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POLE POSITION

All our thoughts are with the Schumachers

I HAD HOPED TO WISH YOU A HAPPY NEW YEAR, but somehow it rings hollow following the awful news of Michael Schumacher's terrible skiing accident in the French Alps shortly after Christmas.

The news that he is lying in hospital in Grenoble, fighting for his life after doctors performed emergency surgery to remove blood clots and ease the pressure from his brain after his head struck a rock at high speed, was utterly shocking. Michael might have divided opinion on the racetrack during his ultra-successful career, but the reaction of the motorsport community was one of total support for him and his family.

As we learned from his retirement from Formula 1 the first time around, when he broke his neck in his motorbike crash at the Spanish track of Cartagena in February 2009, Schumacher is a constant thrill-seeker and adrenalin junkie – it's an essential part of who he is.

However, that he was skiing off-piste near his winter home in the Alps would be equivalent to a stroll in the park for you or me, and that a run ended with such terrible consequences is difficult to comprehend. Thank goodness he received such prompt and expert medical attention to give him every chance.

While in retirement the second time around, Michael had busied himself by combining his love of motorsport and that for his family through son Mick's karting exploits – and it was no surprise that his eldest son was with him at the time of his skiing fall.

Schumacher's glittering career was epitomised by his fighting spirit, typified by that amazing charge in the 1998 Hungarian Grand Prix to earn the most unlikely of wins, and despite the seriousness of his injuries one hopes that his inestimable spirit will make a difference in his latest battle.

As we went to press at the beginning of the week, everyone at AUTOSPORT wishes Michael the very best in his fight for life and are all praying for his full recovery.

● Due to the rising cost of producing this magazine we've been forced to raise the cover price to £3.60 from this issue onwards. In return, we vow to retain this magazine's position as the world's best motorsport weekly.



CHARLES BRADLEY EDITOR
charles.bradley@haymarket.com
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AUTOSPORT ENGINEERING

Our 28-page supplement looks ahead to some of the intriguing aspects of the all-important AUTOSPORT Engineering show at the NEC



THE BIG PICTURE

Eleven-time Dakar Rally winner Stephane Peterhansel took his Mini ALL4 Racing to the Austrian Alps to prepare for the Andes. See page 50 for full details







6

Ski crash leaves Schumacher

Formula 1's most successful racer of all time suffers life-threatening head injuries in skiing crash in the French Alps. EDD STRAW reports, as doctors place Schuey in artificial coma during treatment

Michael Schumacher was fighting for his life and in a critical condition following a skiing accident in France as AUTOSPORT closed for press.

The seven-times world champion fell on Sunday morning while on a family holiday at the Meribel resort in the Alps. He was skiing between two of the resort's most challenging pistes when he lost control and struck his head on a rock.

Schumacher suffered a major brain trauma in the impact and was airlifted to nearby Moutiers Hospital, which is around 10 miles away, less than 15 minutes after the accident. Initial reports suggested

that the injury was serious but not life-threatening, but a statement released on Sunday night revealed that his situation was far worse than first reported.

After initial treatment at Moutiers, he was transferred to the Centre Hospitalier Universitaire de Grenoble, which specialises in treating brain injuries for emergency surgery. An operation successfully removed a haematoma (an accumulation of blood), but the nature of the injury means that doctors caring for Schumacher would not offer any prognosis, saying he will continue to be treated "hour-by-hour".

He remained in an induced coma as of Monday afternoon.

Schumacher's wife, Corinna, and two children, Gina-Maria and Mick, were with him as was his personal physician, doctor Johannes Peil.

"I would say that this accident was particularly serious and was dealt with immediately at our hospital," said Professor Jean-Francois Payen on Monday morning. "He was immediately operated on after a brain scan and afterwards his condition is critical.

"As far as cerebral care [is concerned], all the recommended treatments have been introduced, but for the moment we are not able

to express ourselves with regard to Michael Schumacher's future.

"We are controlling his body temperature according to international recommendations. He is under general anaesthetic to reduce as much as possible any stimuli which are linked to treatment or which could possibly use more oxygen in his brain. The objective is to reduce as much as possible any kind of external stimuli and ensure good oxidation of his brain."

Schumacher's famously high levels of fitness will increase his chances of recovering. But it will be some time before an accurate prognosis can be reached given the

REACTION TO SCHUEY'S ACCIDENT

"My thoughts are with Michael Schumacher at this tough time. Michael more than anyone has the strength to pull through this."

Jenson Button

"Get well soon Michael! Hope to hear some positive news very soon."

Fernando Alonso

"Come on Michael, give us one of those race stints at pure qualifying pace to win through, like you used to. You can do it."

Martin Brundle

"We all know the depth of Michael's fighting spirit and send him all our strength and support in this latest battle. We sincerely hope that he will make a full recovery and will be with us again soon."

Mercedes F1 team statement

"Thoughts with Michael and his family and friends. If anyone can succeed it's Schumi. I hope there is good news soon."

Nico Rosberg

"Everyone at Ferrari has been in a state of anxiety since hearing about Michael Schumacher's accident. That includes the president, Luca di Montezemolo, who through the Scuderia team principal Stefano Domenicali is in constant contact with the family and those close to the German champion."

Ferrari statement

"My thoughts are with Michael and his family. Hope to hear something positive very soon."

Nico Hulkenberg



fighting for life

nature of the brain injury. It was confirmed that he suffered lesions to both hemispheres of the brain.

"We are currently not able to talk about after effects," said Payen. "We will give ourselves some time."

Payen also confirmed that the accident would likely have been immediately fatal had Schumacher not been wearing a helmet because of the high-speed nature of the impact: "We believe that, taking into consideration the very violent shock, his helmet did protect him. Somebody having this kind of accident without the helmet would not have got to here."

"Taking into consideration what we have observed, that despite a helmet he arrived with lesions that were quite severe, the shock must have taken place at high speed."

While the German was conscious after the impact, he was unable to lucidly communicate, which led to the decision to airlift him to hospital immediately.

"There were a number of serious lesions, but I am not going to tell you any details," said Professor Stephan Chabardes. "The impact was on the right side. At the time of the accident, he was agitated but not responding to questions. He did not have a normal neurological reaction."

During his car racing career, Schumacher suffered few major injuries. The broken leg he sustained when he crashed at Silverstone in 1999 was his most serious, but he did suffer neck and head injuries in a crash while testing a Honda Fireblade motorbike at the Cartagena circuit in Spain in February 2009.

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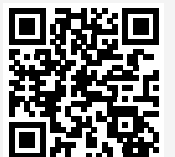


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Mark Hughes

MPH



As the echo fades on the last running of a 2.4-litre V8, the anticipation is of a hugely unpredictable start with F1's new 'eco' turbos

A couple of weeks before Christmas, Toro Rosso bade farewell to its V8-engined car with a few laps by Jean-Eric Vergne around Misano. A full-scream 2.4-litre V8 with Doppler effect is now seared into our minds after so many years as the sound of Formula 1, and it was quite poignant to hear it one last time, reverberating off the surrounding hills, the aural signature of a full-fat era now consigned to the past.

Looking to the future, the fine detail of the challenges of the new turbo V6 formula are as yet unknown. But the broad brush of them is: how do you maximise the efficiency of the electrical-energy harvest/storage/delivery to reduce the nominal fuel demand of the engine to therefore allow you to run more turbo boost (and consequently more total power) more of the time?

Within that very broad set of demands there are going to be all sorts of contributory technical challenges to overcome, all sorts of loopholes that these brilliant engineers are going to spot before someone else realises what they're up to and either has them stopped or copies (or improves) them. After the technical stasis of the V8 era, we're moving into an area of totally new technology still in its infant stages and there are sure to be a lot of crazy, unpredictable race results in the early part of the year.

But it isn't only the engineers who will be grappling with the new technology. For the drivers it's a totally new world, as Jenson Button explained last week: "There's going to be a lot of simulator work and running through things that are going to help us put the power down, because I don't think any of us are used to having torque. I've raced in Formula 1 for 14 years and I've never had torque, so it's going to be a new experience.

"I think it will be easier in reality but we're going to find it tough. In high-speed corners [with the new engines]



Expect to see more oversteer in 2014

controversy about traction control, in reality even when it was there it wasn't really working an area that was otherwise difficult for the driver. In fact, much more difficult was controlling the car on the limit on the way into the corner, and in that respect the deletion of automatic brake balancing (which went with the

"There are sure to be a lot of unpredictable, crazy race results in the early part of the year"

you're off the power for so long and you just can't get the power down — you're waiting the whole time. It's not like the V8s, where you have so much downforce and so little torque that you can just floor it, and even if you run a bit wide all you do is understeer off the circuit.

"With the 2014 car, if you floor it in a corner like Turn 3 at Barcelona, you don't just drive off, you immediately lose the rear because there is so much torque."

Controlling torque hasn't been much of a challenge (in the dry) for a few decades in F1 and, despite all the

advent of standard ECUs a few years ago, at the same time as traction control was finally banished) was much more significant but nowhere near as widely reported upon. For 2014 automatic brake bias is back, because of the practicalities of the huge torque reversal on the rear axle now that the harvesting capacity of the ERS is so much greater.

So, on the one hand we will have cars that are easier to control going into the corners but much more difficult coming out of them. This is going to be fun to watch. ❧

This year in motorsport

PORSCHE BACK WHERE IT BELONGS

New rules and the arrival of Porsche with Mark Webber will undoubtedly raise the profile and the level of competition in the World Endurance Championship in 2014.

Porsche ends its 16-year absence from front-line sportscar racing with its 919 hybrid to be run by an in-house factory team. The returning marque, a winner of the

Le Mans 24 Hours on 16 occasions, will take on established contenders Audi and Toyota in the most technically advanced racing formula in the world.

The 2014 LMP1 rulebook limits performance by mandating a maximum amount of fuel that can be used each lap, and manufacturers must run energy-retrieval systems.



HYUNDAI RETURN SHAKES UP WRC

Hyundai returns to the World Rally Championship with a Thierry Neuville-led team in 2014.

The i20 WRC starts the season short on development time, but with a team packed with drivers. Dani Sordo, Chris Atkinson and Juho Hanninen will all come off the bench at some stage this season to drive the second car.

Hyundai's return has given the driver

market a significant shake, with UK contenders Kris Meeke and Elfyn Evans landing full-time seats. Mads Ostberg moves from M-Sport to Citroen to join Meeke, while Mikko Hirvonen goes in the opposite direction to partner Evans as he returns to the Cumbrian squad.

Robert Kubica will also drive a Ford Fiesta RS WRC for his own RK M-Sport WRT set-up in 2014.



Citroen and Loeb hit the track

Citroen makes its World Touring Car debut this year, its attack spearheaded by Yvan Muller and Sebastien Loeb, who between them boast 13 world championship crowns.

The French marque has conducted

several tests with its new C-Elysee, giving it a sizeable headstart over 2014 rivals Honda, Lada and Chevrolet, all of which are yet to hit the track with their cars built to this year's new rules package.



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New era for US sportscars

Grand-Am and the NASCAR-owning France family have taken over the American Le Mans Series, though billed as a merger, to create the United SportsCar Championship. Upgraded Grand-Am Daytona Prototypes and LMP2 machinery will fight it out in what will be known as the Prototype class. Rules to equate two very different types of racing car were only finalised in December.



F3 engine stakes rise

The most important development in European F3 is new engines, which has brought Renault back to the fold to battle Mercedes, Volkswagen, Nissan and British firm Neil Brown. The calendar includes a return to Pau as well as new dates at Spa and Imola. The rebuilding process of British F3 means sticking with the old engines, and the seven-event schedule (six in the UK) includes a trip to Thruxton, Europe's fastest road circuit.

MONTOYA COMEBACK TOPS INDY CHANGES

Juan Pablo Montoya's seven-year foray into NASCAR ends with his arrival at Team Penske, where he will run alongside Will Power and Helio Castroneves as the team works to end its IndyCar title drought.

There has also been change at Chip Ganassi Racing, where Dario Franchitti's enforced retirement has prompted the team to move new arrival Tony Kanaan into its storied #10 entry alongside champion Scott

Dixon, while bringing Ryan Briscoe back into IndyCar full-time as well. The team also switches from Honda to Chevrolet engines this year, while Andretti Autosport moves in the opposite direction.

Looking more broadly, IndyCar's 18-race schedule has been controversially compressed into a blink-and-you'll-miss-it five months, featuring a new race on the Indianapolis road course in May.



ELECTRIC KICK-OFF

Formula E becomes reality when its 2014-15 season kicks off in China on September 13. The series has 10 events, culminating in a summer '15 finale in London. The grid was recently completed, with Virgin Racing and a Leonardo DiCaprio-backed Venturi Grand Prix entry taking the final spots. Several high-profile drivers are believed to have been targeted to compete.

FORMULA E ENTRY LIST

- Drayson Racing
- China Racing
- Andretti Autosport
- Dragon Racing
- e.dams
- Super Aguri
- Audi Sport Abt
- Mahindra Racing
- Virgin Racing
- Venturi Grand Prix

GT race series get twinned

The FIA GT Series is taking the name of successful cousin the Blancpain Endurance Series for 2014.

The BES and the 'new' Blancpain Sprint Series will total 12 events between them and be united under an umbrella championship. Blancpain GT Series teams' and drivers' titles will be awarded on the basis of results across the two series.

Series boss Stephane Ratel hopes this and a major prize fund for the sprint series will boost entries.

Q&A



ANTONIO FELIX DA COSTA NEW BMW DTM DRIVER

How do you think you will fare in the DTM with BMW?

It's hard to say. I will try to learn and I know I need to earn my place and earn the respect of the others. But I want to get some good results.

What can you get out of moving into touring car racing?

DTM will open up new things for me, so as I driver I can develop. If you keep racing in the same [junior] series you gain experience, but there's not so much learning.

What do you make of the car?

I was quite surprised when I tested it. In the medium and fast corners there is a lot of downforce. In the slow corners you feel the extra weight, but it's interesting because you have to drive it with your mind and work with the car.

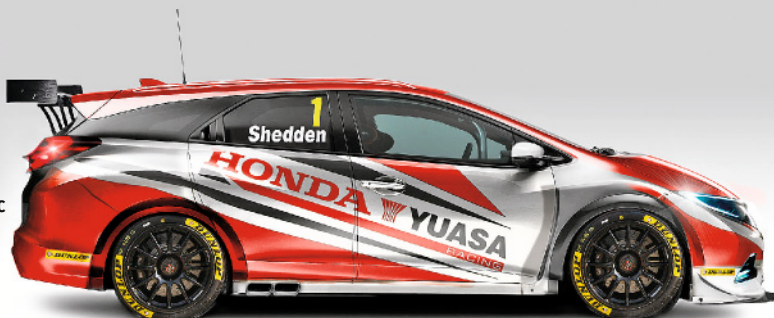
New Honda estate tops BTCC bill

The works Honda squad will run an estate version of its NGTC Civic in the British Touring Car Championship.

Former champions Matt Neal and Gordon Shedden will drive the Civic Tourer, while 2013 champion Andrew Jordan will stick with his Eurotech-run Civic coupe.

Ex-British Formula 3 champion Marc Hynes will return to racing in a third Triple Eight-run MG6, while BTCC frontrunner Adam Morgan brings the first NGTC Mercedes to the series.

The championship's turbo-boost-equalisation changes will also be reduced and there will be harsher penalties for driving infringements.



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Ben Edwards

BBC F1 commentator

The BBC F1 lead commentator is excited about the new era that kicks in for 2014 and feels sure the TV footage will be even more cutting-edge

As the 2013 Formula 1 season recedes into the background we are left with a series of images from the final year of the V8s; television pictures that surprised or delighted us that have then been chosen for the season reviews and the highlights reels so that we get to see them again and again.

Kimi Raikkonen's rare smile on winning the first race in Melbourne, Fernando Alonso tripping over his front wing in Malaysia, Ferrari mechanics bashing his rear wing in Bahrain. Tyres stripping, then exploding, wheels falling off and team-mates eyeing each other suspiciously. Mark Webber on fire, Nico Hulkenberg gleeful at Monza and Korea, the reaction of the Mercedes garage on Hamilton's pole position at Spa. Record-breaking pitstops, taxi rides and donuts, cars running loose and drivers losing rides. Last season didn't feature a classic fight for the title, but it did produce a huge amount of fascinating footage.

Most of that footage comes during the race itself, and is captured by the TV arm of Bernie Ecclestone's empire. Wherever you are in the world, the pictures you are seeing on the general race feed are the same. Once the F1 logo appears at five minutes to the hour, all broadcasters are contracted to stay with that feed until the end of the race, and only then can they break away to deliver their own brand of review, analysis, interviews and highlights.

As a commentator, I have no say or influence on the

on-board, to watch team reactions, to analyse an incident from multiple angles and then just when you get into a flow about something, the radio interrupts and you have to start all over again, or just forget it and move on.

That, for me, is one of the major areas of change from when I first commented on F1 in the mid-'90s for Eurosport. Now, the mission is to look for the drama, the action, the controversy, whether wheel-to-wheel or over the airwaves. Long gone are the days of endless laps by the leader. Thinking back to the latter part of last season, how often did we sit on a shot of Sebastian Vettel dominating a race? He was left to his own devices and the director went chasing the stories, and that's what we all enjoy as enthusiasts of motorsport. Sebastian gets all the coverage he needs once he steps out of the car, but during the race we want to see the action.

This year, the challenge will be to explain what's happening with the new power units. Which team is using its fuel more efficiently? Which driver is making the most of the increase in electrical power and torque available without damaging the tyres?

FOM have had plenty of discussions with the teams and are fired up to communicate this new environment through revised graphics both on-screen and delivered to the commentators so that we can try to enlighten our viewers on fuel-flow rates and stored electrical energy.

Car identification should be easier, with clearer

“Whatever happens, I'm sure F1 television coverage will continue to break new ground”

pictures we will be watching during that time. Unlike in British Touring Cars, where the TV director is listening to the commentator and can react to what he's talking about, in F1 the sheer number of commentators working in different languages precludes that. We may also disagree on what is the key aspect of any race; for a commentator in Venezuela, the priority is always going to be the progress, or otherwise, of Pastor Maldonado...

So, swiftness of reaction is vital when covering a race, not only in terms of reading the situation, but also when the director suddenly cuts away to a shot of a car spearing into the barriers that he has caught out of the corner of his eye from the vast bank of monitors in front of him. That need to react quickly has always been a part of good commentary, but the sheer scale and complexity of F1 coverage keeps you on your toes like nothing else.

There are more cameras focused on an F1 track than in any other form of motorsport, more opportunities to go

numbers and more distinct colour coding between team mates, and I'm hopeful that each team will produce a more individualistic design in this first year of new aero regulations. I'm also looking forward to riding on-board with the new generation of turbo V6, electrically enhanced drivetrains, and wondering just how they are going to sound.

Who knows? Perhaps there'll be some new angles, new ways of seeing grand prix racing as we continue through the decade. How about adding to the thermal camera with a virtual airflow camera, so we can see how those wings, flick-ups and turning vanes really do affect the wind? Or a camera filming in the driver's briefing, allowing us into one of the sport's inner sanctums as we saw in the film *Senna*?

Whatever happens over the next few years, I'm sure F1 television coverage will continue to break new ground and I feel privileged to be at the sharp end of it. ❄

What Massa really thinks of Ferrari

A loyal team player for eight seasons, Felipe Massa's Ferrari career is finally over. Now Williams-bound, **EDD STRAW** took the chance to find out what really went on inside the Scuderia



14

Felipe Massa pauses. After the usual assertions about professionalism and being a team player, he offers his answer to the question. “That was one of the most difficult days of my career,” he says. “Maybe I would do it differently.”

The day under discussion is July 25, 2010. The day Massa was told by long-time race engineer Rob Smedley that “Fernando is faster than you”. The day he had to relinquish what would have been his only grand prix victory since 2008. The day he was ordered to give up a win to team-mate Fernando Alonso exactly one year on from coming close to giving

his life for the Ferrari cause. The question: would he ignore team orders were he to live through the German Grand Prix again?

Massa's answer is non-committal, but revealing. Perhaps that's not surprising for a driver who cites that day as his worst as a Ferrari driver. Incredible, when you consider the head injury he suffered during qualifying for the 2009 Hungarian GP. But while that accident was an endstop for the successful first half of his Ferrari career, what happened at Hockenheim was the defining moment of his disappointing second chapter at Ferrari during which he stood on the podium only eight times and failed to win a race.

Massa is sincere when he describes himself as a team player, but it's understandable he sees what Ferrari asked him to do that day as step too far

given the circumstances even though, from a purely competitive point of view, it did boost Alonso's world championship hopes.

“I've always gained more in my life by being professional than by not being professional,” he says. “If you are working for a company, you need to be professional. I don't know, maybe I would do the same, maybe not. But it was not nice and a difficult day for me. It was a bad thing to happen and it touches your confidence. We are human beings and sometimes things happen that are too much.”

“I was trying not even to speak after the race. It was bad for everybody, for the team as well as me. I'm sure if things happened again, they would also think about it twice. But that is how it happened.”

Massa's eight-season Ferrari odyssey is now in the history books after he was dropped by Ferrari



Alonso uses Massa to slipstream him in qualifying at Monza

in favour of Kimi Raikkonen. The Williams-bound 32-year-old is preparing for his first season in Formula 1 outside of the Scuderia since his final campaign with Sauber in 2005. And he is revelling in it. Visibly more relaxed after his years of toil as Alonso's wing-man, the prospect of leading the venerable team back to the glory years genuinely excites him. The move is not motivated by lack of imagination and the desire to cling to a place on the grid with a struggling team, even though the question of whether he can make a success of it remains to be seen.

It's no secret that the years alongside Alonso have proved Massa's toughest. Both in terms of results, which have been patchy, and the mental rigours of supporting Alonso, it has been a period of more lows than highs. It would be giving Massa ▶



Massa was told to gift Alonso 2010 German GP win

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► a get-out-of-jail card to blame all of his struggles on the number one/number two dynamic and by his own admission Alonso has outperformed him, but there has been no doubt about the pecking order within the team. Perhaps that has made it harder for Massa, who rode a growing wave of confidence from his first year with Ferrari in 2006 through to his near-title miss two years later, to get the best out of himself. But the fact remains he has been a serial underperformer since 2010.

His status alongside Alonso was established early on. After outqualifying him and finishing second to Alonso in their first race together in Bahrain, Massa held the Spaniard at bay in Australia, costing his team-mate a second or even first place. Alonso's management subsequently had talks at Maranello to ensure this didn't happen again. The die was cast, Massa was put in his place and, a few months later, Hockenheim happened.

"In the first race, we were very competitive but then the situation changed a little bit," says Massa. "But that was what the team wanted to do. He showed a very good level of performance on the track, and it was pretty clear that he is one of the top drivers in the history of F1."

"But even if it was more difficult with Fernando, I had a positive time as well. It is not my style to complain, to say negative things. I was part of Ferrari for a long time. Maybe I didn't have what I wanted in terms of results because I didn't win the world championship, but I was very close. You have great times and difficult times so now I need to work to the future."

Part of that future is how Massa's last two team-mates, Alonso and Raikkonen, fare in the same team. Massa suggests that, of the two, Alonso is the better equipped to thrive. That's a view that the majority of the grand prix paddock probably shares, but having raced alongside both of them Massa is best placed to make a judgement.

"Both have incredible talent, not just Kimi and



Massa won the race but lost the title with dignity in Brazil '08

"It is not my style to complain... Maybe I didn't win the championship, but I was very close"

Fernando but Michael [Schumacher, Massa's 2006 Ferrari team-mate] as well," he says. "They are all top talents. But maybe Fernando is the more able to understand the situation. He understands 100 per cent what he needs to do in qualifying, 100 per cent what he needs to do in the race. He is very intelligent and able to consider everything for the race. He is quick, consistent and his driving style is very good."

