proven crankshafts, connecting rods, fly wheels, valve guides and pre-ground shims at Autosport Engineering.

The company produces three-dimensional models and manufacturing drawings from early concepts, with FEA testing of designs showing how loads from combustion and inertia will stress and deform the rods and crank.

They also show how vibrations may affect the components and can indicate the validity of one design over another for a given load case.

PROMOTED STORY **ARMSTRONG ENGINEERING** HALL 9 STAND E496

“The viscous drag of the oil, when eliminated to a great percentage, increases the horsepower by an amazing amount”



The oil pump is the heart of a race engine

ARMSTRONG RACE ENGINEERING EVERYTHING DRY SUMP

Designing and building dry sumps has been Armstrong Race Engineering’s principal focus for more than 40 years. Founder/owner **Gary Armstrong** explains his passion for the science and engineering involved in this essential racing tech

In the beginning everything except F1, Indy, and a few others used fabricated stock steel sumps. Armstrong Race Engineering – better known by the acronym ARE – recognized the advantages of using a cast aluminium part for its strength, sealing, and resistance to vibration fatigue. I was a Formula Ford racer, but soon decided I was a better engineer than a driver. I was unhappy with the dry sumps available for my engines, so I started designing and making my own systems.

To start from scratch and design a pan that took advantage of the centrifugal force of the oil leaving the crankshaft, better trap it, and thus make a more efficient scavenging system. This parameter has always been more important than the ease of using a modified stock sump.

ARE’s newest incarnation of dry sumps are called ‘fluidic’. The viscous drag of the oil in the crankcase, when eliminated to a great percentage, increases the engine horsepower by an amazing amount. This is aided by a design that “makes available” the oil to the scavenge pumps, allowing them to also work more efficiently.

It’s a true system, allowing *all* the dry sump components to work in concert.

The dry sump oil pumps are not allowed to be ‘simple’ pumps either. From the much-needed packaging and mounting of the pumps, to paying great attention to the fluid dynamics involved, every unit has a purpose. Only the best alloys, gear/rotor design, bearings/seals, and of course flow efficiencies can be permitted in today’s highly sophisticated racing engines. Today’s super CNCs and CAD/CAM programmes can be harnessed to create highly reliable, yet very powerful hearts for racing engines.

When the FIA’s global spec-rule junior racing category, Formula 4, made its debut in the United States, it was significant that ARE was chosen to supply specifically developed dry sumps for Honda’s K20 engine. More than 130 units have been supplied now as the series heads into its second season.

The expanding product line of ARE dry sumps has presented the need for a smaller version of dry sump pumps we call the ‘mini mite’. This pump started with a contract to build a very

small, very high (relatively) RPM pump for one of the top echelons of racing, IndyCars. The RPM needed to run this pump demanded a very innovative design of pump, particularly in the anti-cavitation features of the pump cavities and pockets. Now this compact pump concept is heading for other smaller, higher RPM power units such as cycle engines, still requiring dry sumps to stay alive.

A new and ever expanding product in our stable is the Spintrac air/oil separator. This unit, being totally passive, simply connects in-line on the scavenge oil return from the pump to the tank, and eliminates up to 70% of the air in the oil on the way to the reservoir. The extraneous air is then sent back to the top, or ‘air gap’ in your tank to be sent to the atmosphere via your vent system. For more information visit www.spintrac.com.

Dry sump systems, with the science and technology that makes racing unique, are an example of the many facets of parts engines require, and we will continue to create racing engine components for our industry.

THE CRYSTAL BALL

A change is gonna come... but how? As technical advances reach supersonic speeds, how will what we currently know as 'motorsport' evolve? **Matt Youson** looks to the future

These are interesting times for motorsport. During the industry's first century, despite a path that was sometimes jagged, the general direction of progress was clear to see.

Development was incremental; technologies evolved. The occasional giant leap perceived subjectively as an outlier becomes, when studied objectively and from sufficient distance, to be a small but logical step. In the future the current era will perhaps be regarded in similar terms – though this is difficult to imagine for the moment. Motorsport is going through an unprecedented period of revolution.

Revolution comes in many forms. Powertrain, of course, is currently the big ticket: Formula 1 and the World Endurance Championship have taken the hybrid route, while Formula E has blazed a trail, bringing electric racing in from the periphery. More electric race series will probably follow, with the forthcoming Electric GT Championship being a useful gauge of >>

“It’s an interesting fork in the road. There is going to be a split camp and two different directions”
Marc Priestley



Formula E is blazing a trail
for electric motorsport



whether the appetite for zero-emission motorsport exists beyond the hoopla of Formula E. Taken together, what's particularly interesting about this realignment is, while pioneering technologically, it equally represents a shift in philosophy and a response to a demand that motorsport, rather than being an end unto itself, should also be socially beneficial.

This, at least, is one opinion. There's an increasingly clear division between traditional motorsport in which racing exists for its own sake, and the progressive series that seek to make racing useful in a wider context. The latter tend to push the boundaries of technology – but the former have perhaps the more content fan bases.

"It's an interesting fork in the road," says Marc Priestley, former F1 mechanic and now a technology commentator for F1 and Formula E. "There is going to be a split camp and two different directions. They probably won't compete against each other; they'll be two different avenues of motorsport. People will choose one or the other or, like me, they'll enjoy both!"

The future of Formula 1 is a particular area of fascination for Priestley, given its road map is currently opaque. "There's a wider question of where you want the sport to go," he says. "With the hybrids F1 went down the route taken by the automotive industry, but the automotive industry is going to go much further, to the point where it's going to be largely electric. F1 doesn't want to go that way because it's not what traditional fans want from the sport. They don't want to see electric cars – they can and do get that from Formula E. F1 fans want traditional F1."

"This raises the question of what F1 will do. Will it try to stay road-relevant and embrace more new technology, or does it change direction, turn its back on the road-car industry and be an out-and-out racing series. Plenty of

fans seem to want that – a noisy series going incredibly quickly with a gas-guzzling V8 or V10. It's an interesting dilemma for a series that has always prided itself on being at the leading edge of technology. I'm torn between the camps: I'm a traditional motor racing fan and I would love to see the sport go back to V10s – but I'm also a techno-freak, love the new technology and am very excited to see where that's going."