"In races where you have a problem on the front

tyres, he has a lot of difficulties because he uses so much the front tyres. But stressing the front tyres like that helps the rear so his driving style is very good as well. At most of the tracks that works. At some, where you have a front tyres issue, he struggles a lot. And he is better than the other drivers in terms of understanding the race and analysing everything."

And yet, for all Alonso's qualities, Massa was able to get closer to him this year in qualifying than

he had in his previous three campaigns. This leads down an interesting path, inevitably to the never-ending talk about tyre characteristics. The performance of the rubber is a factor that Massa indicates has played a part in his recent struggles.

"In qualifying, yes, but he was better in the race," says Massa of how good his pace was relative to Alonso in 2013. "I know the speed I have and I have had some years where I was struggling with different things like the tyres and the way the car

MASSA'S FERRARI CAREER SEASON BY SEASON

2006

After a patchy start, scoring only 28 points in the first half of the season, recovers well to win the Turkish and Brazilian GPs and finish third in the championship.



2007

Wins three races and only drops out of the title hunt with four races to go after suffering a suspension failure at Monza. Finishes fourth overall.

2008

Claims his sixth win of the season in the season finale at Interlagos, but Lewis Hamilton's last-gasp pass on Timo Glock costs Massa the drivers' championship.



2009

Shows well in an uncompetitive Ferrari but misses the second half of the year after he hits a spring shed by Rubens Barrichello's Brawn during qualifying in Hungary.





A wayward spring in Hungary almost cost Massa's life



Massa's long road to a Ferrari race seat

Felipe Massa walked away from his first meeting with Ferrari team principal Jean Todt in early 2001 with a simple instruction: "Win the championship, and if you win we will speak again." Driving for Draco Racing, he did win the second-tier Euro F3000 title.

"My team was sending reports race by race of everything that I was doing," says Massa. "I went back to Ferrari at the end of the year and then I signed an eight-year contract."

With Kimi Raikkonen leaving Sauber to join McLaren for 2002, Ferrari eased Massa's way into a try-out for the Swiss squad. After five days of running at Mugello in September and October, Sauber signed him up.

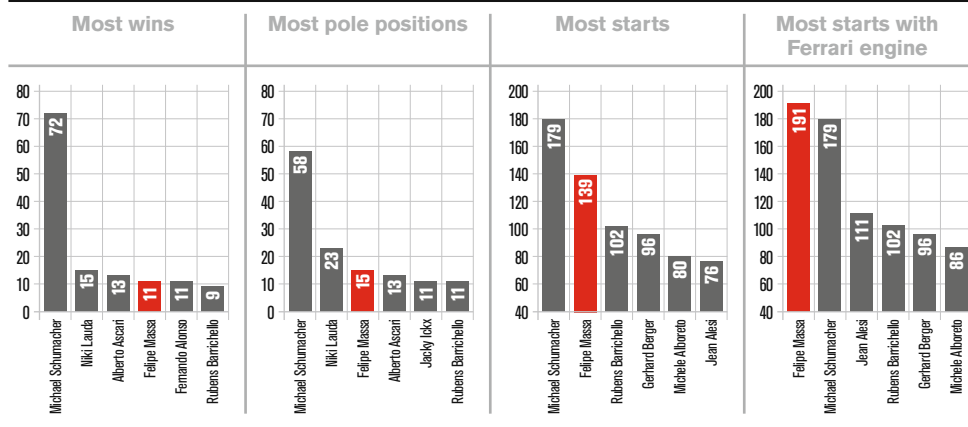
"I had a very good first year with Sauber with some good races and points," he says. "I had a good battle with [team-mate] Nick Heidfeld. He was a bit better than me in the first half of the year and I was better in the second half but the problem was that Peter Sauber already decided to change driver in the middle of the year. So I didn't have the chance to carry on in 2003.

"Then I was test driver for Ferrari. I drove a lot and learned a lot, which was good for me. After that, Sauber wanted me back so I raced for them for two years."

Draco boss Adriano Morini, who was key in bringing Massa to Ferrari's attention, relinquished management of the Brazilian in summer '03. Nicolas Todt's newly formed All Road Management took him on and helped him back into a Sauber race seat in '04.

In '05, Massa outscored team-mate Jacques Villeneuve and earned the chance to partner Michael Schumacher at Ferrari. "Sauber sold the company to BMW and they wanted to sign a three-year contract with me," says Massa. "But I had the chance to race for Ferrari for just one year. The BMW contract was better, but Ferrari is Ferrari and it was much better for me to race for a top team and learning there instead of trying to build up a new team with BMW."

HOW MASSA STACKS UP AGAINST THE FERRARI GREATS



is. The Ferrari was always a very difficult car to warm up the tyres on, particularly with the very hard Bridgestone tyres in 2010. That's why in qualifying it was more difficult than in the race.

"It's something that was never a problem for Fernando because being so aggressive with the front tyres, he never has trouble warming them up. But you can see why the Ferrari was better in the race than qualifying. With the fuel in the car, it was easier to warm the tyres and Ferrari used them less. But this has been a really big problem for Ferrari in qualifying since 2009 and it was the same in 2013."

These are legitimate obstacles Massa has struggled, and often failed, to overcome in recent years. That's a failure of adaptability and while his assertion that the demands of F1 cars now compared to his '08 pomp are very different, he undoubtedly should have done better.

The elephant in the room is the consequence of his Hungary accident. While Ferrari's fortunes have

ebbed since then, the difference between Massa's results from 2006-2009, when he claimed 11 wins and almost the world championship, and since his 2010 return is stark.

Massa himself is adamant that he suffers no ill-effects and medical tests have shown full recovery. But, inevitably, where head injuries are concerned it's not always that simple given the complexity of the brain. He's certainly fit enough to drive a grand prix car, and very well, but it's plausible he has lost that fraction of a per cent. Plenty of other drivers have also had full recovery but not quite been the same behind the wheel.

But while a lot has changed in F1 since 2008, it's impossible to reconcile the often devastatingly effective Massa of that year with his far more erratic recent counterpart. The man himself believes, though, far from being worse than before, he has continued on an upward curve. "I did everything, so many tests and I am the same as ▶

2010

Returns from his injuries and outqualifies new team-mate Fernando Alonso on his comeback in Bahrain. Fails to win a race but does give away victory in Germany.



2011

Fails to stand on the podium once and finishes sixth in the championship with less than half of the points scored by Alonso. Best finish is fifth.

2012

After a dismal first half of the year, recovers well to salvage seventh in the championship and claims his first podium in over two years on home soil at Interlagos.



2013

Outqualifies Alonso eight times, his best Saturday performance relative to Alonso, but third place in Spain is his only podium. Finishes eighth in the championship.

WE RATE FELIPE MASSA'S 10 GREATEST FERRARI DRIVES

AUTOSPORT.COM



GILHAM/GETTY

Massa believes his nightmare Singapore GP cost him '08 title



Massa had a poor 2013 British GP practice but stormed to sixth in the race



Domenicali greets Massa after his only 2013 podium in Spain

► before," he says, emphatically. "Nothing was different, I was always normal. So I don't think the accident was the main issue.

"I am sure I have improved and I am sure I can be where I was before. I had everything perfect for me at that time. I had the tyres under control, the car was how I like to drive, the team was very on my side.

"Many people say that the accident changed me completely, but I don't think so. If the accident was the biggest problem, why am I making great starts, doing great overtaking moves and still quick? If you lose, you lose."

The fact remains that, while there were a few mistakes, Massa was outstanding for much of the 2008 campaign and would have been a worthy world champion. His driving style could never be accurately described as precise, but he was able to keep the minimum speed through corners high, carrying good entry and exit speed even if apices were occasionally somewhat vague. His performance in Singapore that year, when he claimed pole position by an astonishing 0.664s from title rival Lewis Hamilton, and eight-tenths ahead of team-mate Raikkonen, captures just how good he was at times.

That race still gives him nightmares. While people usually focus on the season-ending Brazilian GP and the enduring image of the dignified Massa, hand on heart, holding back the tears on the podium after winning the race and

losing the title to Hamilton's last-gasp pass on Timo Glock, it was the Singapore Grand Prix that he believes cost him.

He had the race under control, with a cushion of around four seconds over Hamilton, when Nelson Piquet, under orders from the team, spun his Renault into the barriers and brought out the safety car. Piquet's team-mate, Alonso, who had made an early pitstop, was promoted from the back to the front while Massa's race was ruined when he was released from his pit with the fuel hose still attached. He eventually rejoined, but failed to score. Hamilton pocketed six points for third and went on to nick the title by just one.

A year later, it emerged that Renault had manipulated the race, but the result stood. This is what really eats away at Massa.

"When you see this kind of thing, it is really frustrating," he says. "It is not part of racing, it is not part of the rules. That was the most significant race in me losing the championship. With what happened in that race, I cannot believe that the federation was able to leave it like that. They needed to cancel the race because the result was different [from what it should have been]. We know how political our world is. Sometimes things happen that are not right."

And who is Massa's new boss, on the technical side at least, this year? None other than Pat Symonds, who was banned from F1 for the Singapore crash scandal along with Renault's

team principal, Flavio Briatore. "For sure, I will discuss it with him," says Massa. "But I am sure he is not the most important guy in what happened. Sometimes people pay more than they need to. I know how it works, these situations, in F1 but I will definitely talk to him."

As for Alonso – officially exonerated from knowledge of the scheme – Massa suspects he did know. "He knew everything," he opines. "But he would never tell me!"

That's about as close as Massa gets to saying something negative. His 'no regrets' outlook on his years at Ferrari, even the bad ones, is sincere and, in a sport full of bitterness, refreshing. While you wouldn't bet the farm on him rolling back the years, it would be one of the feel-good stories of 2014 to see as likable a character as Massa thrive with Williams. As the man himself points out, the 'guard of honour' he received from the Ferrari crew as he pulled out of the garage ahead of his final start at Interlagos shows just how popular he is at Maranello.

"I was the first young driver they helped before F1 and managed to race there for a very long time, becoming the driver with the second most starts," he says. "I have a lot of friends who will still be my friends in the future. I had incredible races, an incredible experience. What they did for me was something I never saw a team doing, so it shows that human connection.

"I had a great time with Ferrari." ❧

Looking to a new F1 future with Williams

He didn't start talking to Williams about a move there until the Japanese GP weekend. But it didn't take long for Massa and the famous squad to strike up a deal that will keep the Brazilian at the team until at least the end of 2015.

He insists that quitting was an option if he had been unable to find a competitive seat. In Williams, he has linked up with a team down on its luck in 2013, but with plenty of potential. It's a marriage of convenience on both sides, with Massa offering experience and commercial benefits and Williams having the raw material to at the very least emerge as a regular points scorer in 2014.

"I was always very open about that," he says of whether he considered quitting. "If I didn't have a team I can be competitive with, I would stop. I had no thoughts of going to a smaller team and never spoke to one.

"I spoke to Lotus, Force India and even McLaren, although I don't think I had any chance of going there and they went for the young kid [Kevin Magnussen] which is nice because he is there on talent.

"But I wasn't looking for a team just to stay in the picture. I want to build something, to fight. It's a lot of work, but there is the possibility to do that with Williams."

Massa is seen as the lead driver by Williams, although he will face a stern test up against Valtteri Bottas. But having the chance to be a team leader for the first time certainly appeals to him.

"It's a very important moment with the rule changes," says Massa. "Williams wants to be back in the game after one of the worst championships in their history. They need to put some work in, but I want to be a very important part of changing the team."



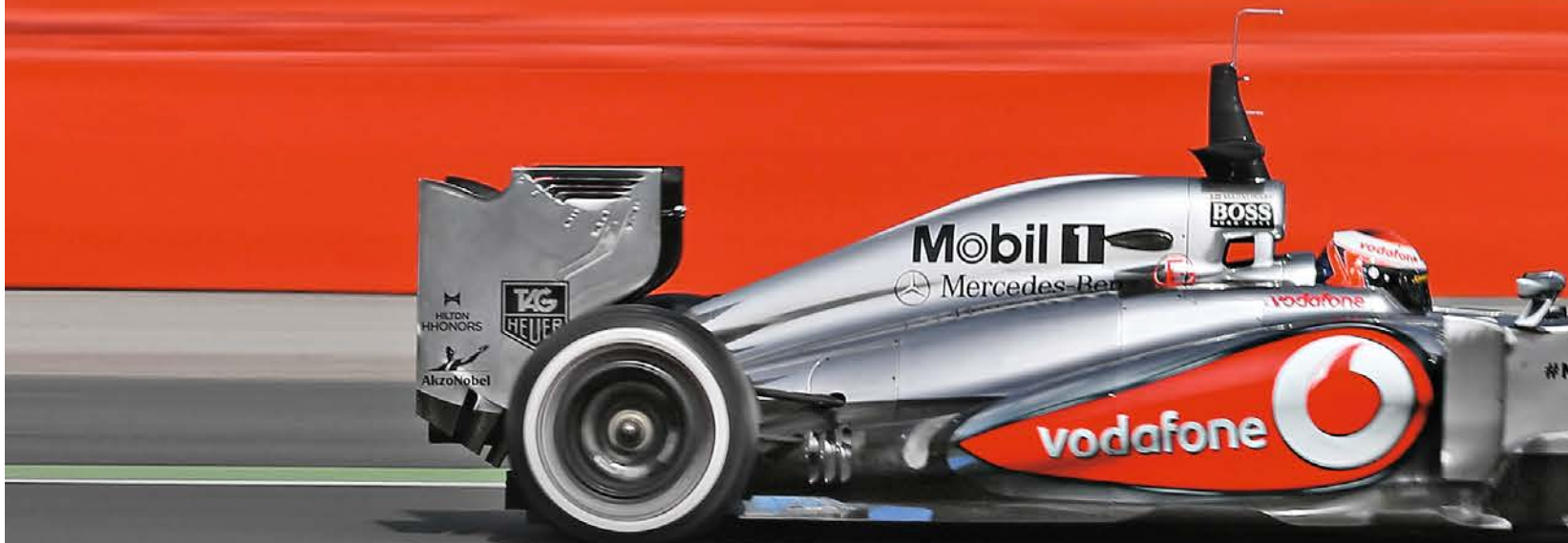


“The pressure is to win and that’s how I want it”

McLaren has just had a difficult season and the lack of testing makes life tough for rookies, but new recruit Kevin Magnussen isn't looking for excuses, as **JONATHAN NOBLE** found out



Magnussen got a taste of
2013 McLaren at Silverstone
young-driver test in July



THOMPSON/GETTY

22

Sergio Perez found out the hard way that a top Formula 1 team such as McLaren takes no prisoners if you don't deliver. So with that in mind, you could forgive his rookie replacement Kevin Magnussen for wanting his bosses to go easy with their expectations.

With all-new regulations delivering perhaps the biggest off-season change that F1 has ever experienced, plus modern testing restrictions meaning no chance to gain valuable mileage, Magnussen has all the reasons he could need in demanding a bit of leeway before he's required to produce top results.

Yet the 21-year-old certainly doesn't sound as though he wants McLaren to hold back in heaping on the pressure. He knows he's been signed to deliver, and that the only way he and his team will be happy is if they are winning. "That's how it should be and how I want it to be – there should be pressure to win," he says. "It's no good having pressure just to be in the points or finish races."

Such a bold statement of intent must not be viewed as misguided arrogance, or a naive assumption that life in F1 will be easy. Spend any time with Magnussen and you quickly realise that he is a man who fully understands that natural talent alone can carry you only so far in this business. He knows the work ethic is just as important for the drivers as it is for the engineers and designers.

It's a lesson he put to good use in 2013 to win the World Series by Renault's flagship Formula Renault



Renault 3.5 title joy
with DAMS team

DUTCH PHOTO AGENCY/LAT

3.5 category, and in doing so quelled the wilder aspects on display during his early career to become a fully-rounded, mature racer.

That was why he kept his head down and focused on making himself a better performer, even during the distractions of his possible (but ultimately aborted) young-driver test outing

with Force India last summer, and the speculation over Perez's future towards the end of the 2013 campaign. "I tried not to think too much about it," he explains about the whirlwind of speculation that surrounded him throughout the middle of last year.

"I had a job to do in World Series and I had to focus on that 100 per cent. I knew that this would

"This year I thought I became much more of the racing driver I wanted to be. I grew up"



The second place that convinced McLaren

Former McLaren boss Ron Dennis once famously said that second place was first of the losers. But in current team principal Martin Whitmarsh's eyes, it was a runner-up spot for Kevin Magnussen last year that convinced him the Dane was ready for Formula 1.

At Monza's opening round of the Formula Renault 3.5 Series, Magnussen was involved in a frenetic battle with expected title rival Antonio Felix da Costa for the lead of race two.

There was little separating the pair in terms of pure pace, so when leader da Costa made an error and ran wide at the exit of the second Lesmo early on, Magnussen seized the opportunity and drafted brilliantly past the Portuguese into Parabolica.

Da Costa knew that if he let Magnussen get away then the race was lost, so he tucked under his rival's rear wing on the run down the start-finish straight and launched a very aggressive attack into the first chicane. Magnussen briefly blocked to the inside but, after da Costa switched left, he decided that discretion was the better part of valour and elected not to dispute the position with too much vigour.

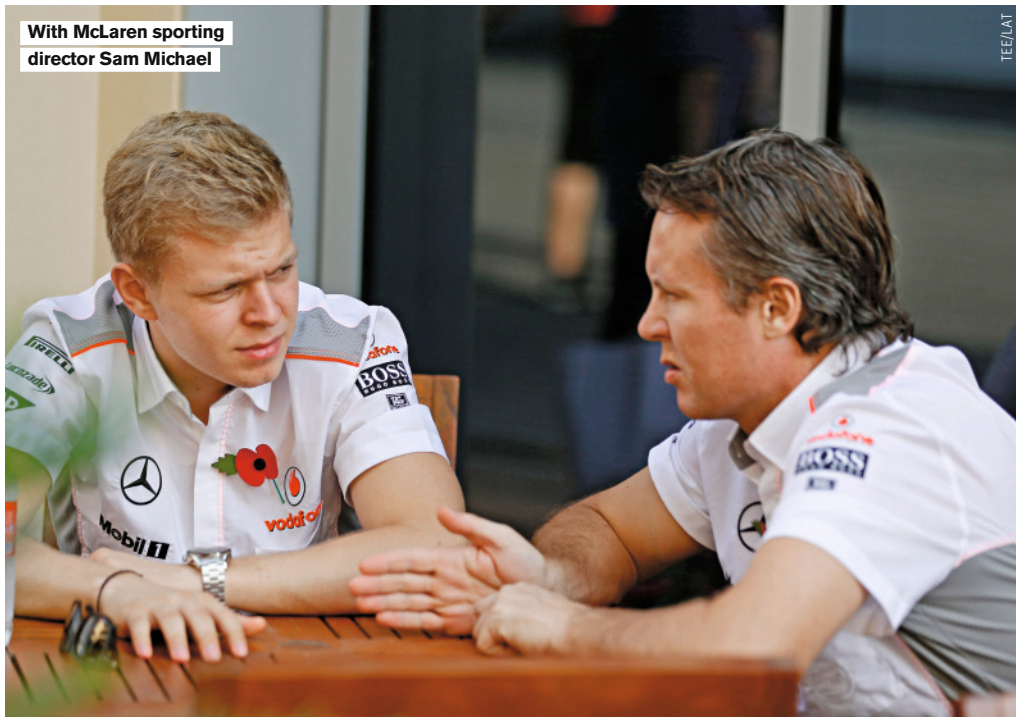
Da Costa swept through to win, and Magnussen's disappointment at losing out was clear to see on the podium. Yet that afternoon proved to be a defining one for McLaren.

"Kevin of old would have seen da Costa coming, would have closed the door and 'bang,'" reckons Whitmarsh. "Instead, Kevin saw him and just let him through, and it went against all his instincts.

"I rang him immediately and said, 'Kevin, that is the most impressive thing I've ever seen you do. The guy got past you but you didn't have the choice. That's part of the learning process. We know you're lightning quick, you now have to learn how to win a championship.' And that's what he did."

Magnussen believes one of the big things he learned during 2013 was the requirement to think about the bigger picture, rather than simply driving flat-out at every moment. "My goal this year was to not take stupid chances, and that would have been a stupid chance to take," he says. "He won the race and I wasn't happy – you didn't see me smile so much on the podium. But I did the right thing, and the year was about trying to think more, and not driving with my emotions too much."

With McLaren sporting director Sam Michael



TEE/LAT

be the year that was the final judge of my work.

"I had to win the championship and I had to do it in a way that showed that I can adapt, that I can drive a championship tactically, and I can drive it with my head. Normally you learn more from bad seasons, but this year I really learned a lot even though it was very good.

"I thought I became much more of the racing driver I wanted to be, and I grew up much more as a racing driver."

Convincing the McLaren engineers and team principal Martin Whitmarsh was just the start of the journey that Magnussen is undertaking. The road ahead is going to be a tough one – one with just as many soul-sapping pitfalls as beautiful peaks. Yet accepting that this is the way of F1 is a great place to start.

THE HAMILTON COMPARISON

McLaren's choice of Magnussen, its first rookie since Lewis Hamilton back in 2007, will inevitably lead to direct comparisons between the two men. There has already been talk of the team doing what it can to protect Magnussen from the 'ravages' of the spotlight he will be under, especially since the circumstances he finds himself in are very different to those experienced by Hamilton over the winter of 2006-07.

While the Briton, as reigning GP2 champion, completed many thousands of miles of testing to get up to speed, the modern test restrictions mean that Magnussen's running since confirmation of his drive has been limited to a 600-mile Pirelli test at Vallelunga, plus simulator work.

The man himself is not fazed that things will ▶

KM keeps distance from lairy da Costa



DUTCH PHOTO AGENCY/LAT

► be harder for him, and reckons that no matter how much running he can do, a youngster is never going to reach a point where he can be satisfied he's fully cracked the art of F1. "No matter what you do it's never going to be enough," he says. "You're never going to say, 'Right, I've learned everything, I'm now ready to go'. You always feel like you can do more.

"These days it's more difficult than it was seven years ago, when Lewis did it. There's no testing anymore, so we have to do it in a different way. But that's reality. It's the same for everyone, and you have to make the best of what you get.

"Surely for a top team like McLaren it might be a bigger risk to take a new driver, but otherwise where are you going to get the drivers from? They have to get them somehow. The other guys are getting older and one day you have to put a new driver in the car.

"I think it's brave what McLaren has done, and hopefully I'll be able to show they've done the right thing."

While the mileage available in a car is hugely restricted, Magnussen points out that the manner in which drivers are coming through and being prepared these days means they're not as disadvantaged as it would appear from the outside.

The assured way in which GP3 champion Daniil Kvyat got down to work in his practice outings in the US and Brazil with Toro Rosso, and the way in which Magnussen got up to speed so quickly during his debut F1 outing with McLaren at the Abu Dhabi young-driver test in 2012, prove that.

"My generation of drivers have all started very early," he points out. "The previous generation of drivers started a bit later. So if you take a driver at 19 from my generation, he will be better prepared at 19 than a driver was from the previous generation.

"Plus the technology that moves on and improves F1 is also doing that in the lower categories. We have grown up with that.

"I'm not saying that I'm 100 per cent ready for F1, because you'll never feel like that. You will always feel like you can do more, and you need a little bit more time.

"I'm not scared about that. I don't feel



MAGNUSSEN CV

- 2013** Formula Renault 3.5 champion with DAMS (5 wins)
- 2012** Seventh in Formula Renault 3.5 with Carlin (1 win)
- 2011** Second in British F3 with Carlin (7 wins)
- 2010** Third in German F3 with Motopark (3 wins)
- 2009** Second in Formula Renault NEC (1 win) and seventh in Formula Renault Eurocup (0 wins) with Motopark
- 2008** Danish Formula Ford champion with Fukamuni (11 wins)

uncomfortable doing it, because I think I'll get to the point where it feels very good. But you can always improve more."

THE RIGHT TIME FOR A ROOKIE

There are two other factors that could help Magnussen minimise the usual negative aspects of being a rookie.

The first is that the all-new 2014 regulations will deliver such a different way to go racing that every driver is starting from a clean sheet of paper.

Whitmarsh, who has guided Magnussen's career since he signed up to the team's young-driver programme in 2009, admits that if ever there was a time to take the plunge and bring on a rookie, then it's this year.

"You can say actually this is an ideal opportunity,

because everything the older drivers have learned, all that experience, is different," he says. "The powertrain is very, very different. The complexity of the whole energy cycling, and what is going to go on, is very different. So on that front he has as much experience as Fernando Alonso or Jenson Button."

Magnussen concurs that 2014 offers a better chance of operating on a much more level playing field: "There are a lot of new systems and the way you work with the team is going to change with the new regulations, because it's almost a different sport in the end.

"A lot of what we do is working with the car, and if the car is completely different then a lot of things will change. The experience you've had is going to be less valuable.

A boost for Button

Having Jenson Button as his team-mate can only be a positive for Kevin Magnussen, and McLaren itself thinks the Briton will also benefit from having such a quick young charger alongside him.

Team principal Martin Whitmarsh openly admitted that Sergio Perez didn't beat Button consistently enough. It's something that Magnussen has been drafted in to do.

"The thing about Jenson is that he's a fantastic team member, a great ambassador, and a great bloke," explains Whitmarsh. "He's comfortable in his own skin and he's nice to be around. But he's so laid back in many ways, so relaxed and mature, that some people don't understand just how competitive he is.

"Jenson doesn't want to get beaten by his team-mate. He largely got his handling of 'Checo', and I don't want him to have a driver he can handle.

"I want him being hurt by his team-mate, in the nicest possible way. He wants to be challenged as a driver – which is why he joined McLaren in the first place – and Kevin will do that."



McLaren wants Magnussen to give Button a hard time

THOMPSON/GETTY



Magnussen Sr's F1 career, here with Stewart, was not a success...



...although young Kevin got an early look at Formula 1

“My dad had no one to guide him. It’s a shame, because I hear he was a great talent. He still is!”

“But I’m not underestimating anything. I know I’m inexperienced and I know I’m going to have to work hard to make up for that. But I’m totally ready to do that.”

The other factor that will be a help to Magnussen is having Button as a team-mate. As well as being a useful benchmark for his own performance, the Briton’s maturity and amiable personality will be a boost in helping him progress.

“I think Jenson for me is the perfect team-mate,” admits Magnussen. “He’s quick, and hopefully we’ll be able to push each other really well.”

“He’s got so much experience too, so the car he is developing is also my car. There will be differences but he will be pushing the team forward, and hopefully I can push the team forward with my speed and willingness to work.

“I feel good that Jenson is my team-mate. With his experience I can listen, watch how he is working with the team and I’m sure I can learn a lot from him.”

The all-new regulations, the limited preparation and the huge uncertainty over whether McLaren’s 2013 nightmare was a blip or part of a longer-term problem make it hard for Magnussen to make a firm prediction of what he can expect from 2014.

“When I have been in Formula 3 or World Series or whatever I have driven – where everyone has the same car and pretty much the same opportunity from the team and car perspective – you can set a goal and say I would like to finish in the top three or win it.

“But because you don’t really know where the teams are going to be in 2014, or how things are going to be, then you can’t really set a goal like that. You just have to make sure you do everything you can. You have to focus on yourself and do everything you can to make sure that your bit is fine.”

LEARNING FROM HIS FATHER

Perhaps Magnussen’s biggest strength is that he has the intelligence to look at where things have gone wrong in the past – with his predecessor Perez, for instance – and make sure he doesn’t make the same mistakes.

“Hopefully it will be different,” he says of the fact that Perez and McLaren never fully gelled. “You learn from the bad times and the tough times, and surely McLaren is a team who are used to winning and they will continue like that.”

The lessons learned from the experience of his father Jan are also important. Magnussen Sr had an incredible natural talent, famously winning 14 out of 18 races in the 1994 British F3 Championship to beat Ayrton Senna’s record from ’83. He was the next big thing and made his F1 debut for McLaren in the 1995 Pacific Grand Prix.

Yet despite the obvious speed, he and F1 were never comfortable bedfellows. His fun-loving

character was one that never sat well with the perfectionist attitudes of his two F1 team bosses, Ron Dennis and Jackie Stewart.

His was a career that could have produced so much more if he’d had someone hammering home to him that he needed to up his work rate off the track to do justice to his abilities on it.

Magnussen Jr has spent a great deal of time discussing what happened with his dad, and his work ethic and intelligent application to the job are evidence that he has taken on board the lessons.

“I think he was just very honest and completely open about his life, and he didn’t have anyone to guide him or tell him what he should or shouldn’t do,” says Kevin of his father, who was 2013’s GT champion in the American Le Mans Series. “So he was himself – a completely honest guy.

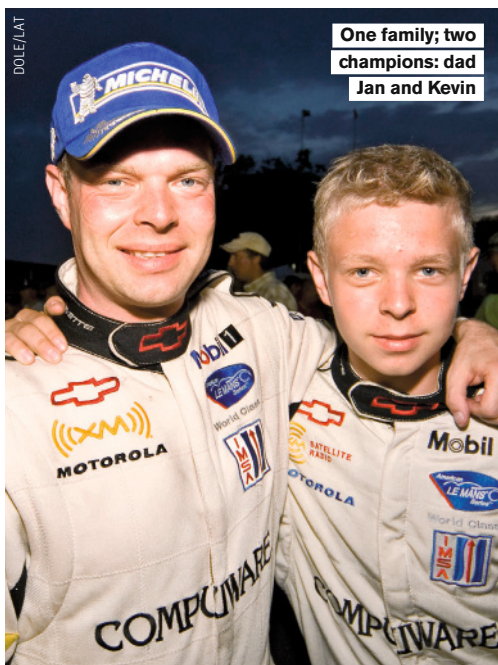
“I’m honest too, but I’m trying to do what’s right and trying not to do what’s wrong. I think maybe he was not educated well [in the ways of F1]. It’s a shame, because from what I hear he was a really great talent. I know that he still is!”

His father’s inability to convert that talent to F1 success likely gives Magnussen great motivation not to waste the opportunity given to him by his own ability. And it also allows him a good sounding board for when things get tough for him on track.

“I always ask him questions and I like hearing about his career and all that, but I have to do my own thing,” he admits. “I have to make my own way. I’ve already gone a different way, but it’s important that you listen to a guy like him because he obviously has achieved good things and has some good experiences. Definitely I can learn from him.”

Magnussen seems to have the right blend of on-track speed and off-track attitude to give it a damn good shot at McLaren. There’s no hint that he believes things will fall into his lap.

“This is a massive thing for me. I still can’t believe it,” he says. “I wake up in the morning and panic a little bit about if it’s a dream or not. But I know what I have to do. This is my chance.” ❄



One family; two champions: dad Jan and Kevin

Huff's California dream comes true

Britain's former World Touring Car champion had never heard of the Thunderhill 25 Hours before being invited to race in it.

BEN ANDERSON hopped across the Pond to watch him win

America is known for some famous endurance races: Petit Le Mans, the Sebring 12 Hours and the Daytona 24 Hours are events that resonate with motorsport fans all over the world. But you'll likely get blank stares back if you mention the US's longest endurance race: the Thunderhill 25 Hours.

Never heard of it? Neither had we. But American endurance racing's best-kept secret has been running for a decade, on a circuit that last year celebrated its 20th anniversary. Think of Britcar's Silverstone 24 Hours, but on three miles of undulating purpose-built track in the North Western part of California's Great Valley...

Just like Britain's only round-the-clock race, Thunderhill is an amateur event at heart. Scores of 'run-what-you-brung' Mazda MX5 variants, BMW saloons, SEAT Cupras, Honda tin-tops and one-off specials make up the bulk of the grid – which even includes a NASCAR truck! But the pointy end is all about hairy GT cars (and modified Radical and CN prototypes).

As the event has become more established, so the quality of the entry has grown. Members of successful GT squad Flying Lizard are here, running a Porsche GT3 Cup car for Award Motorsports; Honda Performance Development too; factory-blessed entries from Mazda and



Huff (left) celebrates with team boss Holland

Lexus; plus GMG (Audi R8) and Rotek Racing (Audi TT RS) with customer support.

The driving strength includes a smattering of racers known outside the US (Al Unser Jr, driving a V8-powered Wolf CN prototype with his son Al Unser III and SPEED Euro Series champion Ivan Bellarosa, and Grand-Am ace Memo Gidley, piloting the 'Lizards' Porsche), plus drivers known well within it. There's nowhere near the quality seen at the blue-riband enduros, but Thunderhill's 'clubbie' is gaining its own momentum, even if the 60-car entry is slightly down on previous editions.

Rotek, the fledgling team owned by bit-part touring car racer Robb Holland and his friend Roland Pritzker, is the reason AUTOSPORT has a chance to witness the 25 Hours first-hand. The squad led 2012's edition in the early stages before



Huff anchored Rotek to its first Thunderhill success

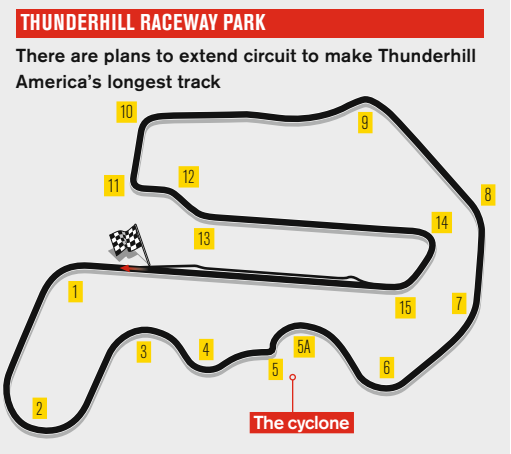
a transmission problem put its VLN-spec TT RS out of the race. This time, after several class wins in the 2013 VLN series on the Nurburgring Nordschleife, the team is back to avenge that defeat, drafting in 2012 World Touring Car champion Rob Huff to lead the charge.

"I'd never heard of this race before," says Huff, who first met Holland when the American tested Tony Gilham's S2000 BTCC Honda Civic at Snetterton in 2012. "It's a bit like the Bathurst 12 Hours. I'd never heard of that before last year [when he partnered fellow Brit James Winslow to eighth in a Peter Conroy Audi R8 LMS]. But endurance racing is getting bigger, and the more high-profile drivers and teams that enter, the more publicity it gets. All of them start as local clubbies, just like this one."

Huff is first in the car during Thursday testing,



Thunderhill 25 Hours took place in freezing cold



**AUDI TT RS TECH SPEC****ENGINE:** 2480cc turbo**POWER:** 372bhp**TRANSMISSION:** Six-speed sequential, front-wheel drive**BRAKES:** Brembo (front), AP Racing (rear)**WHEELS:** OZ Racing 11x18"**TYRES:** Pirelli P Zero**WEIGHT:** 1120kg

Rotek Racing

The little team with big ideas

Rotek Racing hasn't been around for long, but has big plans to establish itself in touring cars, GT and endurance racing.

The result of the collective enthusiasm of American Nurburgring nuts Robb Holland and Roland Pritzker, Rotek began its racing life in last year's VLN series, running the same Nordschleife-specific Audi TT RS that won at Thunderhill. "The VLN is our big thing," says Holland, an ex-pro road-racing sprint cyclist, who describes himself as "like Mark Cavendish but not as quick!"

"We've had five SP4T class victories in the VLN this year with the Audi. There are only five in existence and it's the only front-wheel-drive car to sit on pole in the VLN."

The car (described by Huff as a "weapon") has been designed specifically for VLN races by Audi. It features a 380bhp engine and massive Brembo front brakes. The car makes its lap time in the fast corners, thanks to an aggressive splitter and front aero profile, and the team has worked with engineering firm JRZ to develop specialist damping for the suspension. The car is geared long for the Nordschleife, which isn't ideal for a shorter (2.86 miles) circuit like Thunderhill, but that didn't hold it back too much over 25 hours.

"This is the only car [of this type] to have left the Nurburgring," adds Holland. "We want to break the Pikes Peak FWD record with it. It's my home event; I live in Denver, which is only an hour away."

This year Rotek will expand to run arrive-and-drive Renault Clio packages in the VLN from its base in Germany, as well as an Audi S3 programme in the BTCC, allowing Holland to re-emerge on the touring car scene after abortive attempts to establish himself in the WTCC with the ex-Arena Ford Focuses.



Pritzker (left) and Holland are big Nurburgring fans

"The average speed is high, so you can get your flow on"

getting a feel for the track and refining the set-up. His first impressions of Thunderhill are positive: "It's a good circuit; fairly basic but fun because it's fast and there are two or three blind bends. It's only the second American track I've driven, after Sonoma; I'm impressed. The average speed is high [around 100mph] and there's not too much stop-start, so you can get your flow on."

Car dialled in, Huff's co-drivers take turns to get up to speed. Former World Challenge (think the US version of the BTCC) champion Jeff Altenburg and fellow tin-top racer Kevin Gleason (son of 1960s Formula Ford race winner and Le Mans racer Chris) both get a go, but the Audi runs into a terminal ECU problem before team owners Pritzker and Holland get a chance to hop in the hot seat. *Blind Dogs Smokin'* bass guitar player Pritzker is particularly unimpressed, having geed himself up with strong coffee in readiness. The car is parked for most of Friday too, but Roland finally gets his go when the team (having spent the best part of 12 hours failing to make an R8 unit work) finds a replacement ECU from a TT RS road car and has the Rotek racer purring like a cat again – once a technician in the UK has cracked the car's immobiliser code!

Qualifying begins as darkness descends on a bitterly cold circuit. Huff puts the Audi ninth on

the grid, behind three GT3 Porsches and five prototypes. He's slated to start the race too. "It's not going to be a race, it's going to be testing for 25 hours because the closing speed with some of the cars is horrific," he warns. "Sixty other cars out there spells danger!"

Fortunately, the Rotek Audi keeps largely out of trouble through the race. The car's fuel economy is its biggest strength and a strong opening stint from Huff has Rotek briefly in the lead before its first pitstop. The team flits around the top six for the first quarter, and then takes a commanding lead in the early hours of Sunday morning as its main rivals wilt. The Radical V8-powered Unser Wolf (in which 'Little Al' sets fastest lap) is the hare to Rotek's tortoise, and looks a real threat to catch the Audi before the end, until it blows its engine spectacularly and gets hit by another car, putting it out with six hours to run. That leaves Rotek clear to win by 28 laps after a near-faultless run (save for a couple of minor incidents and two stop-go penalties for pitting under the safety car). It's the team's maiden Thunderhill victory, at the fourth time of asking, and the first for Audi.

"It's amazing really," reflects Huff, having brought the car home. "To win a race like this is a bit special. But to win it by nearly 30 laps; we couldn't have asked for more." ❄️



HUTTON/GETTY

Celebrating the Surtees legend

One of the undoubted highlights of AUTOSPORT International this year will be the collection of motorcycles and cars from the incredible career of John Surtees. **KEVIN TURNER** takes a look at what you can expect to see

This year marks the 50th anniversary since John Surtees achieved something no one had managed before or has done since: add a world championship win on four wheels to world titles scored on two.

There will be a number of displays during 2014 to mark the career of 'Big John' at various events, but the first one will be in Birmingham later this month.

A range of motorcycle and car racing machines that played their part in Surtees's career will be on show at AUTOSPORT International. From some of the key bikes of his career to a number of Surtees-built single-seaters that mark the end of his own on-track endeavours, it should provide a fitting tribute to one of motorsport's true legends.

Here is a sneak peek of what you'll be able to see at the NEC, including the Ferrari 158 that took Surtees to that 1964 Formula 1 crown. ▶



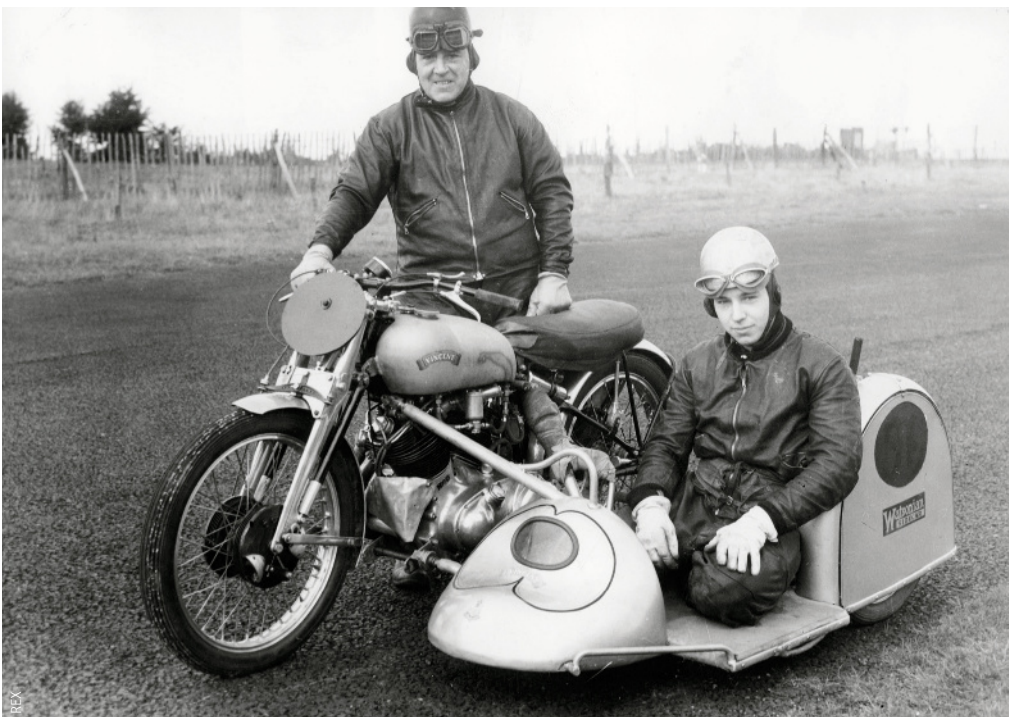
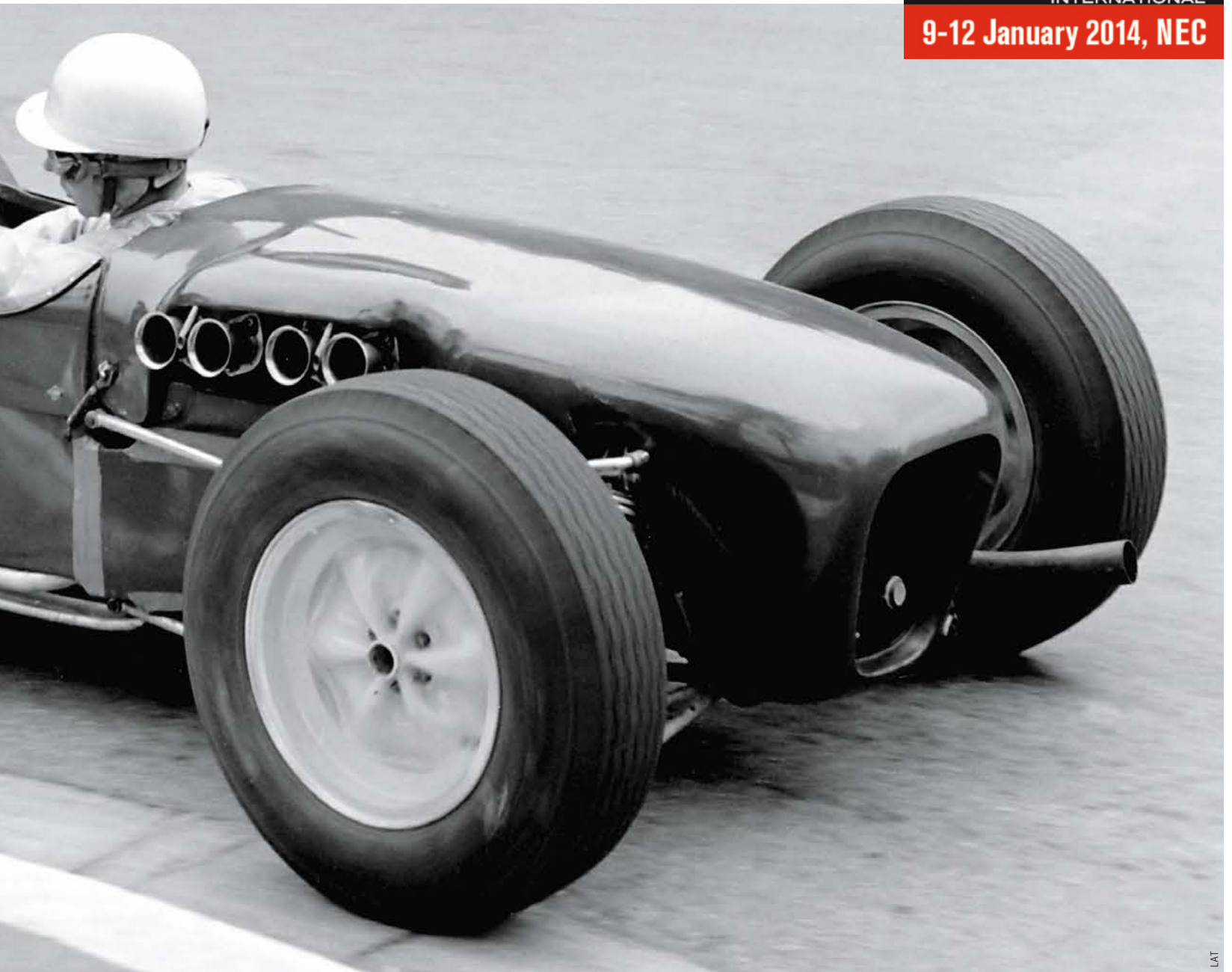
Lotus 18

"MV Agusta said I couldn't race any other bike, so I decided to go car racing." Surtees' explanation for his 1960 switch to four wheels is simple, but it was the start of another remarkable chapter in his career. After a fine second (to Jim Clark) on his car-racing debut at Goodwood in a Formula Junior event, Surtees made his Formula 1 world championship debut at Monaco in a Lotus 18. He qualified 15th, 2.7 seconds slower than polesitter Stirling Moss in a similar car and retired from the race. But in his next outing he took second in the British GP at Silverstone, beaten only by reigning world champion Jack Brabham. Surtees then took his first pole in Portugal and would probably have been a works Lotus driver for '61 had it not been for the fall-out from Colin Chapman's sacking of Innes Ireland. The show Lotus 18 is owned by historic racer Paul Smeeth.



250cc Triumph Tiger 70

Like all the motorcycles in the Birmingham display, the Triumph is owned by Surtees himself. After taking part in his first competitive event (and scoring his first success) in the sidecar of his father's Vincent (pictured, right), Surtees decided to have his own go at the controls. At the age of 16, he made his asphalt circuit racing debut at the then-new Brands Hatch in 1950 on a Triumph. Surtees qualified well, but fell off while battling for the lead in the final. This machine is a more modified example, as raced by former works rider Percy Tait.