If Formula 1 is unsure of its direction, the same cannot be said of Formula E. The newer series is proceeding along a technology path mapped out by the promoters, albeit with a determination to stay flexible and able to react to a swiftly developing technology. This, says Priestley, is greatly aided by the series being unencumbered with dogma and young enough to retain the spirit of cooperation.

"It's one of the really nice things about the organisers, that they're more open to adaptation than perhaps is the case in F1," he says. "They will try things and, if they don't work, they'll change and try a different route until they find one that does work. I think they've been very open to gauging fans' opinions and taking onboard the points of view of the teams and manufacturers."

"In F1 there's so much money at stake and such big brands involved that it often prevents the sport from moving forwards. Formula E hasn't reached that stage. Everybody seems to be working together, open to new ideas, open to change. The biggest driver for everybody – because they all have an interest in it – is to see the series be successful. At the moment most of the teams seem to have a fairly common goal in trying to promote the series and improve the show rather than focus on their own selfish interests. That's the reason why it's still moving forwards at quite a rate – though this may change down the line if you get a group of major manufacturers competing as they do in F1."

These are interesting times indeed. ■



SBLOX/HAMIL/AT

RATIONAL MOTION

NEW PLAYERS IN THE INDUSTRY

The migration of motorsport to hybrid and electric powertrains represents an opportunity for new suppliers to move into the industry and break a stranglehold enjoyed by current supply chains. This is the view of Benoit Vareille, chief operating officer of design, system integration and prototype development company Rational Motion.

"For systems such as power electronics, I think there is a change happening," he says. "People originally looked to the standard motorsport players – the Magneti Marellis and McLaren – but now I think the opposite is true: suppliers with, for example, 30 years' experience working with IGBT [insulated-gate bipolar transistor] technology and silicon carbide power modules are being called upon. They don't know how to package the technology for motorsport – but they can partner with other companies that do."

With a mix of on-road, off-highway and motorsport clients, Cologne-based Rational Motion works on traditional and non-traditional drivetrain projects. It is involved with the NextEV Formula E team, providing development and trackside support. Vareille believes that, despite the growing involvement from major car manufacturers, FE isn't likely to be a series that directly provides technology useable by the mainstream automotive industry.

"Will the OEMs take something coming from Formula E and put it on the road? I don't think so. Smaller manufacturers – Mahindra, NextEV, Faraday Future – may take some of the technology and bring it to prototype level, but for the road? Probably not. We don't work to the same level of safety that we do for road cars so I don't expect it. The manufacturers may say otherwise – but that's for marketing reasons. In this Formula E is no different to Formula 1. There isn't a direct link between F1 technology and the road. Ferrari perhaps used its KERS motor on one low-volume model – but nothing else."

"They don't know how to package the tech for motorsport – but they can partner with other companies that do"
Benoit Vareille



WEC has been a pioneer for hybrid technology

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“We’re seeing tremendous ideas, tremendous innovation and great concepts all over the place” Michael Resl



HARRELSOVLAT

NASCAR’s approach is to focus on traditional tech

AVL

NEW MONEY/OLD MONEY

AVL is the world’s largest private and independent developer of powertrain systems, with interests that encapsulate both traditional and alternative technologies in both automotive and racing sectors. In the opinion of Michael Resl, director of motorsport, marketing and lead development, the future direction of elite racing is going to be built around how series balance the interests of traditional automotive manufacturers with the need to attract new money.

“I think the challenge for the future is going to be attracting the big fish into your racing series,” he says. “Whoever builds the platform that’s attractive for the Teslas, the NextEVs, the Googles and the Apples, while at the same time looking after the needs of the VWs, the Mercedes, the Porsches, will be the winner from an organisational standpoint. But that’s tricky! A series like Formula 1 can’t afford to not cater for new entrants,

while something like Formula E can’t just kick around with its current electric vehicles waiting to see how the market works out. It’s going to be very interesting.”

“The worst thing that could happen is if F1 sticks to traditional F1, NASCAR sticks to traditional NASCAR, and Formula E sticks to being what it is now. I believe the new entrants that are potentially out there may look away from racing for their marketing activities if that’s the case. This is the danger.”

Founded in the ’40s, AVL now employs 9000 people worldwide and has a revenue north of €1billion. It has always been involved in motorsport, but since 2012 has had a specific motorsport brand: AVL Racing. It works across all the elite series, providing engineering services, simulation, component manufacturing and testing as well as a range of on-track optimisation services. According to Resl, the diversification between strands of motorsport is already very clear to see.

“There are dramatically different business

approaches out there now. NASCAR: more or less traditional; F1: trying to combine the technologies; Formula E... doesn’t give a shit about old technology! And it is interesting seeing how that affects the market. In European structures it’s common to see motorsport activities placed under R&D within organisations – but American organisations usually put motorsport within marketing. These are two very different styles of structure and two quite different sets of motivations for racing.”

Resl argues that, far from being a cause for concern, the growing diversity in the industry is a healthy thing for a company like AVL: “It’s in the nature of our business to be flexible, especially in racing. The wider the spectrum, the better for us. It’s not the case that innovation in EV means there isn’t innovation in internal combustion. We’re seeing tremendous ideas, tremendous innovation and great concepts. It seems that everybody is working flat-out in all aspects.”

TITAN

NEW MATERIALS

For motorsport systems supplier Titan, the future is expected to be an escalation of current trends for more complex part designs created by an abundance of cheaper simulation tools, coupled with a growing confidence in 3D printing technology.

So says chief designer Graham Norden: “The cost of simulation is dropping dramatically and that’s leading to better optimised solutions appearing on CAD screens and leading to a higher-performance part being produced. This means parts are more complicated in design and so, from a manufacturing point of view, give us more challenges.

“Where there might be disruptive change is when designers come up with parts that can’t be made with traditional methods. We’re seeing the start of additive manufacturing techniques being used for production parts. This has gone from a way to create semi-structural parts for prototyping, to something suitable for testing or even qualifying. Today there are materials that are capable of producing strong production performance components, perhaps equivalent to what you’d get from a cast part. This opens up a generation of design that moves beyond the limits of an old-school machining process.”