500cc Vincent Grey Flash

A very rare bike, it was a Grey Flash that Surtees used to take his first race win, at Aberdare Park in Wales. Many more followed before his switch to Norton, but the man himself rates that victory as his most important: "On that day I stopped being a mechanic on a bike, I was part of it and that relationship set me up for the rest of my career." Surtees put this particular example together in 1979 from a number of original parts he had after building his original as an apprentice at Vincent in 1950. ▶





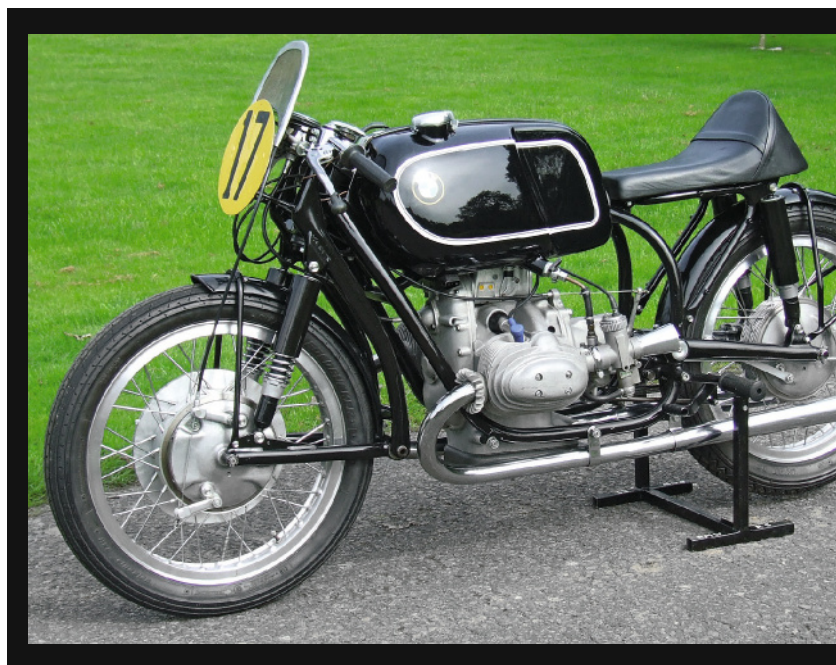
Ferrari 158

Perhaps the star of the show will be the Ferrari 158 in which Surtees won his 1964 F1 title. Owner George Barber is having the 1500cc V8-engined machine flown over from America for a number of events planned for 2014 and AUTOSPORT International is one of them. After a slow start to 1964 as Ferrari focused on Le Mans, Surtees took two world championship GP wins in the 158. Second in the Mexico finale was enough for the title after Jim Clark's Lotus suffered engine failure and Graham Hill clashed with the Ferrari of Lorenzo Bandini.



500cc works Norton

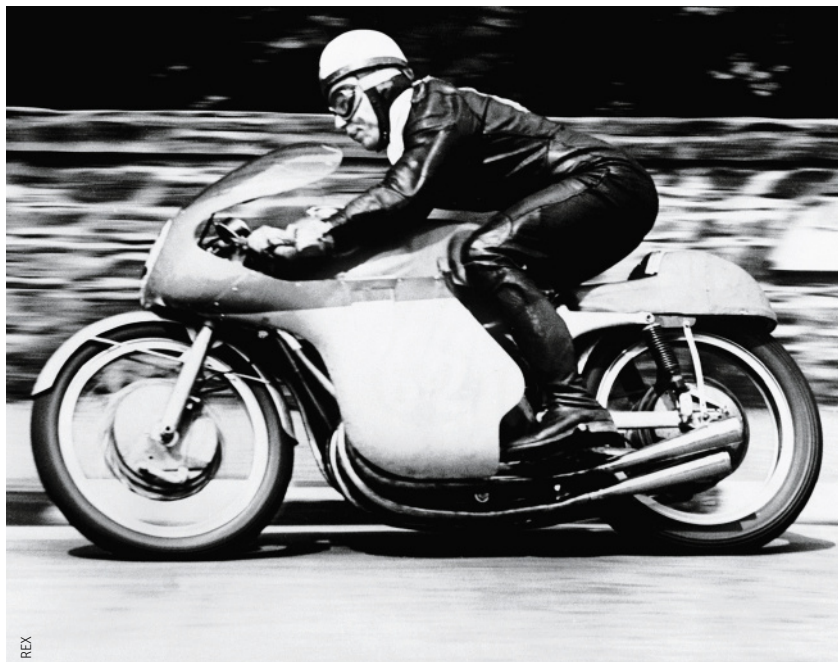
Norton took first and second in the 1953 Isle of Man Senior Tourist Trophy thanks to Ray Amm and Jack Brett. Surtees was invited to join the AJS team for 1954, but instead Norton managing director Gilbert Smith lent him two works machines. After a promising year, Surtees joined the factory Norton team for '55.





500cc BMW Rennsport

Surtees only raced for BMW once in the world championship, but it was an important performance. The Rennsport was not considered the easiest bike to ride and Surtees was drafted in to the BMW squad alongside star Walter Zeller for the 1955 German GP on the legendary Nurburgring, a circuit on which he was later to taste great success. Surtees was in contention for a podium when the float chamber fell off and he had to retire the BMW, but it had been enough for MV Agusta to get in touch...



1960 500cc MV Agusta

Norton confirmed its withdrawal from the world championship in 1955. MV Agusta had lost Leslie Graham (in 1953) and Ray Amm (1955), so approached Surtees. After tests at Monza and Modena, he joined the squad for 1956. It was the start of a successful combination. Surtees won the 500cc world title in 1956, then took both the 350cc and 500cc crowns for three consecutive seasons, 1958-1960. In his final year on two wheels, Surtees scored five wins and a second in the seven 500cc world championship events. ▶



LAT

Lola T70

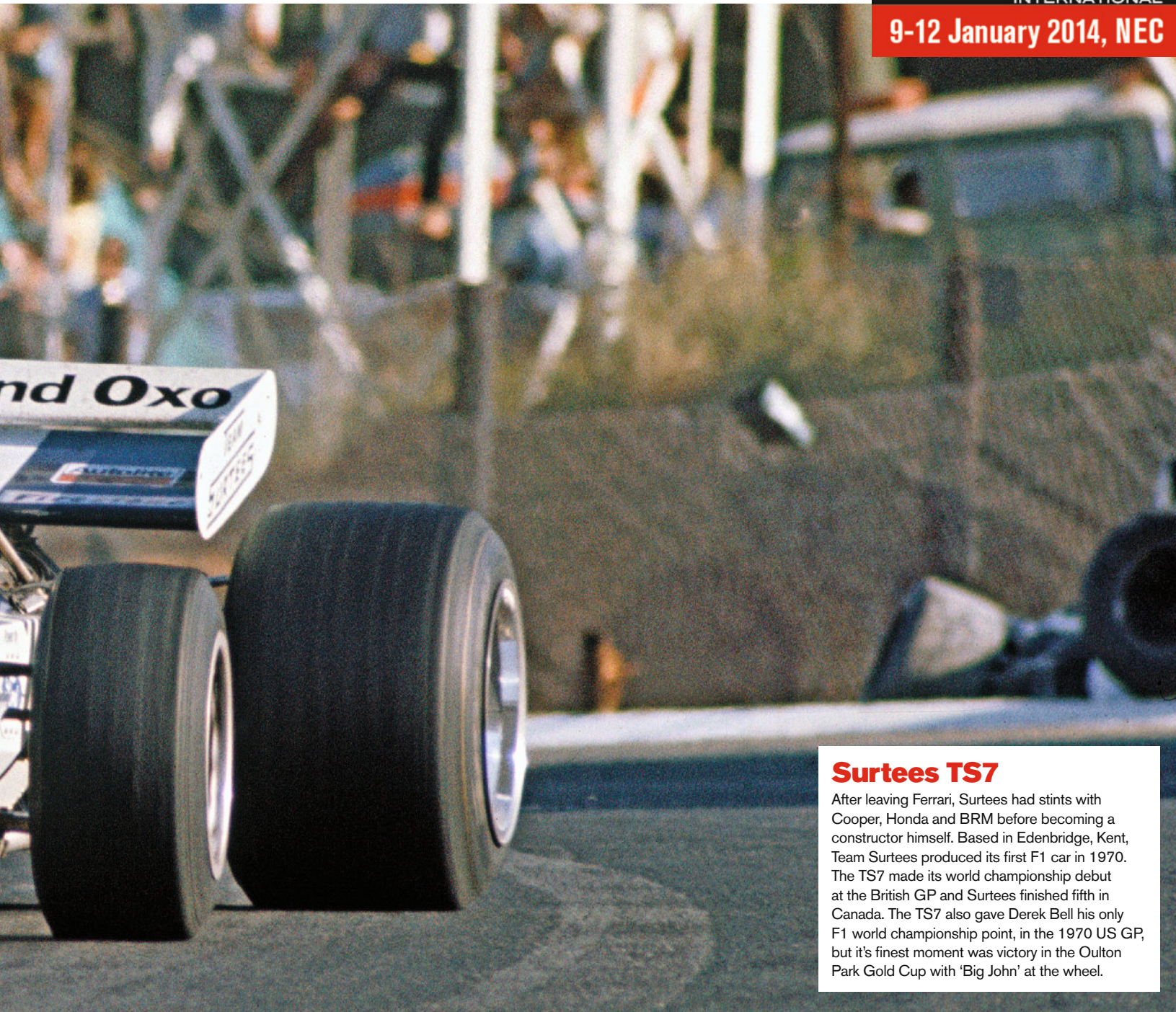
Enzo Ferrari gave Surtees permission to develop the Lola T70 sports car in 1965 and it soon became a potent weapon. Despite a huge life-threatening crash at Mosport, Surtees remained a fan of the open sports-racer. "You can be confident with a car that gives you consistent feedback and reacts and responds to you in an honest way," he says. "It was very driveable." Despite three retirements, Surtees took the inaugural Can-Am title with three wins in his Chevrolet-powered T70 against a field that included past and future F1 world champions, and several US racing legends.



LAT

Surtees TS10

Arguably Team Surtees' most successful single-seater design, the Formula 2 TS10 took the team founder to his final major wins, the 1972 Imola and Japanese GPs. Another former bike star, Mike Hailwood, also used a TS10 to take the 1972 European F2 title.



Surtees TS7

After leaving Ferrari, Surtees had stints with Cooper, Honda and BRM before becoming a constructor himself. Based in Edenbridge, Kent, Team Surtees produced its first F1 car in 1970. The TS7 made its world championship debut at the British GP and Surtees finished fifth in Canada. The TS7 also gave Derek Bell his only F1 world championship point, in the 1970 US GP, but its finest moment was victory in the Oulton Park Gold Cup with 'Big John' at the wheel.



Surtees TS15

The TS10's successor in Formula 2, the TS15 was also Ford powered. Rising star Jochen Mass took two European F2 wins but lost the 1973 title to Jean-Pierre Jarier's March-BMW 732.

The best reasons to visit

Birmingham's NEC will again be the scene of the world's best racing car show this month. Now let



Your heroes live on the AUTOSPORT stage with KX

The AUTOSPORT stage sponsored by KX is your chance to get up close to your motorsport heroes. Among the luminaries who will appear are former bike and F1 world champion John Surtees and three-time Le Mans winner Allan McNish, less than a month after announcing his shock retirement. His 2013 Audi teammate and fellow World Endurance champion Tom Kristensen, a nine-time

Le Mans winner, will join him. New Sauber F1 driver Adrian Sutil, former DTM champion Gary Paffett, BTCC champions Andrew Jordan, Gordon Shedden, Matt Neal and Jason Plato, and Sky F1 expert Martin Brundle will also come face-to-face with our very own compere Henry Hope-Frost. McLaren AUTOSPORT BRDC Award winner Matt Parry will also appear, along with his five fellow finalists.



The Live Action Arena

The legendary Lotus 79 (below) and 49B will make an unmissable appearance in this year's Live Action Arena, shaking the 5000-capacity crowd with tyre-ripping indoor runs in every session during Saturday and Sunday.

Hosted by Sky Sports F1's David Croft and *The Gadget Show's* Pollyanna Woodward, the Arena will also feature high-octane Freestyle MotoX and Drifting, plus the daredevil bravery of world-record stunt driver Terry Grant.

On top of that, 10 of *Autocar's* 'best driver's cars' – including the breathtaking Porsche 911 GT3 and Aston Martin V12 Vantage S – will be paraded alongside F2 machinery driven by this year's McLaren AUTOSPORT BRDC Award nominees.

It'll be a must-see event for petrolheads.



F1 Racing's grand prix grid

With Formula 1 ringing in the changes for 2014, the F1 Racing Grid is a unique chance to see all of last year's grand prix challengers together for one final time.

Pride of place goes of course to the all-conquering Red Bull RB9, in which

Sebastian Vettel shattered numerous records – including taking nine straight wins – en route to a fourth world crown.

Mercedes, Ferrari and Lotus also won races and their cars will join McLaren, Force India, Sauber, Toro Rosso, Williams, Caterham and Marussia racers.



History's finest thanks to the HSCC

From six-litre American monsters to unusual single-seaters, the Historic Sports Car Club will showcase some of the finest machines in history.

Owner Jim Chapman's Lotus 59 – encapsulated by *Rush* as one of the cars that forged James Hunt's early reputation – will be present in its original Gold Leaf Team Lotus colours, while the monstrous US Huffaker Genie will make a rare appearance.

Chevron's B38, as driven by the likes of Derek Warwick and Elio de Angelis, will also appear alongside a Lola Mk3 Formula Junior machine and the gorgeous Alfa Romeo 156 Super Tourer (above).

An Italian Touring Car title winner in the hands of Fabrizio Giovanardi, the Alfa will be making only its second British appearance in the past 12 months at AUTOSPORT International.



AUTOSPORT International

SAM TREMAYNE be your guide to some of the highlights of the first UK motorsport event of 2014

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Fancy testing yourself against the best at AUTOSPORT International? Head down to the Adrenaline Hall and get involved in one of several arrive-and-drive races on our bespoke circuit.

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involved but no less intense, take a ride with an expert around a custom-made drift and slalom course in the iconic Caterham Seven, capable of accelerating from 0 to 62mph in a breathtaking 2.8 seconds.

BLOXHAM/LAT

TICKET DETAILS

Standard entry tickets for AUTOSPORT International, which include a seat in the Live Action Arena, cost £31 per person when booked in advance. Paddock passes, which grant access to the driver signing area, and VIP passes are also available for both Saturday and Sunday. A family ticket for two adults and two children costs £82, but must be booked in advance.

OPENING HOURS

0900 to 1800 Saturday and Sunday.
Website: autosportinternational.com

37



PERFORMANCE CAR SHOW

For those who like their road cars, the *Autocar* and *PistonHeads* Performance Car Show is an absolute must. Alongside an array of stunning and outrageous cars, keep a special eye out for Vauxhall's new 576bhp beast, the supercharged VXR8 GTS (above), which will be making its debut at the show.

A bit of BTCC history

Andrew Jordan's title-winning Eurotech Honda Civic will take centre stage in a BTCC special exhibition that will feature several other 2013 machines, including Rob Austin's A4 – the first Audi to win in the series since 1997. Jordan and Honda stable-mates Matt Neal and Gordon Shedden, as well as a host of series regulars, will be signing autographs throughout the weekend.



EBREY/LAT



LAT

Rally GB celebration

To celebrate the 70th running of Britain's biggest rally, a number of iconic cars will be on the *Motorsport News* stand. Chief among those will be two machines from the careers of Britain's two greatest rally exponents: Colin McRae's 1997 RAC Rally-winning Subaru Impreza WRC (above) and the 2001 iteration that took Richard Burns to the WRC title.

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The Secret Driver

Hidden truths from the paddock

Drivers chasing the Formula 1 dream face huge pressures to perform – in and out of the car – but they need to be able to live a little, too

For the majority of the corporate world December equals a lot of Christmas party invites, a multitude of hangovers and a firm aim to quote ‘not drinking’ as their New Year’s resolution.

That said, what do you do in these months if you are a young driver? Do you join in seamlessly with the rest of the population or do you knuckle down and remain a Saint? Regardless of the time of year, I think there is a real culture to conform in motorsport, especially if you are a young driver. When I was growing up I found it hard to distinguish between what was expected of me and what actually worked for me.

Conformity is a tricky subject as, obviously, total non-conformity can be destructive and unproductive towards achieving top performance and motivating those around you. However, if you conform too heavily to what you perceive to be right in the eyes of others, you can alienate yourself from

the values and principles that actually fuel your ability to be successful.

Having the confidence to be yourself and the space to experiment with your approaches is crucial to a balanced and functional attitude. Twitter and

of spontaneity is frowned upon? Is there anything wrong with being open and honest about having spent all morning sleeping and all afternoon playing on iRacing or rFactor?

Within reason there has to be a release from your working environment, be that an office, a racing car or a football pitch. Everyone else is out celebrating Christmas in ridiculous Christmas jumpers and downing mulled wine; why can’t we as racing drivers? Granted, professionals with a public profile need to be responsible and cannot be seen to actively be promoting indulgent behaviour, but at the same time, we are human beings and we need to balance work and play.

However, that equation quickly goes out of the window with regards to social media, as all you are really trying to do is live up to other people’s theoretical perception of what a professional sportsman or woman should be doing at any one given time. In fact the only time we really get a true insight into most drivers is when the emotion is flowing post incident.

December is normally a month of uncertainty for young drivers; a time to reflect on the outgoing year (2013) and worry about the New Year (2014). With that mindset, the gym and meeting tweets will be in full

“Are sportsmen and women robots and any normality or spontaneity frowned upon?”

Facebook, to a lesser extent, are perfect examples of where we face the scenario of being ourselves or writing what we think other people want to read. Depending on the situation, you’ll mostly see young drivers doing just that – writing what they think other people want to read.

Social media has definitely enhanced people’s perceptions of each other, for better and for worse. It certainly gives us a greater insight into other people, and in most cases, what they are up to. Cue the young racing driver lie. We have all been guilty of the occasional ‘gym selfie’ or the ‘morning of meetings’ line. In some cases this is true, but without bursting the bubble of perception, in most cases, it is a gross lie or exaggeration at best.

Why do young drivers feel pressured into conformity and towing the PR line? Are sportsmen and women robots whereby any form of normality or explosion

flow as they strive to show the world how dedicated and focused they are in chasing their dreams.

The reality is, meanwhile, that dedication, a good attitude and relentlessness are a given with top performers, so in the wise words of Aston Martin WEC driver Stuart Hall: “Training is a way of life, a desire of commitment, pain, sacrifice to go one better than the next. NOT a reason to tweet.”

So what do young drivers really get up to? Normally they play golf, have lunch together and moan about other drivers. Or they might look at steering traces or try and chat up someone on Tinder.

Why do they do this? Because they are normal young boys and girls who are just trying to be the best they can be within their chosen environment. ‘Super athletes’ do not exist; reality must prevail, and, with that, so should a good balance between work and pleasure. ❄

Bentley boys are back for good

Last month, Bentley returned to motorsport. **GARY WATKINS** was at the Gulf 12 Hours in Abu Dhabi to see how the new GT3 programme has come together



The new Continental GT took a fine fourth in the Gulf 12 Hours



Bentley is back, and back firing on all cylinders. That's eight rather than 12 cylinders in a W configuration, which can be the only disappointment of the British manufacturer's return to international sportscar racing with its new Continental GT3 contender. Anyone with petrol in their veins must surely rejoice at Bentley's comeback, 10 years after the last of its six victories in the Le Mans 24 Hours.

Its Continental racer, developed at successful rally team M-Sport in Cumbria, hit the track in last month's Gulf 12 Hours in Abu Dhabi — and in some style. It finished an impressive fourth in the two-part event on the Yas Marina circuit, proving the worth of a car that will race in the hands of the factory and customers this year.

THE LONG ROAD BACK

Bentley motorsport boss Brian Gush, who oversaw the Speed 8 GTP prototype programme of 2001-03, had always promised that the famous marque would be back on the grid at some point. It was a vague promise at the start, but one that got some meat on the bones in September 2011 when he told AUTOSPORT that Bentley would be back at Le Mans within five years.

Gush reveals there had been a plan to put the Bentley name back on the racetracks of the world as long ago as 2008. "We had some strong thoughts about coming back and had a lot of discussions at that time," he explains. "At that stage it would have been LMP1. It was a plan, but the financial crisis put paid to that."

"But we always said that when we were back in the black, we would go back to racing."

Gush was still harbouring thoughts of LMP1 when he talked to AUTOSPORT two and bit years ago, while his boss, Wolfgang Durheimer, envisaged a scenario where customers took to the tracks with racing Bentleys. The landscape within the Volkswagen Group of which Bentley is a part was changing at the time. Porsche had announced its intention to end an absence from top flight international sportscar racing in 2014 that summer and the likelihood was that it would be racing against the VW brand incumbent in LMP1, Audi.

Gush admits now that he wasn't "expecting a prototype programme" once Porsche had made its announcement. He also raised the prospect of a "racing supercar with a derivative for the road" in September '11, but a GT3 car was also on the list.

He insists GT3 was the likely way forward for Bentley before British sportscar entrant Rollcentre Racing, which built up racing Moslers in the UK, embarked on an evaluation of the Continental. What is clear is that Bentley was happy to co-operate with Rollcentre and the Delta Motorsport engineering consultancy with which it was working.

"We were already thinking about GT3, but Martin [Short, Rollcentre's boss] said he was going to do it with or without Bentley," recalls Gush. "I said, 'Don't bump your head against the wall, let me give the data you need!'"

Rollcentre's plans foundered when a change in FIA regulations prevented a so-called 'tuner' such as Short's operation from homologating the car.

The Bentley project subsequently started to take shape in the early months of 2012 when John Wickham, who had been technical director on ▶



Bentley has joined a competitive GT3 pack

► the Speed 8 programme, and Graham Humphrys, designer of the Le Mans-winning BMW V12 LMR were taken on board to undertake what was billed as an evaluation study.

GT3 was the main focus. Some kind of supercar aimed at the Le Mans GTE category had already been ruled out on grounds of cost, though they did look at the classes available for the car at the Nurburgring 24 Hours and the German VLN long-distance championship.

Their job over the first half of 2012 was to clear the path for a luxury car to be able to compete against Ferraris and McLarens in GT3. When AUTOSPORT broke the story in April 2012 that Bentley was on the way to producing a GT3 car, negotiations with the FIA and the Stephane Ratel Organisation, the originator of the GT3 class, were “at a delicate stage”, explains Gush.

“What we did was very carefully check that everything we felt we needed to do to the car to make it competitive had a precedent,” he explains.

“The Apex Jaguar XKR8 had a transaxle, so our departed friend Richard Lloyd [the late team owner who played a key role in the Speed 8 programme] was in a way helping. There was the removal of the four-wheel drive and then moving of the engine rearward and down; we had to check that we could do all these things.”

The project was signed off in June 2012 and then announced in September at the Paris motor show.

THE CHOICE FOR A PARTNER

On the face of it Bentley made a left-field choice of company to design and build the Continental in M-Sport. Left hand might be better description, because that’s the direction Gush now turns onto the M6 when he leaves company headquarters for his new technical partner. But, then, he reckons “Bentley likes to do things a bit differently”.

“I thought M-Sport was a good choice because they haven’t previously gone racing,” he explains. “We want to build a team, a Bentley team that

goes racing in a Bentley way.”

The operation that has masterminded Ford’s World Rally Championship campaigns for nearly 20 years “ticked all the boxes”, according to Gush.

“Number one was quality of workmanship and technology that M-Sport has in house,” he explains. “The other thing is that they know how to provide customer service because they have hundreds of rally cars around the world. They have got a logistical set-up that works at the push of a button.”

M-Sport boss Malcolm Wilson believes this last factor was key in his company landing the deal with Bentley. “We have sold more than 800 Focus or Fiesta WRC cars since the beginning and the majority of those cars are still running, and that includes Focuses from 1999 and 2000,” he says. “Building customer cars and servicing them is our core business.”

Wilson admits that he was surprised when Gush cold-called him. “I was completely honest



Wilson knows how to look after customers



The last great success: Le Mans win in 2003

with him and told him that we had absolutely no racing experience," continues Wilson, who did his deal with Bentley on a handshake within two weeks of the first contact. "But on the other hand I had no reservations about being able to design and build a competitive car. Brian realised we were capable of it and saw a lot of cross-over from the world of rallying."

TURNING CRUISER INTO RACER

M-Sport technical director Christian Loriaux had the same confidence as his boss when he was handed the Bentley project. He cares not for any snobbery from the world of racing about rallying organisations.

"Quite often, rallying companies are seen as by racing people as people who build tractors," says the Belgian, whose biggest claim to fame in the racing world is being on the back of the quad-bike on which Alain Menu broke his leg at Knockhill in 1992 as a young data engineer at Prodrive.

"WRC cars are actually very, very technical and if you go back to 2000-'07, there were more technical challenges in the WRC than in F1. If you take a WRC rally car running on asphalt in Catalunya, we run a similar rideheight to a racecar and we probably have a centre of gravity lower than many GT3 cars. So the principles are all the same."

Getting weight out of a road car that weighs in at 2295kg was one of Loriaux and his team's first challenges. The Bentley ran at 1300kg in Abu Dhabi, 20 kilos less than the weight at which the Mercedes-Benz SLS AMG ran in the Blancpain Endurance Series last season.

"Your first thought is, 'oh my god it is such a big and heavy car', but it wasn't so difficult to get to 1300kg, though 1200 would have been a challenge," he explains.

Much of the weight is dissipated by removing the items that make the Continental a luxury Gran Turismo. That includes double glazing, leather, wood and chrome, not to mention around 50 electronic control units. The switch from four- to two-wheel drive is also significant.

Weight was one of the reasons why the racing Bentley is powered by a twin-turbo V8 and not the blown W12, which powered the show car unveiled in Paris 2012. Just as important, however, were packaging and superior fuel economy of the four-litre, eight-cylinder powerplant.

THE FIRST SEASON

Bentley will be represented by M-Sport with a factory team running two cars in the BES and by its first customers. A successful test programme, which included a 12-plus hour endurance run at Paul Ricard has enabled the



M-Sport squad is learning to go racing

Gush: bringing Bentley back... again

Brian Gush is the architect of Bentley's motorsport return, three times over. The South African was the driving force behind the end of Bentley's 70-year hiatus from motorsport as a factory at the 2001 Le Mans 24 Hours, rescued the Speed 8 project the following winter and kept it on course in 2003, and has now brought the brand back in an entirely different arena.

Gush, Bentley's senior engineer, knew all about parent company Volkswagen's plans to go to Le Mans with a closed-top GTP powered by a W12 engine that was the pet project of company boss Ferdinand Piech. The reality was that the engine was entirely unsuitable for a modern prototype and the project was canned before the engine ever ran in anything other than a Lola purchased for testing purposes.

But Gush saw the potential in the car, designed and built at Racing Technology Norfolk, and reckoned it would be the perfect tool to help promote Bentley, newly under the control of VW and separated from Rolls-Royce, with a younger audience. The only problem was that he didn't have an engine.

That bridge was crossed at Le Mans in 2000. "I knew Dr [Franz-Josef] Paefgen [boss of Audi] and went up to him in the pitlane and told him I'd like to buy an engine from him," recalls Gush. "That's when the whole thing started



Gush has been key for project

falling into place. Once I had got the building blocks together, I was able to go the board and say, 'you know, we could do this'."

The result was the EXP Speed 8 and a third-place finish on debut for one of the Bentleys at Le Mans in 2001. There was a winter wobble for the project, which Gush managed to steady, before Paefgen coincidentally joined Bentley in February 2002.

The decision was made to conserve resources that season and build an all-new car for 2003. That new car, which lost the EXP prefix, would go on to win Le Mans with Tom Kristensen, Guy Smith and Rinaldo Capello.

"If the car's eligible for Le Mans, we'll be back there like a shot"

sale of cars to be brought forwards.

The first of the cars that sell for approaching £390,000 — significantly more than, say, an Audi R8 LMS ultra at £275,000 — has gone to David Appleby Engineering, which will run the car in the British GT Championship and potentially BES as well under the Generation Bentley Racing banner.

The Appleby car is chassis #3, following on from two prototypes, while the M-Sport cars will be numbers four and five. Gush explains that it would be tough to have further cars up and running for the start of the season, but the aim is to sell a total of 10 in year one.

He doesn't envisage selling Continentals in the same numbers as some GT3 rivals (Audi has just passed 100 R8s delivered, while McLaren sold 25 MP4-12Cs in year one).

"We don't want to make more than we can handle," he explains. "The customers must get a feeling of belonging to the Bentley brand and more than 10 a year isn't on the plan."

THE FUTURE

Bentley has a three-year plan for the Continental, meaning total sales of 30 cars. That plan includes M-Sport continuing to race the car as a works

team, something that Wilson believes is vital even though the homologation of the Bentley due ahead of the coming season will effectively freeze the specification.

"We need to continue developing the car and I think the customers will want that," he says. "I know that when Ford pulled out of the WRC [ahead of 2013] it created a lot of uncertainty with our customers. When we continued to compete, it gave confidence back."

The three-year plan for the Continental will potentially take Bentley into a new landscape of GT racing. So-called 'convergence talks' have been devised to bring the GT3 and Le Mans GTE categories closer together and allow competitors to produce a kit to turn what will from 2016 be known purely as a GT+ car.

That will potentially make the Continental eligible for Le Mans and be bang on the five-year timeframe Gush laid out for a return to the 24 Hours back in 2011. He's keeping his cards close to his chest for the moment, however.

"Everything is open and we will have to see how these convergence talks go," he says. "But if the car is eligible, we'd be back like a shot."

And that would be the cause of further rejoicing among sportscar fans. V8 or W12. ☘

Great events for 2014

We've got our heads together and come up with some of the motorsport occasions and venues you should get to at least once in your life. Here are those that require a boat or aeroplane

MONTE CARLO RALLY

January 16-18

The opening round of the World Rally Championship has no Sebastien Loeb for the first time in over a decade, but promises huge excitement after a winter of positive changes. His replacement at Citroen, Kris Meeke, is joined on the entry list by fellow

UK ace Elfyn Evans at Ford, who partners ex-F1 star Robert Kubica. Hyundai makes its return to the WRC with last year's runner-up Thierry Neuville, but reigning champ Sebastien Ogier and VW are the event and title favourites.



DAYTONA 24 HOURS

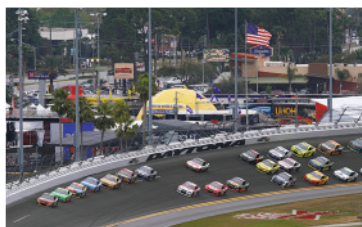
January 25-26

American sportscar racing enters a new era as the United SportsCar Championship kicks off. The amalgamation of the American Le Mans Series and Grand-Am has produced a capacity field of varied machinery, from prototypes to top-level GTs. Some worrying airborne crashes in testing adds an extra (scary) element to this traditional season opener.



DAYTONA 500

February 23



Rising from reclaimed Florida swampland, NASCAR's cathedral of speed has hosted US stock car racing's most storied race since 1959, when it took three days to decide the winner of a photo finish! This year's running is the start of Jimmie Johnson's bid to equal the legendary Richard Petty and Dale Earnhardt's record seven Cup titles.

What's on and when in 2014



FORMULA 1 CALENDAR

DATE	LOCATION
March 16	Melbourne (AUS)
March 30	Sepang (MAL)
April 6	Sakhir (BRN)
April 20	Shanghai (PRC)
May 11	Barcelona (E)
May 25	Monte Carlo (MC)
June 8	Montreal (CDN)
June 22	Red Bull Ring (A)
July 6	Silverstone (GB)
July 20	Hockenheim (D)
July 27	Hungaroring (H)
August 24	Spa (B)
September 7	Monza (I)
September 21	Marina Bay (SGP)
October 5	Suzuka (J)
October 12	Sochi (RUS)
November 2	Austin (USA)
November 9	Interlagos (BR)
November 23	Yas Marina (UAE)

WRC CALENDAR

DATE	LOCATION
January 16-18	Monte Carlo Rally
February 5-8	Rally Sweden
March 6-9	Rally Mexico
April 3-6	Rally of Portugal
May 8-11	Rally Argentina
June 6-8	Rally of Italy
June 27-29	Rally Poland
August 1-3	Rally Finland
August 22-24	Rally Germany
September 12-14	Rally Australia
October 3-5	Rally of France
October 24-26	Rally of Spain
November 14-16	Rally of Great Britain

AUSTRALIAN GP

March 16



There's always a buzz of anticipation ahead of the first grand prix of the season, but after a raft of rule changes – and especially the return of turbo engines for the first time since 1988 – attention will be on Melbourne more

than ever. The elevation of Daniel Ricciardo as four-time world champion Sebastian Vettel's team-mate at Red Bull will bring huge pressure on home turf, and the debut of McLaren's Kevin Magnussen will add to the intrigue.

TEE/LAT

MOROCCO WTCC

April 6

Africa is the continent least touched by international motorsport – especially since the Dakar Rally's exodus to South America. Its only World Championship-

level event is on the streets of Marrakech, when the WTCC hits town. Its long straights and tortuous chicanes usually provide tense, slipstreaming affairs.



INDY'S MONTH OF MAY

GP of Indy May 10

Indy 500 May 25



WILLIAMS/LAT/USA

The 500-mile oval race at Indianapolis needs no introduction, but the new IndyCar road-course event does. Running on the same course as the MotoGP bikes will use, it promises an intriguing spectacle compared to the flat-out 225mph open-wheel racing we're used to seeing the Indycars produce. Will it be a success, or detract from the majesty of its jewel-in-the-crown event?

45

GP de MONACO HISTORIQUE

May 9-11

First run in 1997, the Automobile Club de Monaco's biennial street-racing festival is the calendar's glitziest and – with its moving feast of races for favoured cars – drives the historic marketplace. The ninth edition, a fortnight before the F1 Grand Prix, embraces GP machinery from Bugattis of the 1920s to three-litre cars up to '78, sportscars from '52-'55 and two-litre F3 cars from '74-'78. The event to be seen at!



SAWYER

DTM HUNGARORING

June 1

It's easy to criticise the sinuous Hungaroring, as it has produced some Formula 1 snoozefests down the years. And whether the incredibly competitive DTM field will be any different, with its DRS and option-tyre strategies, remains to be seen. But Budapest is a great city to have as a nearby backdrop, regardless of the on-track excitement. When it comes to races in Germany, the Norisring (June 29) is an undoubted highlight.



BARON/BONGARTS/GETTY

GP de l'AGE d'OR DIJON

June 7-8

Jacques Potherat and Serge Pozzoli's bold idea of showcasing motor racing's 'golden age' with a glamorous sideshow at the 1964 French GP at Rouen caught on. The GP de l'Age d'Or subsequently became synonymous with Paris's Montlhéry speedbowl, then moved to the picturesque Dijon-Prenois circuit where its 50th Anniversary will be celebrated with major pre-WWII content this summer.



SAWYER

LE MANS 24 HOURS

June 14-15

A test of endurance for its contestants and spectators alike, Le Mans is the jewel in the crown of the World Endurance Championship, and this year promises an enticing battle at the front between Audi, Toyota and Porsche. LMP2 has been brilliant in recent years, and the GT classes provide another high-quality field of supercars. And there's the intriguing Nissan ZEOD: can it really do a lap of Le Mans on electric power?



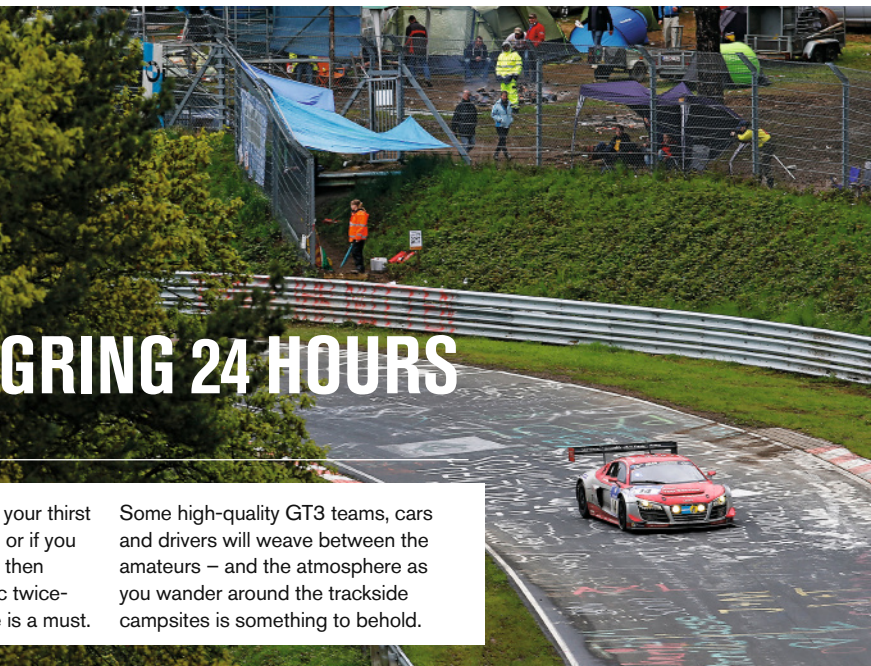
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NURBURGRING 24 HOURS

June 21-22

If Le Mans hasn't satisfied your thirst for long-distance classics, or if you can't make it to La Sarthe, then the Nordschleife's fantastic twice-around-the-clock setpiece is a must.

Some high-quality GT3 teams, cars and drivers will weave between the amateurs – and the atmosphere as you wander around the trackside campsites is something to behold.



PIKES PEAK INTERNATIONAL HILL CLIMB

June 29

A quite amazing event in world motorsport, the now-asphalt climb to the top of this peak in the heart of the Rocky Mountains boasts a remarkable history. Last year, Sebastien Loeb rewrote the record books in his amazing Peugeot 208 – might he return to lower his own mark under the eight-minute barrier for the 92nd running?



LE MANS CLASSIC

July 4-6

All the joys of France's fabled 24 Hours condensed into six stellar grids – the pick of the car crop from 1923-79 – racing three times each in rotation, day and night, at La Sarthe. Le Mans veterans and big-name historic drivers pepper Peter Auto's massive but charismatic event, run in alternate years since 2002. Extraordinary atmosphere in the paddock and tribunes make it unique, but the mouthwatering array of cars that rarely race are what really pleases motorsport enthusiasts.

What's on and when in 2014



WEC CALENDAR

DATE	LOCATION
April 20	Silverstone (GB)
May 3	Spa (B)
June 14-15	Le Mans 24 Hours (F)
August 31	Interlagos (BR)
September 20	Austin (USA)
October 12	Fuji (J)
November 2	Shanghai (PRC)
November 15	Sakhir (BRN)



WTCC CALENDAR

DATE	LOCATION
April 6	Marrakech (MA)
April 20	Paul Ricard (F)
May 4	Hungaroring (H)
May 11	Slovakiaring (SK)
May 25	Red Bull Ring (A)
June 8	Moscow Raceway (RUS)
June 22	Spa (B)
August 3	Rio Hondo (RA)
September 14	Sonoma (USA)
October 12	Shanghai (PRC)
October 26	Suzuka (J)
November 16	Macau (PRC)



SPA 24 HOURS

July 26-27

The highlight of the Blancpain Endurance Series in 2014, this is the last of the twice-around-the-clock classics of the season. A packed field of GT3 supercars – with some top drivers involved – will

battle it out around the legendary Belgian Grand Prix venue that's closer to the UK than you think. All with a culinary backdrop of chips and mayo, plus Belgian beer. What's not to like?



PETIT LE MANS

October 4



This thousand-mile enduro is the curtain closer for the inaugural United SportsCar Championship, so gone are the LMP1 cars, replaced by the revamped Daytona Prototypes. As

well as the battle up front, the GT class boasts entries from some of the biggest manufacturers in the world, and promises a battle royal as good as anything you'll see at Le Mans.

LEPAGE/LAT/USA

RUSSIAN GP

October 12

This is going to be a massive year for Sochi. The city on the Black Sea coast hosts the Winter Olympics next month, then the first-ever world championship Russian GP in October (there were a couple of pre-WWII events that ran with the title). The event should be also be a 2014 highlight for Toro Rosso's homegrown F1 rookie Daniil Kvyat.



BATHURST 1000

October 12

Australia's 'Great Race' is a 1000km two-driver endurance event around one of the best circuits in the world: Mount Panorama. As such, it's the race that everyone wants to win. A fifth manufacturer, Volvo, is due to join the V8 Supercars party this year, adding another element to the Holden v Ford v Nissan v Mercedes dynamic.



IMOLA

EUROPEAN F3

October 11-12

The Autodromo Enzo e Dino Ferrari may have a stained past in the minds of many, but it remains a fantastically challenging circuit. Away from the DTM it usually supports, this Euro F3 standalone forms the penultimate round of the series and is the only encounter in Italy.



MACAU GP

November 16



Is there a more fearsome street circuit in the world? The juxtaposition of the city's flat-out first sector and daunting mountain section means drivers are tested like nowhere else. The fabled Formula 3 Grand Prix and World Touring Car headliners are supported by a decent GT field and some lairy local racers. And then there are the lunatics on the motorbikes...

Best of the UK 2014

You don't have to go globe-trotting to find top-quality motorsport. Britain has a superb racing calendar that takes in everything from hectic club racing to the very best international series

BRITISH GRAND PRIX

Silverstone July 6

Steeped in history and featuring some of the best corners to watch a Formula 1 car at peak performance, the British Grand Prix at Silverstone remains one of the Formula 1 calendar's stand-out events. It's a luxury that can easily be taken for granted, but certainly one to be taken advantage of if you are

seeking some trackside grand prix viewing and do not fancy travelling to Europe or beyond. To make the most of your experience, stand at Maggots and Becketts, which offer great vantage points for watching modern F1 cars and drivers fully tested when they're on flat-out qualifying laps.



What's on and when in 2014

BTCC CALENDAR

DATE	LOCATION
March 30	Brands Hatch Indy
April 20	Donington Park
May 4	Thruxton
June 8	Oulton Park International
June 29	Croft
August 3	Snetterton 300
August 24	Knockhill
September 7	Rockingham
September 28	Silverstone
October 12	Brands Hatch GP

BRITISH GT CALENDAR

DATE	LOCATION
April 21	Oulton Park International
May 5	Rockingham
June 1	Silverstone GP
June 22	Snetterton 300
July 12	Spa
August 31	Brands Hatch GP
September 14	Donington Park

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BRITISH GT

Silverstone June 1

British GT enjoyed a stellar 2013 campaign, with a variety of race winners and a highly entertaining title fight that went to the last round. With a customer Bentley joining alongside an as-yet unknown Gulf Racing entry, the series is set for yet another superb

season. If you can only make it to one round, Silverstone is a safe bet for great viewing: last year boasted a record 47 cars and you would be hard pushed to find a more stunning array of entries on the same domestic grid. And Donington's finale is always classic.

BRITISH TOURING CARS

Oulton Park June 8



The BTCC is going from strength to strength at the moment. Independent teams are taking on the factory squads, there's a huge range of models on show and an ever-improving quality of driver on the grid. You're unlikely to get to every

race (though credit to you if you do), so if you have to pick one it has to be Oulton Park. Cheshire, in the summertime, is as good a place to be as any and this year the BTCC will use the full International layout for the first time in over a decade.

WEC

Silverstone **April 20**

There's a lot of momentum building over in the World Endurance Championship, helped massively by Porsche's LMP1 return and the arrival of Formula 1 refugee Mark Webber. Toyota also grew

in competitiveness in the second half of 2013, so why spend April 20 anywhere other than Silverstone, watching some of the world's finest drivers and machines?



BLANCPAIN

Brands Hatch **May 17-18**



When the DTM announced it would not return to Brands Hatch in 2014, circuit bosses moved quickly to ensure it would not be without a marquee international

event. Top-line sportscar racing will return to the Kent track for the first time since 1996 in the form of the Blancpain Sprint Series, formerly FIA GTs.

WORLD RALLYCROSS

Lydden Hill **May 24-25**

Rallycross exploded into the public eye in 2013, its European series featuring the likes of Petter Solberg and a guest appearance from Sebastian Loeb. Now

it has a world championship, which will come to Britain in the perfect place – Lydden Hill; a circuit where, no matter where you are, you can see everything.



BRISTOW/RALLYCROSSRX

GOODWOOD

Festival of Speed **June 26-29**
Revival **September 12-14**



These cater for both the casual and dedicated motorsport fan. The Festival display in the paddock is great if you want to see a splendid array of

machinery. But if sensational cars with star drivers going wheel-to-wheel is more appealing, then it's the Revival you should head to.

BLOXHAM/LAT



MCKLEIN

RALLY GB

Wales, **November 14-16**

Lots of mud and epic sideways action. Rally GB's tweaked route for last year's season-ending rally meant fans' viewing came first, and with Elfyn Evans landing

a full-time WRC drive with M-Sport, Hyundai returning and Kris Meeke joining Citroen, there's every reason to go along. Will anyone stop Sebastien Ogier?

SILVERSTONE SPECIALS

Silverstone Classic **July 25-27**

Walter Hayes Trophy **November 1-2**

The Silverstone Classic has something for everyone, from sensational sportscars to 50-car grids of period single-seaters via battling tin-tops. In November you'll

find the superb Walter Hayes Trophy, a Formula Ford 1600 showpiece that attracts more than 100 entries and provides some of the best racing around. ✪



Riding with a



Dakar legend



Stephane Peterhansel has 11 Dakar wins to his name and this month he'll be gunning for his third straight success with Mini. DAVID EVANS joined the Frenchman – in the snow!

Here's a question for you. Where do you think a straw bale comes into a team's Dakar preparation? Honestly, you'll never get it. In fact there's quite a lot about today that you wouldn't align with racing across the planet's hottest, driest spots. Mini has selected a very fortunate few to come along and sit next to a Frenchman who is particularly handy at getting from A to B through the desert, be it on two wheels or four. But where am I meeting Stephane Peterhansel just days before he heads to the achingly hot desert plains? In the mountains.

The Austrian Alps, to be precise. Where the temperature is laughing in the face of anything positive and for fesh-fesh, read, er, snow.

The straw bale? Simple. It's what is being used to help people into the ALL4 Racing Mini and ▶



Our man prepares to ride shotgun with Peterhansel

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Peterhansel demonstrates his car control in the snow

“My car is like a toy... I love to play with this toy in the desert”

▶ alongside the man who has redefined the word ‘success’ in marathon rallying.

The first thing that strikes you about Peterhansel is how unassuming he is for someone who has won the world’s toughest motorsport event six times on a bike and five in a car. The first thing that strikes you about his car is how big it is. And how small it is inside, like a TARDIS in reverse. Except cooler.

The reason we’re near Innsbruck is because Mini is using the event to show off new Paceman and Countryman models. Getting into the ALL4 Racing machine is a bit of an art form. You sort of slide down into it, but you then feel like you’re belted into a bucket-seated barstool. After a low-slung World Rally Car, you’re definitely up on a bit of a perch, but visibility from where I’m sitting is excellent (not always a good thing!).

Firing the diesel up is a pretty underwhelming experience. There’s a big chuff of black smoke and then the chunter of a finely tuned oil-burner. But when Peterhansel gives the throttle a prod, the diesel noise is refined by the long, low whoosh of the restricted (if 38mm still counts as a restriction) turbo. Suddenly it sounds serious. And very, very powerful. In fact, if Airbus made an A380d, it would sound just like this. Predictably, torque’s really not a problem for the Mini. But I’m intrigued

to see how it’s going to handle the rough, rutted and rocky road up which we’re heading. The snow’s deep enough for there to be banks on either side, but in places the track looks barely wide enough for the car. That’s not a problem for Peterhansel or the Mini; if it’s not wide enough... make it wider.

“We will have roads like this on Dakar,” he says, “this twisty and bumpy, but not this narrow. And we definitely won’t have the snow!”