ROBORACE

DRIVERLESS CARS

The recent Formula E round in Marrakech, Morocco, saw the debut of something that, depending on your point of view, may either be the future of racing or its death knell. DevBot#1, the prototype electric car for the proposed driverless Roborace series, lapped for 30 minutes without incident during a demonstration run. The development plan is to see two cars on track next, gradually building to a full field with the production Roborace car (DevBot#1 can also be driven by a human driver) in action.

“At some point we’re going to be having a conversation about driverless cars,” says Formula E analyst Marc

“At some point we’re going to be having a conversation about driverless cars. It’s something we can’t avoid” Marc Priestley

Priestley. “The road car industry is undoubtedly heading in that direction and so it’s something we can’t avoid discussing in racing. It’s a strange concept because there’s a personal attachment to drivers; they are the component we get behind and support in motorsport – but at the same time the technology, I think, is fascinating.

“As we learn and develop the algorithms that run driverless cars, they will completely transform the motor industry and probably our daily lives. Being able to witness things like this on the track makes it a very exciting time to be involved in motorsport. We really are shaping the future – and I don’t feel that racing has been able to say that for quite a few years now.”

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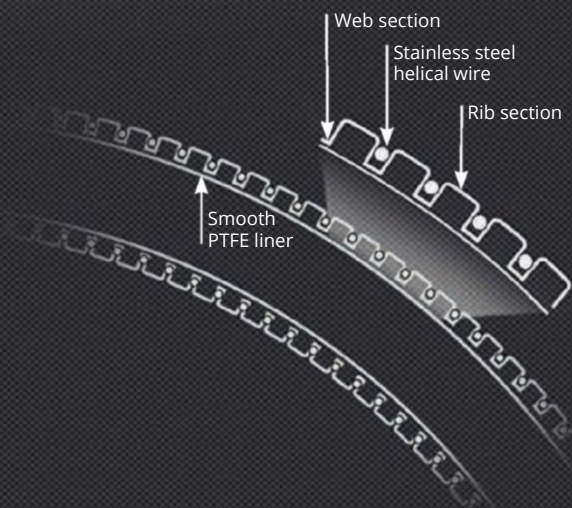
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A BEST-KEPT SECRET?

Innovation and technology are the bywords of Ricardo, an engineering company behind many more successes than you knew, as **Andy Hallbery** discovers

Motorsport history is littered with 'game-changers' through the years; Mercedes perfected direct injection in the '50s, a decade that also brought Jaguar's breakthrough Le Mans win with disc brakes and Jack Brabham's success in a rear-engined racer. Ford's partnership with Cosworth produced the legendary DFV engine in the '60s while Colin Chapman and Lotus perfected wings, and then, in the '70s, ground-effect aerodynamics. The '80s dawned with carbonfibre monocoques in F1 and four-wheel drive in rallying, followed by active suspension and semi-automatic gearboxes and then, at the turn of the century, a diesel win at Le Mans... And, well, the list goes on.

Racing drives ingenious solutions to the basic problem of getting from start to finish in the fastest and most efficient way possible. Names

such as Mercedes, Audi, Ford, Lotus, Williams and Ferrari are all household names, synonymous with winning and revolution.

Nowhere on that list is the name Ricardo. Never heard of the century-old innovative British engineering company? There is actually good reason for that. Most of its work is, for obvious reasons in this ultra-competitive age, confidential. It's also because the company has a culture of letting the quality of its output generate business through word-of-mouth and repeat commissions.

Ricardo's managing director, Performance Products, Mark Barge, explains. "We are proud of being the best-kept secret... You would not believe what you don't know about us, which, yes, is a crazy thing to say.

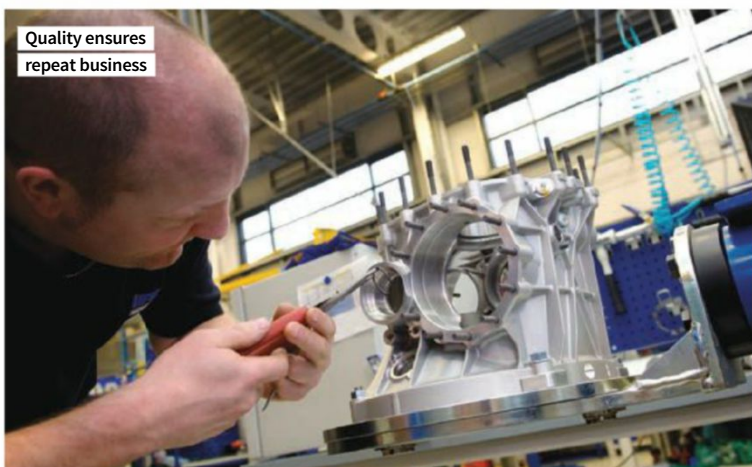
"We've been producing and supplying specialist products for years. Some of which are

borne out of our engineering and some of which come from our clients, who require a partner to manufacture it. Ricardo is a flexible organisation. What's common in what we do is competency in complex products. Whether we're supplying the driveline system for Bugatti, the engines to McLaren for their entire road car range, working on rally transmission systems, components for F1 teams – even supplying components into the world's largest aerospace companies – it's just another challenge for us."

Barge, 30-plus years at Ricardo, is proud and passionate about the company's breadth and the spectrum of what is achieved, whether it's at the Shoreham-by-Sea headquarters, Leamington Spa technical centre, Cambridge or the bases it has near Stuttgart in Germany, Shanghai in China, or Detroit, Chicago and Santa Clara in America. It has a turnover of some £300m, and overall



Ricardo supplies transmission elements to many categories



Quality ensures repeat business



Workforce is skilled and highly dedicated

the staff numbers almost 3000, of which approximately 2600 are engineers “pursuing every technology possible,” says Barge. Communication is paramount, global and 24-hour; those global locations are driven by being close to its customers.

Barge knows that Ricardo’s efficiency and speed are just as important as innovation. “There are some physical things about being a manufacturing company. I have my office in Leamington Spa but our network infrastructure is just One Ricardo. It has joined together, globally, and I think what makes us the successful company we are.”

Professor Steve Sapsford is another veteran of 30-plus years at Ricardo and elaborates on its history. “It started 101 years ago at the Shoreham HQ, primarily as an engine company. More and more was gradually added to it and that’s probably one of the key features here. It is still fundamentally a British company.”