Just as the 728Nm of torque feels impressive, so does the suspension. Twin Reiger dampers at each corner laugh in the face of these Alpine undulations and keep the car remarkably stable at high speed. When I say high speed, everything’s relative; Peterhansel doesn’t top 70mph down the stage, but trust me, if you brought one of the shiny Countryman ALL4s up here, you wouldn’t get it out of first gear.

We were lucky enough to get two runs and, if the first had been impressive, the second was out of this world. Granted, we were on studded tyres and much of the snow had been cleared, but the speed Peterhansel showed – especially coming down the hill – was just mental. Sitting in the Mini, it feels huge (largely because it is, remember the straw bale) and it weighs in at 1900 kilos, but it’s got poise as well as presence here.

But he’s having to work it quite hard in places to keep it in the middle of the powerband. With 320bhp, it’s not the most powerful of machines, but immediate response and earth-shattering acceleration are not important here – it’s about the mid-range torque giving lift out of medium-speed corners. It’s about momentum. And, coming down the hill, we have plenty of it. With commitment and a busy left foot, Peterhansel keeps the car precise on turn-in and furious on the straights.

The end of my time alongside the Dakar master comes much too soon. He smiles at my compliments of man and machine – he’s heard them all before, no doubt – but he still enjoys the chance to make people think again about what a Mini can do. And, once out of the snow and into the South American sun, Peterhansel will be chasing a third-straight Dakar win for the ALL4 Racing. His enthusiasm remains undimmed, but he’s not stressing about another win.

“I am confident,” he says. “We made a good test and my body is well trained, but there’s no pressure for me. One victory more or one victory less is not a big difference. I drive because I have good motivation and good passion for driving. And driving when you are relaxed is easier. For sure, some drivers will be taking the pressure – I know a lot of these other drivers want to kill me!”

Peterhansel is completely laid back about the next couple of weeks of his life. In winning Dakar 11 times and competing 25 times, he’s seen pretty much everything Africa and South America has to offer. The African event was undoubtedly tougher, he says, which is part of the reason why he doesn’t hanker after a return.

“Since we moved to South America, I didn’t sleep in the tent once,” he says with a smile. “But 20 years in tents in Africa is maybe enough for me... It’s not the same rally now. Before it was real endurance, really tough and so complicated – now it’s more intense. It’s more like a long sprint. But this year will be tougher: they tried to find some of the old spirit of Dakar with more kilometres and some tougher places. I’m happy for this and I’m happy for it to stay in South America.

“The good thing here is that we can find different roads; like Africa we have the desert roads, but also around Cordoba we have a lot of WRC roads and it’s a real pleasure to drive the Mini on these roads.”

Driving pleasure is a driving force for him. Ask Peterhansel to describe the feeling of flat-chat across the Atacama and he replies: “My car is like a toy and I love to play with this toy in the desert.” And nobody’s ready to take his toy away just yet. ☘

The challenge of reaching the start

The Dakar lasts two weeks. And, for 13 days, the crews will drive as fast as they possibly can for 3431 miles. Over the fortnight, including liaison sections, they will drive almost 6000 miles.

For pretty much all of the 450 crews competing, getting to the startline in Rosario, central Argentina, will be an achievement in itself. The logistical exercise is mammoth. At the start of last month, a cargo ship left Le Havre in France to cross the Atlantic in 21 days to reach Argentina, where it decanted its cargo of 700-plus race and support cars for the event.

Team Ford Racing had five vehicles on the boat, including two T1 Rangers (right), one 10-tonne race truck and two 6x6 26-tonne support trucks. The team’s 27 personnel arrived in South America by air on December 29, and will prepare for a journey that runs through some of the most hostile terrain on earth – including a new high-altitude Andean highpoint of 4700 metres.

Ford’s 10-tonner follows the route and acts as a first support car for the two Racing Rangers. One big truck carries all the spares, including 128 tyres, transmissions, body kits, suspension



components – everything needed to keep the T1 cars running. The second truck is home to most of the team during the rally, set up each day in time for the crew’s arrival. “It’s just like setting up and breaking down a small city every day,” says Team Ford Racing’s Scott Abraham.

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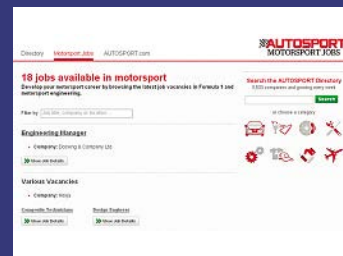
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Graham was a 1970s touring car star in Chevy Camaro

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HAPPY NEW YEAR, EVERYONE.

The relentless nature of the racing season means there's barely time to digest the Christmas turkey and sober up before focus switches to the next one.

AUTOSPORT International is only a week away and soon after will come car launches, F1 pre-season testing, general pre-season testing, and then racing will be underway once more.

For Goodwood's latest initiative – likely to be one of the earliest UK race meetings of the new season at the end of March – things are already looking pretty promising. To have 30 cars signed up already, when they're still more than two months away from lining up on the grid, highlights the lure of Goodwood's history and the appeal of the Group 1 touring car era.

If organisers can add some star names to the bill (more than likely given how many flock to the Revival every year), Goodwood will have another success story on its hands.

Speaking of success, it's great to see that new champion Andrew Howard will return to defend his British GT3 title this season (see page 66).

Co-driver Jonny Adam reckons the Beechdean boss is one of the most improved amateur drivers in the series, and the stability in their Aston Martin line-up should make them a formidable force again this year in the V12 Vantage.

Howard's plan to start a feeder team in GT4 is also good news for that class, which is crying out for more credible entries to take on the Ginetta hordes.

Just before we leave 2013 behind us entirely, AUTOSPORT has again compiled its annual review of the new series that joined the UK fold in the most recent season. Turn to pages 68-69 to see what we made of them.

Graham tops Goodwood entry

Saloon champ to drive Chevy Camaro in Gerry Marshall tribute race

FORMER TOURIST TROPHY winner Stuart Graham leads an entry of nearly 30 cars for the tin-tops contest at the 72nd Goodwood's Members' Meeting this year.

The Gerry Marshall Trophy will be for Group 1 touring cars of the 1970s and 1980s at the March 29-30 event (see AUTOSPORT, Sept 19 2013).

Graham, who won the TT on two and four wheels as well as the historic TT at the 2011 Silverstone Classic, will drive a replica of the Chevrolet Camaro he used in the British Saloon Car Championship in 1975, built by historic tin-top racer Nigel Garrett. Graham won eight rounds in 1975 driving his 5.7-litre V8 Camaro, but lost the overall title to Class B runner Andy Rouse in the drivers' standings.

"Apart from a slow demo lap in one – with a trick auto 'box – at a BTCC celebration, I've not driven a Camaro in almost 40 years, but the model marked my successful transition from motorcycles," said Graham, now 71.

"The Brut 33 Camaro became a bit

of an icon, but we didn't test at Goodwood in the '70s. In fact, we didn't test much at all.

"I found Nigel the paint code and the stickers to reproduce and am excited to have been asked to drive it."

Almost 30 cars have already been entered for the event and the current list includes an ex-Rouse Opel Commodore, several Ford Capris, original Triumph Dolomites, Win Percy's 1980 title-winning Mazda RX7,

and three Rover SD1s. Tim Moore's Vauxhall Magnum, which Marshall and Peter Brock took to a class win at the Spa 24 Hours, is also entered.

Drivers have not yet been confirmed, but AUTOSPORT understands owners of the cars will contest a short qualifying race on the Saturday. A number of star names will then share with the owners for the longer, mandatory-pitstop event the following day.



New race will include several ex-Marshall cars

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British GT champion Howard will return with 2013 partner Jonny Adam this season

British GT

Beechdean plans Aston junior team

BRITISH GT CHAMPION ANDREW

Howard is to attempt to win a second title this season as well as creating a GT4-class Aston Martin junior team.

The ice-cream magnate will pair up again with AMR Junior Driver Jonny Adam in the V12 Vantage with which Howard took last year's GT3 title.

"British GT is a fantastic championship and it's massively hard to retain the title," Howard told AUTOSPORT. "No one in the last few years has gone back with the same

team, same structure, same drivers, and with no upgrades allowed in GT3 we want to capitalise on everything we've learned.

"We haven't got the fastest car on the grid, but we've got a car that's very reliable and has a great chance of winning the title again."

A points penalty for a contact incident at Snetterton denied Adam any chance of the 2013 title, but Howard hopes to share the glory with his co-driver this season.

"Jonny is fantastic from a driving point of view and from a coaching point of view," Howard added. "I'm very excited to drive with him and build on everything we've developed over the past two years as a team."

Howard plans to run a dual programme in Europe, and is searching for extra drivers to contest the Blancpain Endurance Series and the Spa 24 Hours, plus Britcar's Silverstone 24 Hours.

He has also secured support from

Aston Martin Racing to run a latest-specification GT4 Vantage for up-and-coming drivers.

"We will run a proper junior team in GT4," added Howard, who was due to sign drivers for the programme as AUTOSPORT closed for press. "We've bought the 100th GT4, which will be a development car for AMR."

"There will be more marques in GT4 this year, so it will be a great time to win that. It's going to be a very exciting year for us."

Historics

Goethe to race Gulf Tyrrell in Historic Monaco Grand Prix

A TYRRELL 007 IS BEING RETURNED

to the Gulf livery in which it raced in the hands of Formula 1 privateer Alessandro Pesenti-Rossi in 1976 for this year's Historic Monaco Grand Prix.

Sportscar driver and historic regular Roald Goethe, who owns the RofGo collection of cars bearing allegiance to Gulf Oil, has purchased the Tyrrell – chassis #4 – in which Pesenti-Rossi contested four grands prix. The German plans to race it in the first of two Gulf liveries in which it was entered by the Rondini Racing team.

Goethe said he bought the Tyrrell to compete in the historic race for 1972-78 cars in June, in addition to taking part in the race for earlier machinery in his McLaren-Cosworth M14.



Gulf Tyrrell will be back

"I wanted a car in which I could compete in the second 'plateau', so it's perfect that I can do it in a car that raced in Gulf colours," he said.

"It is likely that we will run it in blue with big Gulf stickers rather than the later blue and orange [pictured]."

The ex-Patrick Depailler Tyrrell was previously raced in historics by Peter McLaughlin and Jeff Lewis.

Historics

Willhire Reunion switches to two-hour race at Donington

WILLHIRE REUNION RACE

organiser Julius Thurgood hopes to run a 24-hour race in future despite having to reduce his 2014 edition to two hours.

Thurgood planned to run a longer race at Snetterton, the former home of the Willhire 24 Hours, but AUTOSPORT understands planning issues forced a switch to Donington Park on October 18.

The race, which will be run into the night, will still be open to sportscars and touring cars of the type that contested the original Willhire between 1980 and '94, and Thurgood hopes to extend the length of the race in future.

"The race will consist of running for an hour in the dark, which I think will be the

highlight of what people are interested in," he said. "Unless you run into the dark it's not the Willhire."

"There are enough cars out there. It's a trial thing. If we can get the pilot scheme off the ground things are looking good [for a longer race] in 2015. Everyone will want to do it."



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Historics

F5000 racing set for Thruxton return at Easter Revival event

FORMULA 5000 RACING WILL return to Thruxton next season as part of the Historic Sports Car Club's Easter Revival meeting.

The five-litre monsters have not raced on the circuit for almost a decade but will join Formula 2 cars in competing for the Derek Bell Trophy. The first F5000 race at the Hampshire track was won by Peter Gethin in 1970, but a dedicated race for the class has not been run since '75.

A small group of leading F5000 drivers are expected to take part, including

multiple category trophy winner Michael Lyons, who won the category's event at last year's Silverstone Classic.

"I've been pushing for a long time to take the 5000s there," he said. "I really enjoyed racing at Thruxton in Formula Renault and I love the idea of racing something with 500bhp there.

"If it doesn't clash with my GT programme, I'll be there. Thruxton is a proper circuit for these cars."

The April 19-20 double-header includes the Jochen Rindt Trophy for F2 cars.

Gethin won first F5000 race at Thruxton in 1970



VSCC

VSCC to run special ERA race for club and marque's 80th anniversary

THE VINTAGE SPORTS-CAR CLUB and English Racing Automobiles will celebrate their joint 80th anniversaries with a dedicated race for the marque's cars at the club's traditional Spring Start meeting at Silverstone on April 12-13.

As with the 70th anniversary celebration at Donington in 2004, it is hoped that most surviving examples will attend the reunion.

Raymond Mays practiced the first ERA at Mannin Moar in May 1934, sharing the R1A with financier Humphrey Cook on its race debut at Brooklands the following month, and the machines were popular as far afield as Australia and South Africa.

Seven ERAs raced when Silverstone

opened in 1948 and several went on to start the British Grand Prix in which Bob Gerard finished third. Gerard and the 12-year-old R14B (owned by Donald Day since '58) would finish sixth in the inaugural world championship opener at Silverstone in 1950.



ERAs will grace Silverstone in April

GT

Ex-TVR champ Blower plans club races for turbocharged VX220

FORMER TVR TUSCAN CHALLENGE champion Colin Blower wants to enter the unique turbocharged Vauxhall VX220 he originally built for the 2004 British GT Championship in club races this year.



Vauxhall was first developed for GTs

His 15-year-old son Sam recently tested the car at Bruntingthorpe, after Blower Sr's engineering company uprated the Lotus-developed machine's engine to 300bhp and fitted a six-speed Xtrac gearbox with assistance from British Touring Car champion Andrew Jordan's father Mike at Eurotech Racing.

Unable to compete himself since the onset of Parkinsons disease, Blower Sr wants to see the Vauxhall run and may enter it in selected events for old Aston Martin racing friend Peter Snowdon.

Blower is also building a Ford Lotus Cortina for Historic touring car competition.

HUMBLE PYE

The voice of club racing

Classic FF2000 racers will join Historic cars at Silverstone



New Year and new promise for Goodwood and FF2000

Goodwood Road Racing Club's 72nd Members' Meeting on March 29-30 is shaping up well. While it won't quite be the 'turn up in your road car, tape up the lights, paint numbers on in plimsoll white and go racing' exercise that many did in clubbies at the reclaimed RAF Westhampnett between August 13 1949 and July 2 1966, it promises to be fun. And different from September's monster Revival Meeting.

One of the newcomer's modern features will be the Gerry Marshall Trophy race for Group 1 Production Saloons of a type raced between 1970-82. The event will be pro-am – based on the Revival's St Mary's Trophy model – but polarised opinion as to whether tin-tops should compete on a track closed to all but testing and sprints when they were new. It will certainly be a spectacle.

Alfa Romeos, BMWs, Ford Capri 3.0Ss, Escorts and Fiesta ranged against screaming Mazda RX7s, Mini 1275GT, Opel Commodore, Toyota Celica, Triumph Dolomite Sprints, DTV Vauxhall Magnum and VW Golf GTIs will evoke memories, and the V8 Chevrolet Camaros and Rover SD1s will stir spectators' juices, as in period. Saloon stalwart Nigel Garrett has built a replica of Stuart Graham's all-conquering Faberge Brut 33 Camaro Z28 of '75, and has Graham, 71 – the only man to win two-wheeled, four-wheeled and historic Tourist Trophy events – raring to go as his co-driver.

"Initially we ran the car ourselves, with my brother doing the engines

and Keith Fell from our garage [who now runs Stephen Bond's historic stable] as mechanic," said the Cheshire man. "Later, [the late] Ted Farge came on board.

"I've not met Nigel Garrett but he's keen to do the car properly. It will be a bit of fun and I'd like to invite John Cardrick – the influential man at Faberge at the time – and the guys who helped to a reunion at the event. I'll have to dig out my old Brut jacket!"

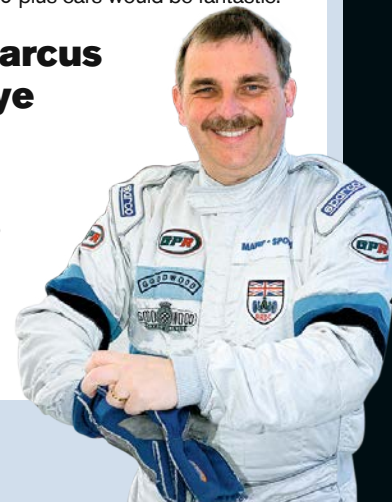
Another highlight of 2014 should be Formula Ford 2000, which will get a boost when competitors who run Pre-1984 cars in the Classic championship – established by the BARC in '85, to a Pre-'79 dateline – are invited to join fellow enthusiasts in the Historic [Pre-'82 outboard-suspended chassis] competition for a race on Silverstone's GP circuit.

The showpiece event at the HSCC's International Trophy retrospective on May 17-18 will unite the rapid Ford Pinto-powered machines in what is widely seen as the most pragmatic way to consolidate the affordable slicks-and-wings class first run in 1975.

Alan Morgan, co-founder of the Historic FF2000 Association with Delta Motor Sport boss Iain Rowley, is confident the joint race will be a success: "It works from both sides. We don't want to trip over anybody's toes, or do it too regularly, but a grid of 40-plus cars would be fantastic."

Marcus Pye

"Tin tops will evoke Goodwood memories and Chevrolets and Rovers will really stir spectators' juices"



Review: what w

A number of new categories graced the club national scene last year. AUTOSPORT looks back at 2013's fresh offerings and assesses what worked and which series didn't quite hit the mark



ATOM CUP

Despite failing to make double figures at any race, the first bespoke UK series for the Ariel Atom was an on-track hit. More often than not the racing was close and clean, and it attracted a few big names to drive its guest car. The cars look superb on track, raising the tantalizing prospect of what a full grid could look like.



BRDC F4



One in the eye for FIA single-seater commission president Gerhard Berger, who said on the eve of BRDC F4's debut season it was wrong for young drivers. Comfortably developed into the UK's leading single-seater grid, despite a few teething problems (to be expected) and a late-season decline in numbers (slightly disappointing).



RADICAL SR1 CUP



Another feather in the cap for Radical Sportscars and its founder Phil Abbott. The SR1 Cup featured a brand new car and the marque's Caterham Academy-inspired, entry-level category brought new people into the sport, all while achieving the Holy Grail of club motorsport – healthy grids. Perhaps the only downside was Colin Noble's dominance.



SUPER TOURING TROPHY



Huge anticipation surrounded this series for former British Touring Car behemoths, and while numbers weren't always stunning, the grids certainly were. Full of fan favourites, some driven by period drivers including John Cleland and Tim Harvey, organisers need to bridge the gap between appeal and viability. If they do, it has a bright future.

as new in 2013



★★★★★

CSCC MODERN CLASSICS

This series succeeded one specifically for German models, and catered mostly for pre-2000 production GT and sports cars. Sensibly, organisers opened it up to cars from its Tin Tops series and even allowed a few newer cars in as well. The result? A debut grid of 45 cars! The entries varied thereafter, but 32 took to the track for the finale, indicating another winner for the CSCC.

HAWKINS

★★★★★

MAZDA MX5 SUPERCUP



HAWKINS

Four full-time drivers won races and the top two were split by just two points. That sounds like the making of a good championship, but it was difficult to get excited about a series in which only seven drivers contested more than half the races. Showed signs of improvement in the final two races, though, managing a season high of 16 cars at the last round. MaX5 is popular so can the series grow in 2014?



★★★★★

BRITCAR PROD SPORTS

It looked fairly promising when nine cars entered for the opening round at Donington Park, but that was not sustainable as a standalone grid. Smart work from the organisers meant it was quickly amalgamated with the Production Cup grid for the remainder of the season, but numbers never really got going so one has to question its appeal.

★★★★★

SCOTTISH COMPACT CUP

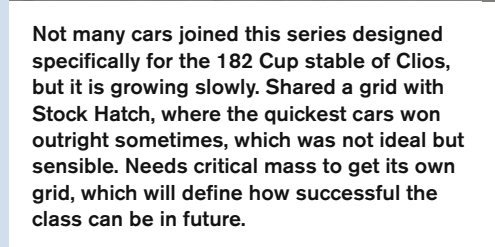


MOIR

Had a tough act to follow after the roaring success of the main series' first full season the preceding year. The Scottish Compact Cup was littered with one-off entries that have "did not enter" by most of the other races. Despite that, its launch in a new area was promising, and the six-car grid for race one had swelled to 12 by the finale.

★★★★★

750MC CLIOS



JONES

Not many cars joined this series designed specifically for the 182 Cup stable of Clios, but it is growing slowly. Shared a grid with Stock Hatch, where the quickest cars won outright sometimes, which was not ideal but sensible. Needs critical mass to get its own grid, which will define how successful the class can be in future.

★★★★★

CLIO CUP SERIES



HAWKINS

Catering for both the purebred Clio Cup car and converted 197 roadgoers, this club-level series often attracted modest grids, but at least it was always north of the double-digit fringes. Brought new racers into the sport and offered an alternative route for those already here. Has a bright future as the UK Clio Cup offloads its older models for 2014.



★★★★★

PATCH FIESTA

A brilliant example of how great motorsport need not focus on glamour or prestige. This new offering meant potential drivers could bag a roadgoing, mid-'90s Fiesta Zetec, fit a rollcage... and go racing. Huge grids and close front-wheel-drive action ensued. A Formula Ford Festival invitation race meant this Irish series had a stellar inauguration.