There is no doubt Ricardo is successful. In 2015 it celebrated its 100th year since Sir Harry Ricardo – a brilliant engineer – founded the company. He was a pioneer (known as “the high priest of the internal combustion engine”), and registered patents in his name that are still in use today in automotive, transport, energy and environmental sectors. His thinking and approach is central to the company’s way of

thinking now, despite the vastly different technical challenges faced today.

“I’d say we’ve gone through two clear cycles,” says Barge. “We’ve gone through the ‘we’ll just tackle the challenge, it doesn’t matter what shape or size it is. It’s a brand new challenge, a clean sheet of paper, we’ll apply our tools and the technologies and get a solution.’

“Now we are at a phase where we have such well-developed engineering tools, understanding of material sciences, load case and stress analysis capabilities, that we have to find a balance between innovative engineering and ‘proven’ fundamentals, and how to apply it to a new application. You can’t get so stuck in your ways that proven always means you use that option. That doesn’t keep it competitive.

“Equally, if you’re always cavalier, wipe the table and have a clean sheet each time, then you put too much risk into the programme. You’ve got to find that balance.”

The pace of development in motorsport is such that finding that sweet balance is a fast-swinging, moving target, one where standard practices can become extinct overnight.

“Motorsport, traditionally, has been people who make engines, people who make transmissions, and people who do chassis work,” explains Sapsford. “Then it takes the team to bring it all together. Now, with increasingly

complex and integrated powertrains, you need companies such as Ricardo because the engine, the transmission, the hybrid system and the energy recovery/energy storage system is a completely integrated unit.

“There are very few places you can go now that can deal with it all; the control system to optimise the energy, harvesting, recovery storage and re-use like you see in F1 and the World Endurance Championship. That’s the big change over the past four or five years.”

It’s clear Ricardo is “one of the few places” that can deal with all that’s required to be at the front in topline motorsport, whether it’s Formula 1, Formula E, WRC, WEC, Indy Lights or Porsche Supercup. It’s just the outside world doesn’t know about all of it – the F1 work especially.

“The trouble with what we do is we’re never allowed to say anything about it,” says Sapsford.

Barge elucidates, adding: “There’s a diversity that we promote, because it keeps stability in the organisation. We genuinely actively pursue and engage with the WEC, whether specifically Le Mans or the global platform, open-wheel single-make series, the various levels of the WRC, and, yes, F1.

“This maintains that balance of commercial viability and load in the factory, and it creates interest in our engineering and technology centres as well, which for us is important.” >>

Ricardo is proud of its transmission work



Company has facilities all over the world



Keeping projects diverse is the key to success

One other aspect of racing is that the industry itself is a pretty small world. The race fan at home may not have heard of Ricardo's successes and innovations in all those series, but it's safe to say that those in the business do, and some even name Ricardo after their victories.

"Ricardo has a really strong brand within the motorsport fraternity," says Martin Starkey, business development director. "Quite often our customers want to promote that their transmissions were designed, developed and produced by Ricardo. And of course that puts our name into the public domain.

"We have longstanding relationships with these teams, and secrecy at specific times of the project is absolutely key, so we always feel slightly uncomfortable to name-drop."

One example of that secrecy being used to great effect was with the LMP1 Peugeot 908, which was home to a revolutionary transmission under its skin, one that few people outside the team knew about, even when it was competing.

"There was some very clever design and execution in that transmission," says James Sundler, head of sales. "We developed that back when the diesels were starting to hit Le Mans... And it was kept quiet, kept *really* quiet."

Ricardo's director of transmission systems, Iain Wight, is proud of their solution. "When Le Mans went from gasoline to diesels it was a

major challenge to cope with that much torque. But we produced that gearbox for Peugeot. It was significantly lighter than the Audi R8 gasoline gearbox, because of the way that we packaged and dealt with it, and yet it had to manage twice the torque, something like 800 Newton metres to 1600 Newton metres."

The car's career was cut short when Peugeot unexpectedly cancelled the programme days before the 2012 season. A cutaway transmission from the car currently sits on display in Ricardo's Leamington Spa Technical Centre.

"Trust and secrecy are part of this success," adds Sundler. "That approach can be a difficult thing for commercial guys like Martin and me to deal with, but for Ricardo it's the customer first. Until we get a green light, it's very difficult for us to say who we work with or to give you the names. But, search for 'Peugeot 908' on Wikipedia, and you'll see that it is now out there in the public domain..."

Sundler also feels it's important for Ricardo to have a wide-ranging presence in various series. "I don't think we want to ever be in a situation where we don't have engagement in those markets. Our job is to make sure that that diversification is there.

"While regulation changes are fairly well known, if you start to lose touch with a series, a particular type of racing or a particular market,

it can be difficult to get back in."

Formula E and electrification is a technical area that is exploding rapidly, especially as the roadmap for seasons four and five free up the regulations. That is something that appeals to Starkey: "Formula E is such a showcase for battery technology electrification that it's understandable that manufacturers are wanting to get involved.

"As things have opened up, more opportunities were presented to companies such as Ricardo and we obviously got more involved. It's interesting to see that the Formula E conversations we have now are for three, four, five-plus years. That's different to the traditional gasoline driven motor racing where the regulations and technology have already been so well developed, it's about extracting the last fraction of a percent of performance.

"Formula E is changing so rapidly – how are they going to manage single-shot batteries and things like that? It presents a different set of challenges to us, and from a transmission perspective as well."

Challenges and innovation are what drives the personnel at Ricardo. That and delivering success. "It's about the ethos and the team working," says Barge. "It's about what gets you here early in the morning and what stops you going home until that something gets solved." ■



Ricardo's viscous coupling proved itself in the WRC

ROLL OF HONOUR

PLENTY OF HIGHLIGHTS

For a company claiming over 100 years of engineering innovation, it's hard to pinpoint one highlight to focus on, as Ricardo's MD, Mark Barge, freely admits. "I've been here over 30 years and there are loads, so it's hard to answer that question honestly.

"Audi at Le Mans was a game-changer. And that wasn't because you could change the gearbox in under four minutes! Race teams are highly skilled at finding the best interpretation of the regulations. What was a game-changer were the targets that Audi gave us to produce the LMP transmission. In 2000 that was 700Nm, 5000km durability and 20,000 shifts with a very small development window. We had to pass first time. And we did it!

"We did it by not doing it the old-fashioned cottage industry way. We did it using a completely integrated approach with the client's engineers and our own team. You have to design the concept to fit in their vehicle chassis system. By combining our own core technical consulting skills, advanced analysis, advanced simulation tools and rig-based testing... We delivered."

While the 24 hours on the smooth Le Mans circuit is one challenge, the multiple terrains and conditions in

the WRC represent a very different test. It's fair to say that Ricardo's viscous coupling system – already in use in Ford's Sierra XR4x4 and Sapphire Cosworth on the roads – really underlined its importance in WRC.

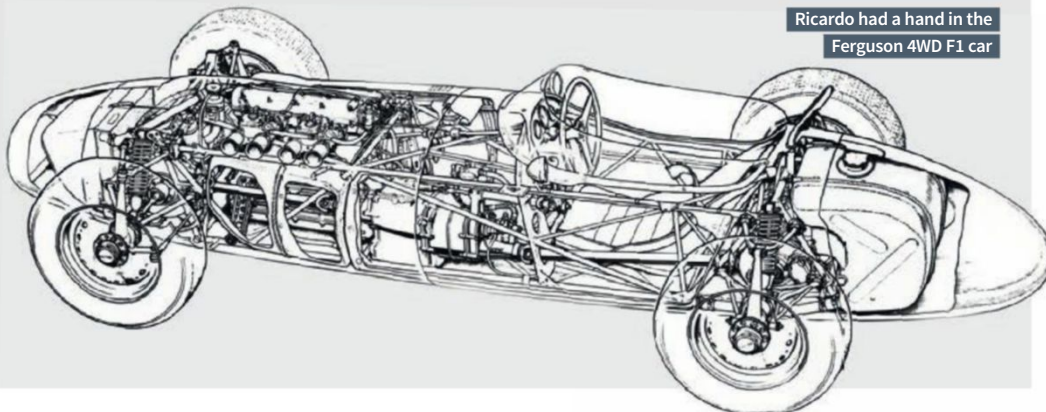
"The viscous coupling was our innovation," says Steve Sapsford, "that went on to turn the whole WRC on its head."

Barge was also part of the development, recalling the relentless testing. "I sat with some of the world's best drivers over the years, such as Stig Blomqvist,

taking notes. When you experience the first time a car leaves the ground in Finland it's just incredible."

Those two innovations both came during Barge and Sapsford's time at Ricardo. That's not to say they don't appreciate earlier marvels too. There's the Ferguson P99 Formula 1 car driven to victory by Stirling Moss in the drizzle at Oulton Park in 1961, the only time a 4WD car has won an F1 race. Or, from the pre-war era, the supercharged Alfa Romeo Tipo 162 three-litre V16 that was destined never to race.

Ricardo had a hand in the Ferguson 4WD F1 car



BACK IN BUSINESS

Ayrton Senna in Formula 1, Nigel Mansell in Indycars and Michael Dunlop in the Isle of Man TT – all three are linked by British performance-wheel specialist Dymag. **Alex Kalinauckas** investigates

Max Boxstrom founded Dymag in Wiltshire in 1974, and the company supplied wheels to many famous motorsport winners – on two wheels as well as four – during its heyday in the '80s and '90s. The engineer's name lives on today through the new Boxstrom carbon hybrid wheel.

"We were famous then because we had a really good foundry that did diecast magnesium wheels and could produce some really good quality castings," explains Mike Wilson, the company's chief engineer. "That's why the name is Dymag – diecast magnesium wheels."

The company is also notable for producing the first three-spoke motorcycle wheel and the first carbon-composite commercial car wheel, as well as a successful range of forged aluminium wheels. But things looked bleak in 2009 when a lack of investment and low sales of high-spec wheels thanks to the global financial crisis meant Dymag faced bankruptcy.

Enter, or rather re-enter, CEO Chris Shelley, who had led the company during the 1990s. He put together a financial rescue package to save Dymag that rested on maintaining the business's key asset: its workforce.

"I bought it out from a liquidator and got

"The big motivator for us is the fact that the car manufacturers are now looking to put our wheels on their production cars"

Chris Shelley

together with Mike and a couple of other guys to restart in 2011," he says. "The condition I gave was that if I couldn't get the company's four core guys onboard, I wouldn't do it. But they all agreed to come back."

After some early difficulties, the company is back producing high-spec wheels for motorcycle teams and road cars. This comeback was boosted by new OEM interest in carbon wheels for their high-performance machines.

"For the first two years after the takeover, we talked about car wheels but didn't do anything," says Shelley. "Then about three years ago, when it became clear that BMW and Ford had carbon wheels and the whole activity level seemed to be going up a lot, I decided that I had better do something about it."

After raising funds, and securing an Advanced Manufacturing Supply Chain Initiative (AMSCI) government loan and grant package of £7.2 million to develop a high-quality volume-manufacturing process, Dymag launched the Boxstrom wheel, the lightest, stiffest and strongest wheel it has ever produced. This is a carbon-composite wheelrim with a fully optimised load path that is protected by sacrificial bi-axial composite layers for which patents have been filed.

As well as being able to make its products in a reasonable volume repeatedly, Dymag also set its sights on attracting OEM partners to use its designs on their cars.

"The big motivator for us is the fact that

the car manufacturers are now looking to put our wheels on their production cars, albeit at the higher-spec end of their product ranges," says Shelley.

The Briggs Automotive Company is using the Boxstrom on its BAC Mono supercar, and a recent deal with Fisker Inc will see the Boxstrom carbon rim fitted on the EMotion electric vehicle. Another partner will be announced soon and Shelley hopes five more OEM contracts will be secured by next year.

Dymag quickly began to resupply motorcycle teams with wheels after the rescue – two 2016 Isle of Man TT categories were won on its wheels by Michael Dunlop – but it will have to wait until at least '18 before returning to four-wheeled motorsport.

"Hopefully we will be able to start pushing the motorsport agenda more aggressively, probably from 2018 onwards," explains Shelley.