Teddington Studios, Broom Road, Teddington, Middlesex TW11 9BE, UK.
Tel: +44 (0) 20 8267 5804 Fax: +44 (0) 20 8267 5922
E-mail: mail@autosport.com Website: www.autosport.com

EDITOR-IN-CHIEF
Andrew van de Burgt ext.5974
andrew.vandeburgt@haymarket.com

EDITOR
Charles Bradley ext.5889
charles.bradley@haymarket.com

GROUP F1 EDITOR
Jonathan Noble ext.5810
jonathan.noble@haymarket.com

F1 EDITOR
Edd Straw ext.5887
edd.straw@haymarket.com

FEATURES EDITOR
Kevin Turner ext.5432
kevin.turner@haymarket.com

NEWS EDITOR
Glenn Freeman ext.5309
glenn.freeman@haymarket.com

MANAGING EDITOR
Peter Hodges ext.5903
peter.hodges@haymarket.com

RALLIES EDITOR
David Evans
david.evans@haymarket.com

DEPUTY NEWS EDITOR
Sam Tremayne ext.5952
sam.tremayne@haymarket.com

ART EDITOR
Lynsey Row ext.5914
lynsey.row@haymarket.com

CHIEF SUB-EDITOR
Marcus Simmons ext.5807
marcus.simmons@haymarket.com

PRESENTER/SUB-EDITOR
Henry Hope-Frost ext.5835
henry.hope-frost@haymarket.com

NATIONAL EDITOR
Ben Anderson ext.5425
ben.anderson@haymarket.com

EDITORIAL ASSISTANT
Scott Mitchell ext.5370
scott.mitchell@haymarket.com

SENIOR DESIGNER
Michael Cavalli

PICTURE EDITOR
Peter Mills ext.5918
peter.mills@haymarket.com

AUTOSPORT.COM TECHNICAL TEAM LEADER
Geoff Creighton
geoff.creighton@haymarket.com

AUTOSPORT.COM DEVELOPER
Tomasz Trznadel
tomasz.trznadel@haymarket.com

AUTOSPORT.COM USER INTERFACE DEVELOPER
Theo Pape
theo.pape@haymarket.com

OFFICE MANAGER
Joanne Grove
joanne.grove@haymarket.com
ext.5804

PHOTOGRAPHS
LAT Photographic

SPECIAL CONTRIBUTORS

Mark Hughes	Dieter Rencken	Pablo Elizalde
Gary Watkins	Gary Anderson	Matt Beer
Marcus Pye	Giorgio Piola	
Mark Glendenning	Alan Eldridge	

CORRESPONDENTS

ARGENTINA Tony Watson	ITALY Roberto Chinchero	Martin, David Phillips, Diego Mejia, Robin Miller, Jeremy Shaw.
AUSTRALIA Phil Branagan	JAPAN Jiro Takahashi, Len Clarke	UK & EIRE Jonathan Crawford, Dan Cross, Kerry Dunlop, Leanne Fahy, Paul Healy, Paul Jurd, Linda Keen, Mark Libbeter, Stephen Lickorish, Scott Mitchell, Marc Orme, Graham Reed, Hal Ridge, Peter Scherer, Ian Sowman, Oliver Timson, Ian Titchmarsh, Matt Upton, Eddie Walder, Richard Young
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GREECE Dimitris Papadopoulos	USA Jonathan Ingram, Bruce	

ADVERTISING
Tel: +44 (0) 20 8267 5820
Fax: +44 (0) 20 8267 5850
E-mail: autosport.ads@haymarket.com

COMMERCIAL MANAGER
Rachel Brock
rachel.brock@haymarket.com
ext: 5820

ONLINE ADVERTISING
Alex Newberry
alex.newberry@haymarket.com
ext: 5244

Leah Mimms
leah.mimms@haymarket.com
ext: 5846

Matt Simpkin
matt.simpkin@haymarket.com
ext: 5281

DIRECTORY ADVERTISING
Emily Clark
emily.clark@haymarket.com
ext: 5865

CLASSIFIED ADVERTISING
Peter Musumeci
peter.musumeci@haymarket.com
ext: 5992

SUBSCRIPTIONS
UK 0844 848817
OVERSEAS +44 (0)1795 592 974
E-MAIL
autosport@servicehelpline.co.uk
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BACK ISSUES
Tel: 0844 848817

MARKETING MANAGER
Karen McCarthy, ext: 5658
karen.mccarthy@haymarket.com

LICENSING AND SYNDICATION
LICENSING MANAGER
David Ryan, ext: 5024

DIGITAL SPECIAL PROJECT MANAGER
Simon Strang, ext: 5093
simon.strang@haymarket.com

DIGITAL PRODUCT MANAGER
Simon Grayson, ext: 5346
simon.grayson@haymarket.com

CIRCULATION/TRADE ENQUIRIES
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EDITORIAL DIRECTOR
Mark Payton

CREATIVE DIRECTOR
Paul Harpin

STRATEGY AND PLANNING DIRECTOR
Bob McDowell

PUBLISHING DIRECTOR
Patrick Fuller

MANAGING DIRECTOR
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THIS WEEK

LETTERS • BEST PICS • LATEST GEAR • ON TRACK & SCREEN • ONLINE

What you think of the motorsport news of the past week



Mark Hughes ranks
Raikkonen behind
Grosjean in our top 10

COATES/JAT

How does Romain beat Kimi?

Everyone is, of course, entitled to his opinion and these lists are basically great fun. However, having followed F1 for almost 40 years I still can't figure out how on earth you managed to get Romain Grosjean in front of Kimi Raikkonen on your top 10 list of 2013 F1 drivers (December 12). Kimi outscored Romain easily in points (even though he couldn't drive in two races),

had more podiums and one victory. Even if I remove my 'blue-white' glasses, I can't figure that out. I think the team bosses' list was very much the correct one. **Ari Jakobson, Espoo, Finland**

It was Grosjean's electrifying form in the second half of the season that swung it. And you're right, it is just our opinion – ed

Years ago the term 'silly season'

summed up the rumour-mill at driver contract time. Nowadays the silly season seems to mark the FIA's attempts to spice up an already fabricated formula with more and more absurd ideas. Double race points? Eight-speed gearboxes? Mandatory pitstops? This is all nonsense! The last thing F1 needs is more contrived gimmicks and restrictive legislation. In my opinion the competition is being strangled out of F1 by overly stringent regulation. **Paul Roberts Caerphilly**

with potential pitfalls and injustices. But what is undoubtedly a complete nonsense is that over half the drivers are guaranteed no points at all, no matter how hard and well they may have driven, if they finish outside the top 10. Points should be awarded to every driver who finishes the race above last place. This will add an incentive to teams and drivers in the lower half of the grid and will make it far easier for fans to see why a team/driver is where it is rather than having to work out, for example, how many 16th or 17th places they scored, as opposed to their nearest challengers. **Richard Morrison Pangbourne**

I was disheartened to read Caterham's Cyril Abiteboul stating on autosport.com that he feels drivers who do not seek sponsorship money are irresponsible. Yes Cyril, forget about talent. What next, asking designers to bring sponsorship? Well, what do you expect from a guy who refers to the F1 team he works for as a "project"? **David Herron Washington**

Re: double points. The 'Formula 1 circus' has been an affectionate way to describe the contestants, but it is now confirmed that it's run by clowns. **Tim Marshall By email**

In pictures

Our snappers roaming the globe from California to the French Alps



THE LAST TEST OF 2013...
Juan Pablo Montoya was in action in his Penske IndyCar just before Christmas as he gears up to return to the series for this season

PRUETT/LAT



...AND THE LAST LONG DISTANCE RACE
The Black Falcon Mercedes of Bernd Schneider, Jeroen Bleekemolen and Khaled Al Qubaisi won the Gulf 12 Hours

FERRARI AT CHRISTMAS
L-to-r: Massa, di Montezemolo, Alonso, Rigon, Bianchi and Fisichella got into the festive spirit for the children of Maranello and Medola



HE'S GIVING US A GOOD STEER
Andrea Dubourg gives a great illustration of why four-wheel steering is a must in the world of Andros Trophy ice racing in his tidy Renault Clio



In the shops

Desirable new releases

MARC MARQUEZ WATCHES

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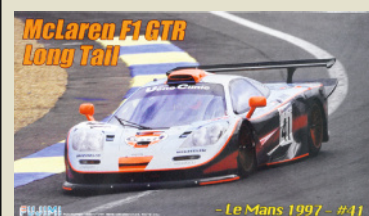
Not many 20-year-olds have their own watch range, but MotoGP sensation Marc Marquez has released six designs as part of his 2013 world championship celebrations. There are various levels of his '93' branding on each one, with some more subtle than others.



McLAREN F1 GTR 1:24 MODEL

£36.95 - grandprixmodels.com

Japanese plastic-kit builder Fujimi has released several iterations of the long-tail McLaren F1 GTR that raced at Le Mans in 1997. Choose between the Gulf car (below) that finished second, the Lark-liveried machine or the Fina-backed Schnitzer car shared by Nelson Piquet.



CHRIS AMON 1967 BOOK

£35 - autosport.com/shop

Get beyond the bizarre cover design and you'll discover a fascinating collection of anecdotes from Ferrari F1 driver Chris Amon and his friends and adversaries from the 1967 season. Author John Julian has left very few stones unturned in his quest to paint a picture, using first-hand accounts, of what really happened in an aptly titled 'year of living dangerously'.



WHAT'S ON

ON TRACK AROUND THE WORLD



DAKAR RALLY
Argentina-Bolivia-Chile
January 5-18
dakar.com

ERC
Rd 1/12
Janner Rally, Austria
January 3-5
fiaerc.com



AUTOSPORT

Supposing you had the chance to banish your worst nightmares – what would they be? National editor **BEN ANDERSON** gives his arguments to get rid of his pet hates to motorsport's Room 101



Schuey got penalty for this in 1997, but escaped in '94

technical nuances of the sport and how they relate to him. Motorsport is a complex relationship between man, machine, science, nature, other people, psychology, emotion and commerce. There may be many other factors I've missed. But one thing it is not is 'magic'.

INCONSISTENT PENALTIES

Not something unique to motorsport (how many times have pundits and fans pored over dodgy refereeing decisions in football?), but there are few things more frustrating than seeing one driver punished for a blatant transgression of the rules, only to see another go unpunished for the same offence.

Or how about the same driver treated differently for identical breaches at different times and in different places? That's right Michael Schumacher, I'm talking about you! Deliberately drove into Damon Hill at Adelaide in 1994 to win the championship – retained his maiden world title. Deliberately drove into Jacques Villeneuve trying to win a third title at Jerez in '97 – was stripped of second place in the points. Go figure.

'TALENT IS ALL IT TAKES'

As Mario Andretti once said, "Nobody is born with a steering wheel in their hands." And yet there's a certain old school that subscribes to the idea that people either have the 'talent' to drive a racing car, or they don't. If that were true, nobody would ever get better, or worse.

People talk about talent, but cannot define what they mean by it. Motorsport is a science. An inexact science, but a science all the same. People can be predisposed towards it (mentally, physically, financially), but the rest is about effort and experience. Do you think Sebastian Vettel is the same driver he was when he was 13, 17, 21? No. He continues to improve because he works hard and strives to understand the

NOISE TESTS

Don't get me wrong. I understand very well the ever-increasing need for motorsport to be socially responsible within its local communities. Mallory Park is a sad case in point. But static noise tests for each car before they take to the track are a waste of time. The sound made by a stationary car, holding a set number of revs while the transmission is unloaded, bears little or no resemblance to multiple cars driving around a circuit simultaneously at full speed. Failing cars by these tests does nothing to protect the sensitive ears of nearby residents; all they do is deny poor amateur racers the opportunity to enjoy their day's sport uninhibited by bureaucracy.

Silverstone has a better idea – measuring 'drive-by' noise levels via a microphone suspended above the main straight. This gives a far more accurate reading of the noise 'nuisance' a car is making. If you're too loud, you get pulled off the circuit. Fair cop. It also saves people pointlessly queueing to be tested at the start of the day, when they should be preparing to hit the track.



A better way of assessing noise levels, TK?

TUNNEL VISION

By this I mean a perception among people operating within a certain championship that theirs is the only game in town. Everyone is guilty of it – from Formula 1 right the way down to the smallest club series.

Perhaps it's the obsessive element of human nature to think the world revolves around you. But I can tell you now it doesn't. So before you complain that your superb dice for 14th in a Sports/Saloons race at Anglesey isn't getting the attention it 'deserves', take a step back and gain a sense of perspective. You'll feel better for it.

MOANING ABOUT MONEY

It's all too common to hear people complain a driver has the 'ability' to go all the way to the top but just can't get the funding. But have they ever stopped to consider why they can't get that funding? Probably not.

Simply being fast has never been enough to make you a world champion, and often isn't even enough to get you the sponsorship to try. Financial transactions are about give and take. If you can't give anything back, why would anyone waste money on you going racing?

Motorsport is expensive. I get that. But it was ever thus. It is wholly unreasonable to expect a sport that began as a hobby for the rich motoring elite to owe you a living just because you're a bit tasty behind the wheel.

If you can't afford to do it, or can't find somebody to afford it for you, do something else. There's a whole other world out there! Sure, it's not meritocratic. But life isn't fair. Deal with it.



Andretti knows you have to work to win

Your guide to the best events taking place in the UK and around the world – plus TV and online

ON TELEVISION



F1 Legend: Alain Prost, Sky Sports F1, Saturday midday

THURSDAY JANUARY 2

1650-2305 Motors TV
 NASCAR Nationwide: 2013 Season Review
1800-1900, 2130-2230 Sky Sports F1
 F1 Show: Christmas Special
1900-2000 Sky Sports F1
 F1 Legends: John Watson

FRIDAY JANUARY 3

0000-0100 Sky Sports 4
 Racemax
0040-0435 Motors TV
 ALMS: 2013 Season Review
1135-1750 Motors TV
 V8 Supercars: 2013 Season Review
1800-1900 Sky Sports F1
 F1 Show: Journalists Special
1900-2000 Sky Sports F1
 F1 Legends: Eddie Irvine

SATURDAY JANUARY 4

0355-0420 Channel 5
 Motorsport Mundial
0600-0720 Motors TV
 Macau GP: Euro F3 Highlights

1200-1300 Sky Sports F1
 F1 Legends: Alain Prost
1300-1400 Sky Sports F1
 F1 Show: 2013 Season Review
2000-2305 Motors TV
 British GT: 2013 Season Review

SUNDAY JANUARY 5

1155-1310 Motors TV
 2013 Dubai 24 Hours Highlights
1300-1400 Sky Sports F1
 F1 Show: Christmas Special
1650-2305 Motors TV
 V8 Supercars: 2013 Season Review
1700-1800 Sky Sports F1
 F1 Show: Journalists Special

MONDAY JANUARY 6

0215-0600 Motors TV
 European Formula 3: 2013 Season Review
0230-0330 Sky Sports 1
 F1 2013 Season Review
0715-0810 Motors TV
 FIA GT: 2013 Season Review
0810-0900 Motors TV
 FIA WEC: 2013 Season Review

ONLINE

HOT ON THE WEB THIS WEEK

YouTube JOHN WELCH WINS 1985 BRITISH RALLYCROSS GRAND PRIX



SEARCH FOR: Escorts Xtrac's Welch Schanche 1985 British Rallycross GP Final (6:31)
 Before you turn to the final page of this issue to read about why John Welch rates his victory in the 1985 British Rallycross Grand Prix as his best, watch the Brands Hatch finale in the company of Murray Walker. You'll then know exactly what John's on about.

AUTOSPORT+

Exclusive content coming up in our premium website this week

We put forward the things we'd like to change about Formula 1, while Toby Moody picks out his best MotoGP moments of 2013. Plus, our Race of My Life series continues with Michael Schumacher, while AUTOSPORT's F1 editor Edd Straw selects Felipe Massa's 10 best races for Ferrari.

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Revved up over what's on the box



Schmidt (right) is Germany's top F1 journalist

THERE ARE SOME THINGS LIKE luminous socks, telegrams and paying for quality journalism that are simply never going to be en vogue again. I'll confess that for a while I suspected that specialist pundits were part of that motley crew. Since Jimmy Hill first chinned his way onto our screens as the original host of *Match Of The Day*, tellyland has seemingly been seduced by the notion that only ex-pro sportsmen are qualified to talk about that sport in an analytical capacity. In some cases – Gary Neville, Steve Cram, Martin Brundle – this has been an unqualified success. In others – Alan Shearer, Jonathan Davies, Mark Blundell – it emphatically hasn't. But perhaps the tide is beginning to

turn. The BBC has breathed much-needed fresh life into the MOTD franchise with a Sunday-morning panel show where leading journalists assess the impact of the previous days' results. I've always suspected that they remain too close to many inside the sport and in order not to offend their mates ex-pros simply rely on trotting out the well-worn clichés and attack the soft and obvious targets. Over on Sky's F1 channel, its extensive 2013 season review package included *The F1 Show: Journalist Special*. With a panel comprising AUTOSPORT's Jonathan Noble, *The Times*' Kevin Eason (aka the Mark Webber fan club) and Michael Schmidt from *Auto Motor und Sport*, they chewed the fat over the season.

The difference in the journo's briefs was clear. Schmidt and Noble offered deep and considered insight, Eason opted for headline-grabbing sound bites. Despite conversing in his second tongue, Schmidt was excellent. He adroitly shifted the debate along, provocatively suggesting that the teams having a vote on the rules is a disaster and perhaps the reason why an FIA role will not interest Ross Brawn. Noble clearly painted the dystopic picture of current F1 via the troubles at Lotus, a depressing depiction that's rarely discussed during the race coverage. These are issues that ought to concern the fans far more than DRS or longevity of the tyres. I hope they were watching. **Revved Up**

John Welch

“You could hear the crowd inside the car, which was pretty staggering”

■ British Rallycross GP ■ Brands Hatch ■ December 8, 1985 ■ Ford Escort 4x4 ■ Recovery victory



Welch staged epic fightback after a hit at the start

THE STANDOUT RACE FOR ME has to be the Rallycross Grand Prix at Brands in 1985.

Just before the event we had won a small championship in Norway; it was nice to beat the Scandinavians on their home ground, but nothing like racing in the grand prix. It was the event that everybody wanted to do. Back then there was a proper travel-money package for competitors, so all the top names came. Matti Alamaki, Seppo Niittymaki, Martin Schanche – all the European champions were there.

As was normal in those days, we were out until midnight or 1am with sponsors the night before the racing – that’s how we would get to the people who made the decisions about money. It was the first time we all really understood commercialism and we got STP on board.

The cars were very expensive to run; mine had caught fire in one heat and I spun in another although I still set second fastest time. It was a bit of a surprise to be on the front row

of the grid for the final. Off the start line I got crowded onto the grass by Alamaki, and went through a stack of tyres on the inside which bent the steering. Then I got hit by Schanche which bent the front strut and dropped me to about seventh. It was wet, muddy and slippery. The car was misting up for the whole race, and by the end I couldn’t really see anything. I got past people, and with

each one I felt I was on more home turf. It felt like the slower you drove, the faster you went, but by golly everyone was trying! It was one of those races where you feel so calm and your head was in the right place.

It was quite a slow race in the slippery conditions, and that’s where we had an advantage with the Escort. The car was very special, a project between me, Xtrac, Gartrac and

Schanche; he had the same car. It was brand-new technology, and our cars transformed rallycross after that year. That grand prix established the success of the Escort. We took on the Audi Quattro tanks and the Porsches with their huge amounts of power and won. Nobody gave an inch, it was brilliant racing. They were incredible times, for the racing and the technology.

The reason that result is still so important to me is that you could hear the crowd inside the car over the noise of the engine, which was pretty staggering. And to be the first Englishman to win the grand prix was absolutely fabulous. I left the after-party long after midnight and went to my car – a Granada Estate – but thought better of driving home, so I slept in it.

I left Brands in the mist the following morning and it felt pretty special. Every time you won it was a special feeling, but the grand prix really was the one. ❖
John Welch was talking to Hal Ridge

PROFILE



JOHN WELCH BEGAN IN autocross in 1969, and by 1972 was competing in rallycross across Europe in a Ford Escort Mk1. He won two British Rallycross titles at the wheel of Escorts in 1984 and ’86. Welch raced in his last event at the Rallycross Grand Prix in 1993, finishing sixth in an Opel Astra. Since then, he has focused on son Dan’s racing career and now runs the family team in the BTCC.

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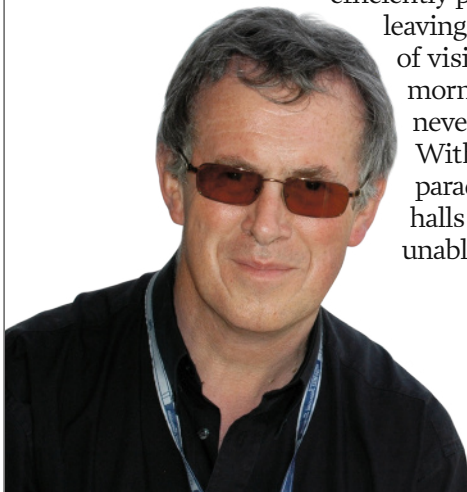
WELCOME

IT PROBABLY BEGAN WITH THE GARAGISTES, as Enzo Ferrari so disparagingly called them. These were the seemingly insignificant British companies, such as Cooper and Lotus, that sprung up in the 1950s and 1960s to challenge the Grand Prix establishment. They were not industrial operations such as Maserati, Mercedes-Benz or even Ferrari. It might even be stretching the term to describe them as racecar manufacturers. Despite their innovative nature, they were more akin to assemblers, putting together a car from a variety of sources.

It was the suppliers who came into being to service this industry who created Britain's Motorsport Valley. Many of them and their successors still play a crucial part in the industry. While this now has a global footprint there is no denying the continuing importance of the UK's involvement. This was reflected in the creation of AUTOSPORT Engineering, now an important element of the AUTOSPORT International Show. The event is, of course, much more than a British showcase. The rest of the world has realised its importance. US suppliers have been known to describe it as a 'gateway' to European motor racing.

It is a sad fact that confidentiality agreements mean that many of those exhibiting at this January's AUTOSPORT Engineering will never get the wider credit they deserve. They will be unable to tell the world that they are important ingredients of the success of a Red Bull, Mercedes or McLaren. One senior F1 figure has been cynically known to remark that they can, as long as they pay for the privilege. However, wander down the aisles of the show and note the stature of some of those visiting the stands; they will include the technological 'gods' of the sport. As SS Tube Technology director Mike Dewhirst points out (see page 25), these are people who suppliers will have difficulty getting to during the rest of the year. However, at AUTOSPORT Engineering, one of them may hand you his card and then you know exactly why you are at the NEC.

AUTOSPORT Engineering only lasts for the two 'trade days' of AUTOSPORT International. Friday evening will see its exhibitors efficiently packing up their stands and leaving the building. As the mass of visitors arrive on the Saturday morning it will be as if they had never been there. But will it? Without them, the sport that parades its successes in the main halls over the weekend would be unable to exist.



IAN WAGSTAFF
EDITOR



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Show within a show

We tell the story behind one of the most important motorsport industry events in the calendar and learn the secrets of its success



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What to look out for around the stands at the NEC this year, including all the latest products



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Keeping wheels moving

We learn how motorsport acts as a test bed for improving road car lubricants



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Show stoppers

AUTOSPORT Engineering will be hosting a number of leading brake manufacturers this year. Here's a round-up of what to expect



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On a charge

Batteries are growing in importance in motorsport, as both race series organisers and manufacturers turn to electric and hybrid solutions



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New tube stars

We talk to the new owners of SS Tube Technology about the future, and why AUTOSPORT Engineering is key to their plans



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The great enthusiast

We profile Tony Tobias, the energetic head of business development for AUTOSPORT Engineering, and the driving force behind its success



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SHOW WITHIN A SHOW

AUTOSPORT Engineering is a vital ingredient of the motorsport calendar

“You can build a complete racing car from the parts on offer,” so says Tony Tobias, head of business development for AUTOSPORT Engineering, the show-within-a-show that takes place on the first two days of AUTOSPORT International. Wander into Hall Nine on the Thursday and Friday and you will find the motorsport industry’s suppliers demonstrating their wares and meeting their buyers.

Every January around 200 suppliers can be seen talking to around 28,000 trade visitors. It is a tradition that began four years after the first AUTOSPORT International. Tobias admits that it was never envisaged that it would grow to the size that it has. Show director Ian France says the parent show was originally seen as a mirror for this magazine. However, it soon became clear that it also needed to cater for the professional industry and trade. This included suppliers of specialist products with no interest in communicating to the public. “That meant we needed to organise the show in a better fashion,” he recalls. The result was the two-day AUTOSPORT Engineering, which Tobias helped to get off the ground. “He deserves much of the credit for its success,” says France. The two main

rival shows in North America and on the Continent are stand-alone events without the consumer element. France believes that AUTOSPORT International uniquely offers the industry flexibility, the opportunity to talk solely to the trade by being part of AUTOSPORT Engineering or to also promote its brands to the competitor and what might be called the ‘prosumer’ by being part of the main exhibition. France says this format has stood the test of time.

Times have changed since the London Racing Car Show in Olympia. Specialist manufacturers in the UK no longer produce volume racing cars in the numbers they once did. Britain is still an important motorsport hub, though, and AUTOSPORT Engineering reflects the current and thriving nature of its

business. “The world’s leading suppliers of motorsport technology: services, such as finishing, testing, machining; manufacturers of components, composites and telemetry; and those running wind tunnels tend to be present,” says Tobias. “Exhibitors come from all over the world including Russia, China and, increasingly, the USA.”

Wilfried Eibach, boss of the eponymous spring supplier, once quipped that he was surprised to find his company’s products mandatory on the rear of NASCAR super speedway cars, not because his was a German company, but because its US operation was based in California, far away from Mooresville. Such parochialism is well in the past with the show reflecting the change in attitude that has occurred.