The reason for this wait is that many high-profile motorsport championships do not allow wheels to be made from carbon. Formula 1, for example, stipulates that wheels must be made from magnesium alloys.

But Shelley believes that pressure from OEMs using carbon wheels on their road-car ranges will force higher technology focused championships to change their regulations to reflect the products that are already available commercially.

"There are some forms of racing that would be interested in allowing carbon because they



The Boxstrom carbon hybrid wheel



Mansell at Indianapolis in 1993 - on Dymag wheels



want to be seen to be technically advanced," he says. "But there's a lot of politics to overcome before others will change the rules that would significantly change the incumbent supplier base."

If the rules in high-profile championships do change to allow carbon wheels, Shelley believes motorsport offers a golden chance to showcase Dymag's technology on the global stage once again.

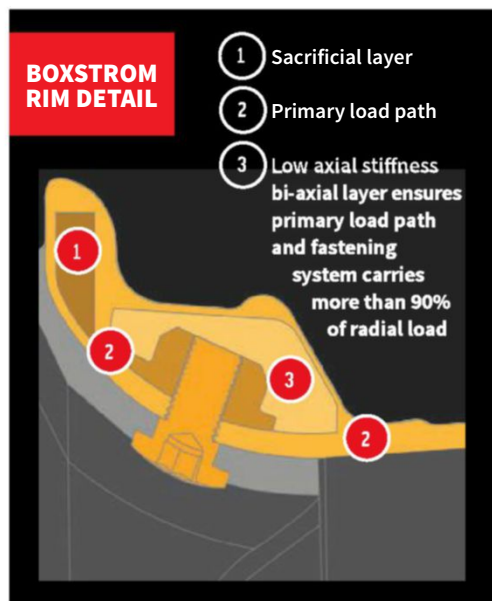
"We can develop our products much better in racing by pushing them to the limit, and also because it's very good marketing," he says. "It gives us a chance to demonstrate why our wheels are as good as we say they are. For those reasons we will definitely be coming back into racing."

The new Boxstrom Carbon Hybrid Car Wheel is initially available in sizes: 20x9in, 20x10.5in, 20x11in, 17x7.5in and 17x9in, with

a 20x12in and more sizes including a range of 16 to 22in to follow shortly during the course of 2017, as market requirements evolve. Prices are available upon application.

Enquiries from OEM customers, and premium wheel companies who wish to use the Boxstrom Carbon Rim with their own exclusive centrepiece style, are encouraged.

For more information on Dymag's range of wheels visit www.dymag.com



GETTING BEHIND THE WHEELS

Chris Shelley's rescue of Dymag between 2009 and '11 kept its four key production staff together, and the company has been growing ever since. "The gang of four came back to help get the company started again, and we then built the team around them," he explains.

The AMSCI investment and a partnership with the National Composites Centre, which helped to carry out research into significantly reducing carbon-wheel manufacturing process cycle times, led to rapid growth in the past 12 months - Dymag's workforce at its Chippenham base is up to 22.

"We've just been going through a headcount plan and this time next year we're planning to have grown significantly," says Shelley. "There's a big ramp-up starting in the first quarter of 2017 and really kicking in through quarters two and three and four, and our monthly sales

should be getting on for 10 times what they are now."

That would lead to a staffing level in the region of 45, with 75% working on OEM wheel designs, 15-20% on aftermarket products, and the rest handling a mix of motorcycle designs and new-for-2018 projects.



Chris Shelley (left) and Mike Wilson

RISE OF THE MACHINES

Mazak machine tools have been used to build key components on McLaren's Formula 1 cars since 1999. **James Newbold** went to see how they are driving British manufacturing forwards with a quiet revolution in engineering

Worcester isn't the first place you would naturally think of to base a global machine-tool company, but Yamazaki Mazak has made the city home for the past 30 years. Founded in Japan in 1919, the family-owned company rose to prominence in the '60s when it began exporting products to the United States, before basing European production in the UK in 1987.

Now a market-leader in computer numeric control, laser-processing and multi-tasking five-axis machines on three continents, Mazak's Worcester plant is one of 10 around the globe where machines are assembled for distribution and showcased to potential customers by a staff of more than 500 people. Mazak's expansive operation also includes a further 78 support bases dotted across the map, which offer demonstrations, advice and support to a range of different sectors including aerospace, medical and, of course, motorsport.

One of Mazak's most fruitful partnerships in this regard has been with the McLaren Formula 1 team, which dates back to the halcyon days of 1999. Since then, Mika Hakkinen and Lewis Hamilton have claimed drivers' championships, while David Coulthard, Kimi Raikkonen, Juan Pablo Montoya, Fernando Alonso, Heikki

Kovalainen and Jenson Button have contributed to a tally of 66 victories, averaging 3.7 per year.

With 25 Mazak units running almost around the clock, McLaren has succeeded in bringing the vast majority of its machining work in-house, giving it far greater control over output and a quicker turnaround. In the fast-paced world of F1, where a new design tweak is sent to the machine shop every 20 minutes, the productivity and reliability of a factory makes a telling contribution to on-track performance. After all, a race team is only as effective as the supply of parts it receives.

"It's a very valued partnership that has been important for both parties, in terms of developing innovative products from a machine-tool point of view and of course from their side in delivering high-quality components in a very short turnaround time," explains Alan Mucklow, Mazak's UK managing director.

"The key thing is the speed you can get from concept to part. We've got a 'done-in-one' capability, which means you put the raw material in and get a finished part out. It's no pun that speed is of the essence, not just for cars going around the track but the parts that they can get to those cars both in the design process and in the support process during the season."

Just as McLaren conducts extensive development work on its cars to remain competitive throughout a season, Mazak is no different. The machine-tool industry is predominantly reactive, led by the requirements of the customer to embrace new solutions, including hybrid additive technologies, in which Mazak is taking a lead.

Exhibiting at Autosport International is a useful means of killing two birds with one stone, as an opportunity to meet with existing partners while also generating interest from visitors and other exhibitors.

"One of the key areas [in remaining a market leader] is listening to our customers, because they are the drivers of innovation," Mucklow



continues. "We're constantly developing new products because the landscape of manufacturing is consistently changing across every industry.

"The motorsport industry sector in the UK is extremely important for us, it provides a significant amount of our business in the UK and Autosport International gives us the ability to connect with those existing customers and new customers.

"We're very keen to ensure that our investment in innovation matches each customer's demands, be it in medical, oil



and gas, aerospace or motorsport. Keeping a clear vision of how our customers are developing and the industries that they serve are developing is paramount, so that we can develop our range of products and services to match those requirements.”

Rather than a strictly linear relationship between vendor and client, Mazak prides itself on offering a holistic service, consulting with clients to find catered solutions and providing them with training to use their machinery effectively. This approach makes McLaren’s successes all the more gratifying.

“It’s a very strong relationship which is built around success and a lot of hard work,” says Mucklow. “We’ll be involved in making recommendations to them on the best method to produce a particular part, be it the machine configuration or the strategies to machine those parts, all those aspects that go into producing a part more productively and more efficiently.

“Of course, that’s not all cases – there will be some cases where we will support, other cases where they are fully able to support themselves, but we’re very proud to take our customer base to their facility and equally they’re very proud >>

MTA – INVESTING IN YOUTH

While the primary function of the Manufacturing Technology Association over the course of its near-100-year history has been to serve and represent its members, its remit extends beyond simply lobbying the government.



The MTA is responsible for organising the biennial MACH show, the UK’s biggest exhibition of advanced manufacturing capabilities, and takes an active role in inspiring the next generation of pioneering designers and engineers through its Technology, Design and Innovation Challenge.

Held since 2003, the TDI Challenge encourages aspiring engineers in the 14-16 and 17-19 age brackets from schools and colleges across the country to submit innovative solutions to a panel of expert MTA judges. For the first time, group projects for teams of three to six students will also be admitted this year to help foster collaborative skills.

The final will be held at Mazak’s Worcester plant in July where, among other criteria, the creativity and innovation of the concept, quality of manufacture and commercial viability will decide the winner. Former winners include a bicycle phone-charging system, water-heating stove for outdoor expeditions and an intuitive cycle helmet.

“There are a number of elements to the MTA that go into supporting British manufacturing, and the TDI Challenge is one of the key examples,” says Mazak’s Alan Mucklow.

“It’s a fully embracing manufacturing and technology association, which is very important for the UK sector to have. It means we’re not just banging our single drum – we’ve got a collective drum.”

“The key thing is the speed you can get from concept to part. We’ve got a ‘done-in-one’ capability”

Alan Mucklow

Partnership with McLaren has been long-running



LAT

to come here and see the latest technologies that we offer. It's a two-way partnership."

An important part of the package is Mazak's Smooth Process Support Software, which allows users to have greater control over their decision-making and maximise the uptime of their assets through remote diagnostics. The idea is that, by monitoring performance, it can be identified in advance where maintenance work is required and actions taken pre-emptively to limit any costly downtime further down the line.

"There's a whole suite of software that can further enhance your productivity, and that

can be from the smaller one-man customer and the machine right through to larger OEM organisations," adds Mucklow.

"It enables data to be used and not just data, but the right data in the right place at the right time to make informed decisions, which take an asset and make it even more productive."

Mazak's motorsport activities are by no means exclusive to McLaren. Its expertise can also be found in several grass-roots projects, including the University of Birmingham's Formula Student programme and Cambridge University's Eco Racing effort, which will enter the World Solar Challenge in Australia in October.

"We're involved in a lot of motorsport projects at different levels, through other teams and the small subcontractors that supply those teams," Mucklow explains. "We go right from grass-roots through to the top and what we hope will happen is that those students that started working with us in Formula Student will end up working for some of the premium motorsport companies."

Legacy is a key concern for the company, as it seeks to make a lasting imprint on the British manufacturing industry. Mazak hosts the annual Technology, Design and Innovation Challenge for schools, organised by the Manufacturing Technology Association, and Mucklow hopes that through this and other measures it can inspire the next generation of engineers and technicians.

"One of the key things for us here is apprenticeships; that's been a really important

"We're very keen to ensure our investment in innovation matches customers' demands"

Alan Mucklow

focus for us over the last years in term of developing the skills that will keep our company moving forward," he says.

"We have just launched an app, which will hopefully drive more connectivity with our customers and help us to service them, but we need to service them with highly trained, highly skilled service engineers, so it's important for us to train our staff to have the highest level of knowledge on the latest technologies.

"Manufacturing is hugely important for the UK and we're very proud to have our European manufacturing centre in Worcester," concludes Mucklow. "As we approach our 30th birthday, I think we're an example of how you can be successful with investment in innovation.

"Clearly that's important for all British industries, to take the same lead to maintain a competitive advantage. British manufacturing is on a very good direction at the moment, and motorsport is taking a lead in that." ■



McLaren has 25 Mazak units running around the clock

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Ohlins dampers are used at all levels of the sport

EcoBoost Dry Sump Kit

TITAN, THE LEADER IN DESIGN AND DEVELOPMENT of engine, steering and drivetrain components, is launching an exciting development within its product range, which it will be demonstrating at stand 8230.

Working with leading motorsport businesses to develop new products and solutions, Titan is a major supplier at all levels of motorsport engineering. This year at Autosport International, Titan is launching a new range of products to suit the Ford EcoBoost 1.6-litre and 2.3-litre engines, building on 30 years' experience in the industry developing high-performance engine components.

Included in this range is the Titan-developed 1.6-litre EcoBoost Dry

Sump Kit, offering optimum performance, reliability and efficiency. The kit is supplied with a twin-scavenge, high-capacity geared pump, and a baffled sump with integrated windage tray for maximum oil circulation and flow. A Dry Sump Kit has also been developed for the 2.3-litre EcoBoost Engine, which is supplied with a three-stage geared pump.

Titan has also developed two flywheel options for this engine, including the super-lightened flywheel, weighing 3.67kg and suitable for a 7.25" clutch, perfect for any racing application.

The other flywheel is suitable for use on a standard size clutch, weighs 4.6kg, and is ideal for fast road applications. Both are a single-mass design, reducing issues arriving from additional moving parts, as well as reducing the rotating mass of the engine.

The range is completed by the development of bellhousings to suit a Type 9 gearbox, available in both long (192mm) and short (173mm). Fitment is also suitable for Ford Zetec SE/Sigma application.

Visit stand 8230 for more details.



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GOODRIDGE HAS RAISED THE BAR WITH ITS enhanced flexible-hose offering, which it is delighted to announce.

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A patented 316 stainless-steel helical wire wound into the external PTFE convolutions provides superior kink resistance and increases vacuum resistance to 200C while retaining all the flexibility demanded by today's top motorsport teams.

To maintain the traditional advantages of Goodridge's lightweight G-Line XF range, G-Line Ultra also features increased bore sizes and associated fittings to offer maximised and uninterrupted flow. G-Line Ultra is available with both 316 stainless steel or aramid braid to suit any application and withstand the most extreme applications and conditions.

For all enquiries and orders please contact sales@goodridge.com.



Variohm EuroSensor

VARIOHM EUROSSENSOR HAS ADDED AN 8mm D-shaft option to its motorsports-proven Hall Effect angle-sensor range, greatly increasing the interfacing flexibility of its Euro-XP non-contacting angle sensor, which is available with a choice of 32 or 38mm PCD mountings.

The D-shaft, with its integral magnet, makes for easier installation – particularly for throttle-position sensing – without the need for a separate coupling. With the optimal magnet to sensing-element gap maintained within the assembly, and a choice of mounting diameters, form-fit interchangeability with competitive models is made easy. The coupling-free sensor is also convenient for direct connection on other motorsport position-sensing applications such as steering angle, suspension and gearbox.

The comprehensive 28mm diameter Euro XP family, also available with Form 'U', spring coupling or separate 'Puck+Magnet' versions features the motorsports industry-preferred 5 VDC ratiometric output and includes a redundant dual-track 360-degree measuring range for safety-critical use.

With two programmable angles from 30 to 360 degrees for both measurement range and characteristic curve, the sensor can be configured for a constant voltage output over predefined angles, which is very useful for gearbox applications. The position output covers 5% to

95% of the 5 VDC supply voltage; and, being absolute, it does not lose position after power loss. The Euro XP's precision combines an independent linearity of +/- 0.5% of each signal range with repeatability to better than 0.2%.

The new D-shaft sensor joins the Euro XP family with completely contactless technology and a mechanical bearing-free design, giving a long-life specification in excess of 50 million movements. The fully encapsulated sensor element ensures complete environmental protection – rated to IP68, in addition to IEC 60068-2-6 protection against shock and vibration – making it a perfect choice for challenging track conditions.

The sensor is moulded in highly resilient glass-filled PBT plastic with threaded inserts, and a reinforced mounting flange with stainless-steel kidney washers that add further durability. The D-shaft material is moulded nylon 66 and the 32 or 38mm PCD mounting for two M4 screws includes slots for radial adjustment. Three cable-exit offsets are possible, and electrical connection for the standard model is Raychem 55 cable and DR-25 sleeving at 500mm length, with various connector options.

Variohm EuroSensor holds large stocks of the complete Euro XP product range, which can be shipped, fully programmed, within 24 hours of receiving your order.



VARIOHM
EUROSSENSOR

SHOCKS ROCK HIS WORLD

For 40 years, founder, owner and CEO Kenth Ohlin has given his all to the company that carries his name, Ohlins Racing AB. His passion remains undimmed

Late last year it was announced that Kenth Ohlin would be stepping down from the role of CEO at the company famous for its shock absorbers; but while he plans to slow down, he won't stray far away from his passion.

"I have no intention to stop," smiles Ohlin, "but I will take care of other tasks associated with Ohlins Group, and I will still be involved in the technology, which is my real interest. I will also be more involved in the strategic side for Ohlins Racing as I continue on the board."

The son of an engineer, Ohlin was born north of Stockholm in 1949. He acknowledges how much he learned from his parents: "They taught me the value of hard work early in life. I was raised at a mechanical workshop that my father owned, and lived in a small town that had quite a number of Swedish motocross riders who trained and competed nearby. I had the privilege to watch the great riders train, and built an interest in motocross and competed myself.



Ohlins has gone from 'garage' company to world player

JOAKIM BRAUN/ALFAKANAL



Technology still inspires company founder Ohlin

JOAKIM BRAUN/ALFAKANAL

"I was born at the right time," he continues. "Swedish motocross was blooming and one could take inspiration from talented engineers who worked on improving the motorbikes. This was a period when there weren't that many modifications available to buy; if you wanted to improve something, you had to do it yourself. And through my parents' workshop I was able to learn the practical aspects from skilled people with a great deal of expertise."

First, though, came a motocross career; racing around the world gave a greater opportunity to learn from other technicians, and inspired him to apply that knowledge to his own machine.

"In the early '70s, the contacts I made probably gave me a headstart on many others," remembers Ohlin. "In my motorcycle career I had been working with the damping characteristics and had knowledge of how bad the suspension was on a bike during this time. I decided to develop my own shock absorber, which would correct the weaknesses. During this time there were no products on the shelves, so it wasn't so hard to develop a new and better product. Today it's a completely different story."

Ohlins shock absorbers were soon a force to be reckoned with, helped by a world championship win in 1978. Husqvarna placed an order for 10,000 shock absorbers to equip their bikes.

"This showed that we were on the right track and could hold our own as an OEM," says Kenth.

"At first we were alone in having a dedicated racing service. I took care of that myself for many years, packing my old Mercedes bus full and setting off around Europe every weekend, servicing shocks at races and then returning home to work on Monday evening. I had the bus fitted with shelves, cupboards, a workbench and a small washing machine. It's not like it is today, but it got the job done. Above all, we were available in the pits when we were needed!"

On four wheels, a European Touring Car Championship title followed in 1986, another of many successes the founder looks back on fondly. "To have had the chance to build this business from a 'garage' company to the large worldwide corporation we are today with a turnover of €100million gives me pride," he smiles. "Together with so many talented and hard workers we have been able to achieve so many great results together."

Now it's time for him to throttle back a little. "Ohlins has been a huge part of my life for the past 40 years, perhaps too much! It has been 24 hours a day for me and unfortunately I've not had enough time for my family – my wife, children and grandchildren. I'll still work, but at 80% now. I'll have more time with my family."

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