Since 2003, manufacturers of capital equipment have also been part of the mix. Such exhibitors can often find business amongst the visitors and on the stands of the component suppliers. Richard Grant, once known as the ‘king’ of aftermarket spoilers, points out that it is also a suitable place to meet buyers from motorsport as well as the conventional car manufacturers and their accessory departments. There is certainly more than just the obvious to AUTOSPORT Engineering. ❖

‘Exhibitors come from all over the world, including Russia, China, USA’



AUTOSPORT Engineering brings together 200 suppliers and 28,000 trade visitors



Manufacturers of all types of components attend



AUTOSPORT Engineering is where the industry meets



Wirth Research
plans to showcase
its diversity

PROVING THE WIRTH OF THE SHOW

Wirth Research breaks its exhibition 'duck' at AUTOSPORT Engineering

Wirth Research will be a significant debutant exhibitor at January's AUTOSPORT Engineering at the Birmingham NEC. The show's head of business development Tony Tobias reported in late November that the multi-faceted research and development company headed by racecar designer Nick Wirth had signed up for a stand at the show.

Wirth managing director Simon Crompton said: "AUTOSPORT International is one of the world's biggest shows. Up to now, as an engineering company we have been fairly quiet about what we do and what we have achieved. Now we are starting to have a more open face and I think people will be

surprised by the level of our reach.

"The exhibition is an excellent platform for us to display what we do and meet many of our existing and potential customers over a short period of time. It's also appropriate that we are in the engineering section. We'll be very interested to see the results."

Crompton points out that Wirth will be making a major effort at the show with many of its staff in attendance, representing the breadth of the company's capabilities from composites to CFD.

The basics of the large stand could already be seen at Wirth's Bicester facility in December. An example of an LMP1 front corner will indicate the quality of its composite and design work.

The company will not only be projecting its motorsport expertise but also its ability to work in other areas, including commercial vehicles, architecture and defence. "We want to talk to people about new projects," explains Crompton.

This will be the first motorsport-oriented exhibition in which Wirth has participated. In November it took stand space at the inaugural Advanced Engineering Show, also in the NEC. The number of people present pleasantly surprised the company. It had already been considering attending AUTOSPORT Engineering and, as a result, decided to go ahead with its participation.

"AUTOSPORT kicks the year off; it shakes the cobwebs out of people," states Crompton.

Spring has sprung

Suspension supplier Eibach has long been a supporter of AUTOSPORT Engineering but has decided this January to transfer to the main halls. According to general manager Greg Kirby, the German company works closely with shock absorber manufacturer Bilstein. Last year, Bilstein decided to exhibit for the full four days enabling Eibach to see the wisdom of such a move. Both companies enjoy a consumer brand awareness arguably making the move a logical one. Their stands will be adjacent in hall 20.

The extra stand space available will enable the still family-run firm to display a Dyno Drive-prepared Lotus Exige S Cup car as well as a Corvette LS1-equipped BMW E36 Coupe 'cover car'.



Smallest sensors

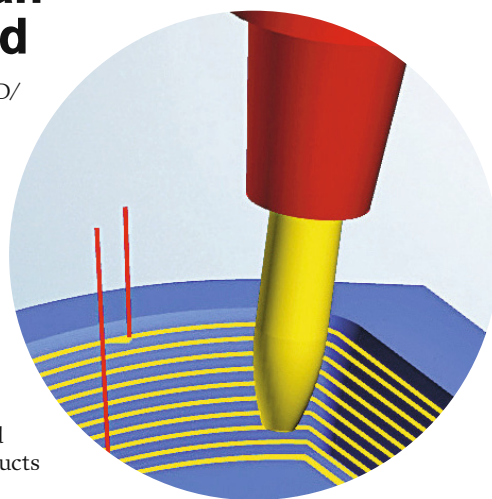
Variohm EuroSensor has introduced a new range of sensors aimed specifically at the motorsports sector. Known as the VXP series, these potentiometric linear position sensors are said to feature improved reliability and increased operational temperature over the VLPM sensors that they replace, as well as IP67 sealing. (The Ingress Protection [IP] rating system indicates degrees of protection from solid objects and liquids.) Design improvements include a new dual-lip sealing arrangement and the use of what are described as specialised motorsport materials.

Described as an absolute measuring device, the VXP is available in nine measurement range versions for stroke lengths from 25 to 290mm. The ratio of the extended length to the body length is said to be the smallest available to the motorsport industry.

Keeping an open mind

As a developer of CAD/CAM software and processors for designing and manufacturing complex moulds and parts, OPEN MIND Technologies typifies the modern AUTOSPORT Engineering exhibitor. It is going to be showcasing its new hyperCAD-S and hyperMILL 2013 products at the show.

The completely redeveloped hyperCAD-S features a new architecture, core, graphics, database, user interface and API (application programming interface), and is more closely integrated with CAM-specific tasks. According to product manager Wolfgang Weiss, it accommodates all the latest ergonomic considerations. The latest version of hyperMILL 2013 is said to offer efficient usage of modern NC machines and cutting tools, reducing programming time and extending tool life.



The 1000mph wheel

Metalweb, said to be one of the UK's leading stockists of specialist metals, will be at AUTOSPORT Engineering basking in the reflected glory of Bloodhound SSC. The Birmingham-based company is providing the aluminium for the bespoke wheels to be used on the World Land Speed Record contender. According to Metalweb national business manager Colin Ord, the company researched a range of resources over several months in order to find a material that gave the wheels the best chance of surviving runs that are planned to reach over 1000mph.

The wheels, which comprise a solid aluminium disc and separate dust cover, were completed last October ready for runway trials. The first of these will take place at Newquay airport next summer. Metalweb believes its involvement will enable it to showcase its capabilities at the NEC. ▶

This is ground control



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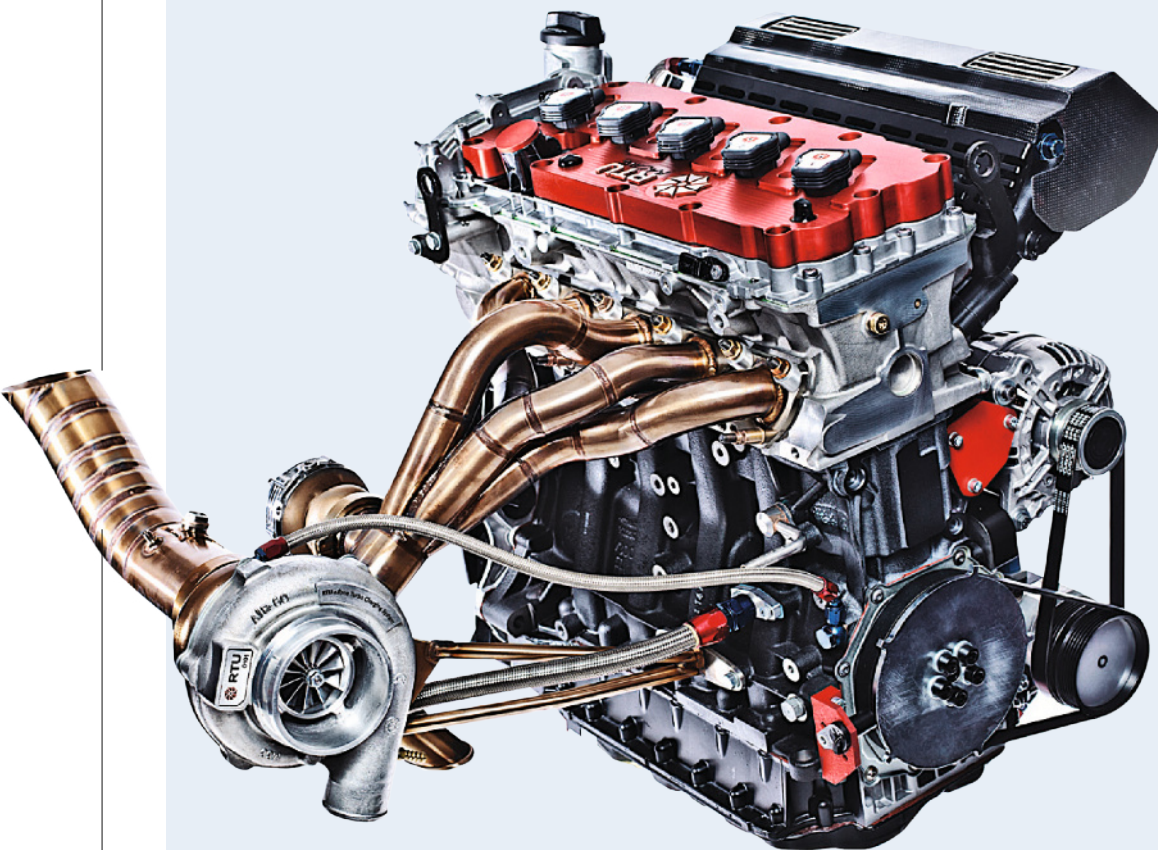


First-timers from abroad

First-time exhibitors at AUTOSPORT Engineering indicate the international flavour of the event. They will include German rapid prototype technology firm, AC Tech GmbH and pit equipment manufacturer CaseLiner of the Czech Republic. From further afield, engine component supplier, Injen Technology will be travelling from the USA, while Exzess International, K-Sport Racing Co Ltd and SPR Magnesium will all represent Taiwan. Another 'new boy' is Performance Engine Components (PEC), the UK distributor for Wossner high-performance forged pistons, cylinder liners and conrods.

Cell blocks

Fuel cell manufacturer, Aero Tec Laboratories has recently relocated its already expanded headquarters. The company remains in Milton Keynes but now operates from a new, 100,000 sq ft site, situated around four miles from the previous, 25,000 sq ft facility that it had used for the past 13 years. The relocation has enabled project-specific production bays to be introduced, along with dedicated areas for the assembly of particular types of cells and purpose-built showroom displays.



Revolutionary claims

It is said that claimed performance figures of Revolutionary Technologies United (RTU)'s new Le Mans Prototype engine will be confirmed at AUTOSPORT Engineering. First seen in Cologne at PMW Expo in November, the company's radical 1.6-litre turbocharged short-stroke boxer power unit is based on a Subaru FA20DIT block. It is reckoned that the eLMP R engine will run with minimal cooling, thanks to a patented Pseudo Adiabatic combustion process. The difference between this and a conventional engine is said to be the proportion of energy converted to work. RTU's controversial chief executive officer USA, Alberto Solaroli, who, it must be pointed out, was recently indicted in a \$1.5 million bank fraud, claims the technology has been proven on a five-cylinder Audi engine. If so, then it could be competitive in the flow-restricted formula. Reduced cooling demands should also mean higher aerodynamic efficiency although, at 130kg, the engine is rather heavy. A street-legal version, the eLMP S, is also promised.

DC power

DC Electronics has announced a new partnership with Holland's Super B Batteries, which will distribute the latter's range of lithium race batteries. The line-up includes high-tech starter and deep-cycle energy batteries, spanning tiny 2600mAh starter products to 160Ah deep-cycle energy versions. According to DC Electronics co-founder David Cunliffe, his company will be able to supply such items for karts, motorcycles, aviation and electric

vehicles as well as race cars. Having unveiled a new dual intelligent battery system at the PRI Show in Indianapolis in December, DCE will also display this product at AUTOSPORT Engineering. It features two individual lithium batteries in one casing.

DCE is best known as a manufacturer of custom-built electrical systems including wiring looms, control panels, EPAS systems and sensors, ECUs and data acquisition hardware. ▶



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Zircotec will be unveiling its latest coating products

A new coat

Zircotec is to present samples of a new, durable and UV-stable coating, said to be suitable for motorcycle applications, at AUTOSPORT Engineering. The coatings specialist says 2014 could be a significant one for it, particularly as a supplier to the F1 field. The energy recovery systems to be introduced require efficient thermal management and protection such as Zircotec provides for composite components. The company had success in 2013 when Pirtek Racing began to use its ZircoFlex heat shield. Prior to the BTCC Rockingham round, the team had used gold foil to reflect heat away from its Honda Civic's air filter and inlet pipe. It might be too much to attribute Andrew Jordan's two race wins at Rockingham to ZircoFlex, but he did go on to take the title.

Swedes Ring in

Tony Ring, who heads up the Swedish Motorsport Industry, will this year be bringing a party of representatives from Orebro University, SAAB Dynamics and BAE Systems to the show.

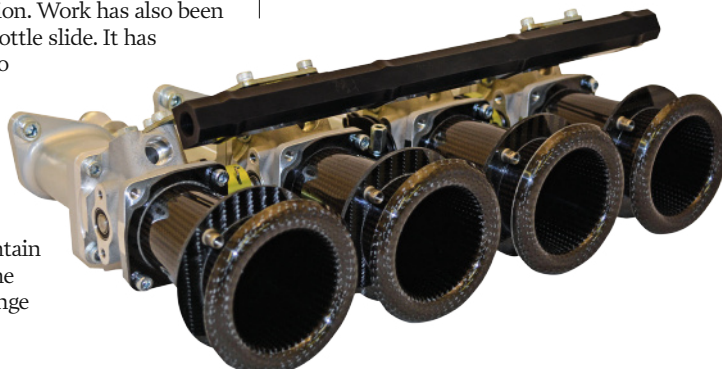
Meetings are planned with members of the Motorsport Industry Association plus 'a Formula 1 team' as part of a research project that involves a comparative study of motorsport and the Swedish defence industry.

Ring, who was charged with carrying out a pre-study, points out that both industries have similar challenges and feels that a company such as SAAB Dynamics is ideally suited to work with a typical F1 team.

Butterfly flaps wings

AUTOSPORT Engineering will mark the official UK launch of a new range of butterfly throttles from Titan, as well as four other products yet to be announced. Once known for its Formula 3 and Formula Ford cars, St Neots-based Titan is now a specialist component manufacturer with a new design facility that was opened last year. As such, it has spent the last year designing and developing this product having initially been asked to do so by two leading engine builders.

The field is not entirely new to Titan. Its involvement in inlet system development started way back with its K Series roller barrel, which was designed for Caterham Cars and, more recently, a Duratec roller barrel solution. Work has also been carried out on a BMW throttle slide. It has now turned its attention to producing a lightweight system and, working with a composite supplier, has developed carbon fibre trumpets said to reduce overall assembly weight and maintain optimum airflow across the composite surface. The range covers 16 systems.



Caparo AP unveils new brake caliper

Caparo AP Braking will launch its new race-performance six-pot monobloc caliper at AUTOSPORT International. Machined from a single billet of aluminium, the new caliper has been designed to increase braking performance and feel for high-performance road cars and race use.

IN BRIEF

VILLAGE PEOPLE

A dedicated Engine Village will be a new feature of the show. Exhibitors will include Serdi, Gosnays and Engine Parts UK.

ONE OF THREE

Keating Supercars, which was started by a former student from the University of Bolton, will be present on no fewer than three stands at AUTOSPORT International, one of which will be in the Engineering section.

EVO LIGHT

Aliant Ultralight Battery will be presenting a new product line, the X series EVO, at AUTOSPORT Engineering. The company reckons that its use of lithium iron phosphate technology allows it reduce weight by 15kg compared to lead acid batteries.



BTCC EXPERIENCE

Pipercross, another former AUTOSPORT Engineering exhibitor to have transferred to the main halls, has recently launched a new cold air intake system for both motorsport and fast road use. Known as the Evo 2, this carbon fibre and aluminium product is said to draw on the company's experience in supplying teams in the BTCC. Using a fully-sealed filtration chamber, it insulates the induction tract from intense under-bonnet heat.



TEAM INPUT

EEC Performance Systems has introduced its new f-POD Intelligent Race Fuel Bowser. Designed with input from a top single-seater team, this can run multiple drivers simultaneously and record data history, which can be viewed on-screen and downloaded via USB. ❄



KEEPING WHEELS MOVING

STEPHEN SLATER learns how racing has influenced the lubricants used in road cars

There's a well-worn cliché that racing improves the breed, and in the case of lubricants it is a proven fact. For the past century, one of the toughest proving grounds for fuel and lubricants has been motorsport.

Lessons learned on racetracks and rally stages have been applied in the development of engine lubricants, transmission oils, fuels, hydraulic fluids and greases, for use on two wheels and four. From the fast-track testbed of competition, developments feed surprisingly rapidly back into products that benefit consumers.

One clear example of this winning formula is Mobil 1. Following its launch in 1974, the lower resistance of the synthetic lubricant compared with mineral-based oils was found to enable greater efficiency and horsepower, while at the same time providing greater protection at high temperatures. It enabled the development of more efficient engines both for racing and road cars, on both sides of the Atlantic.

When Mobil became a partner of the Williams Formula 1 racing team in 1978, it was one of the first full technical partnerships in the sport, with the company providing a range of experimental lubricants to the team, including the new synthetic engine oil. The partnership won its first grand prix at Silverstone in 1979, and then won its first World Championship in 1980 with Alan Jones behind the wheel. Mobil won another World Drivers' Championship with Williams and Keke Rosberg in 1982.

Meanwhile in the United States, legendary NASCAR driver Rusty Wallace relied on the new lubricants when he won two Winston Cup titles and IndyCar drivers Emerson Fittipaldi, Rick Mears and Al Unser Junior (later followed by Helio Castroneves and Gil de Ferran) all took Mobil to victory lane in the Indianapolis 500. Today the oils are used in the NASCAR Sprint Cup for Tony Stewart's and his Stewart Haas team, which will expand in 2014 to a four-car operation.

Back in 1995 one of the most enduring technical partnerships in Formula 1 began, when Mobil became the technical partner of the McLaren-Mercedes team, providing Mobil 1 synthetic lubrication products.

Shell's relationship with Ferrari is even older. It dates back to the 1930s when Enzo Ferrari was manager of the Alfa Romeo racing team. When Ferrari started to build his own cars in the 1940s, he turned to Shell. Following the advent of the World Championship, Shell and Ferrari won their

first grand prix together at Silverstone in 1951, with the Argentinean, Froilan Gonzalez, at the wheel.

Shell engineers today form an integral part of Ferrari operations, providing support to both the Formula 1 team and the Ferrari road car operation at their factory in Maranello and at Shell facilities globally. As well as providing Shell V-Power fuels for use on-track, Shell also provides full lubricant analytical services at every race in a trackside laboratory in the Ferrari team compound.

The constant testing of fuel and oil from the race cars has enabled the development of more efficient and cleaner-burning road fuels. It is said that 99 per cent of the same types of compounds in the fuel being used in the Formula 1 World Championship are today used in 'super unleaded' fuels for road cars.

Similar benefits have accrued in the development of gearbox and engine lubricants. In comparison with fuel, the regulations on lubricants are less restricted. This allows chemists and engineers more freedom to explore new formulations and then feed this information back into production oil development.

One breakthrough developed in both motorsport and motorcycle racing has been the use of 'friction modifiers' which give an oil the protection qualities of a high-viscosity lubricant while maintaining the lower drag properties of a 'thinner', lower-viscosity grade. In a road car the same characteristics can both improve

'Constant testing of race car fuel and oils enables development of cleaner road fuels'



McLaren F1 pilot David Coulthard talks oil tech



Mobil's partnership with McLaren began in 1995



Shell's racing research feeds road-car products



Shell has worked with Ferrari since the 1940s



Shell's trackside lab provides vital analysis

horsepower and reduce fuel consumption.

Petronas of Malaysia first entered the Formula 1 arena in 1995 with the sponsorship of the Red Bull-Sauber Petronas F1 team. Today they are a well-recognised motorsports name on two wheels and four, working with Yamaha in MotoGP, TOMs and Lexus in Japanese Super GT, and Mercedes in GT racing and Formula 1.

In 2009, Petronas signed a five-year agreement to become the title partner to the Mercedes GP team. The oil company also provides 'track lab' facilities for the team, instantly analysing both fuel and lubricant samples to maximise performance and reliability. Besides advanced fuel and lubricant R&D, Petronas also embarked on an eight-year technology programme to equip Malaysian engineers with knowledge derived from Formula 1. This has already

resulted in the development of a prototype 2-litre passenger car engine and a GP1, 3-cylinder 4-stroke motorcycle engine that is also used as a high-performance engine for recreational vehicles including the Austrian Ski-Doo snowmobiles and jet skis.

Racing diesel engines with their combination of aggressive compression, vibration and high internal pressures, offer a particularly gruelling challenge for lubricants. In 2013, the multiple Le Mans champion Audi was assisted by Castrol in making history at what is probably the world's toughest motor race. The Audi cars used the latest Castrol Edge synthetic lubricants as they scored their 12th victory at Le Mans in 2013. The knowledge transfer from La Sarthe is fundamental to the creation of longer-life, cleaner-running lubricants for road-going engines.

Castrol uses other areas of production-based motorsports engineering as the basis for development work too, supporting DTM Champions BMW, Qatar M-Sport in the WRC, the Honda WTCC team, and Honda and BMW in World Superbikes.

Smaller companies have also found motorsport to be a cost-effective test bed for developing new niche technologies. Millers Oils uses the expertise gained in motorsport and performance car development to ensure it remains a leader in commercial vehicle oils, classic vehicle oils and industrial lubricants. The Yorkshire company's Nanodrive nanotechnology engine oils offer up to 33 per cent lower friction than competitors. Among recent uses, the products have been helping Drayson Racing break the FIA World Electric Land Speed Record. ❧



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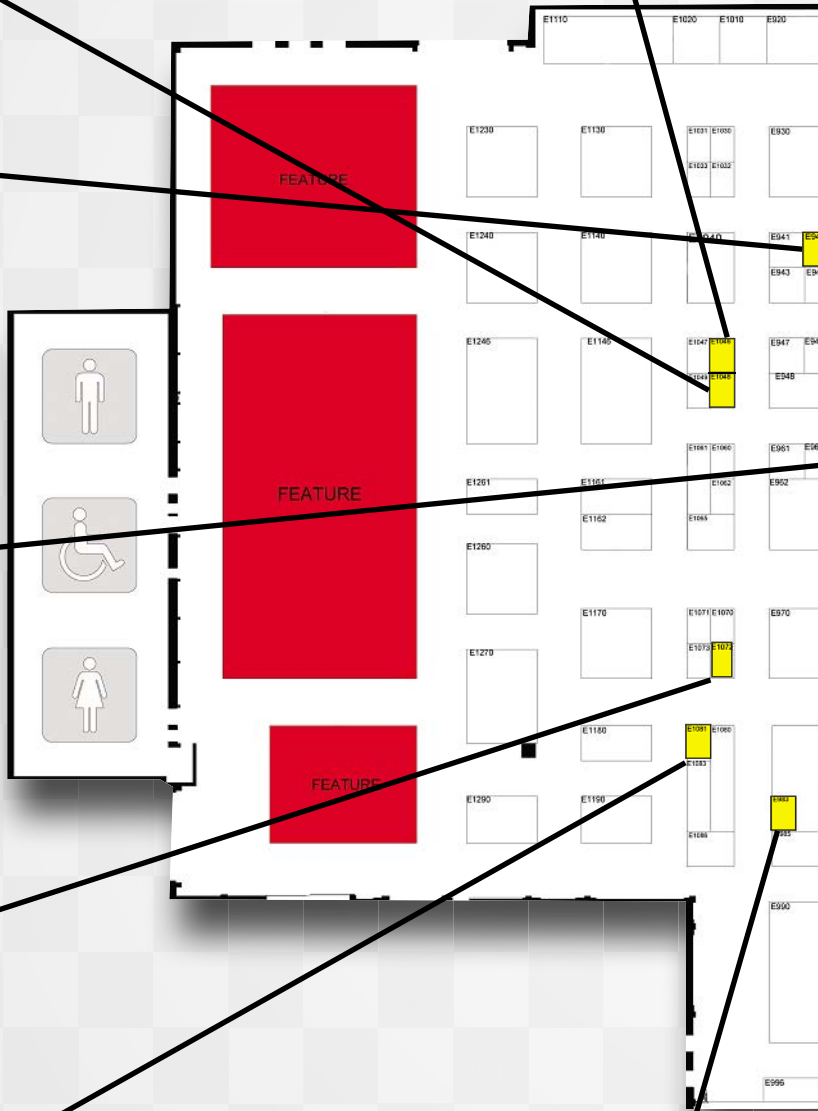
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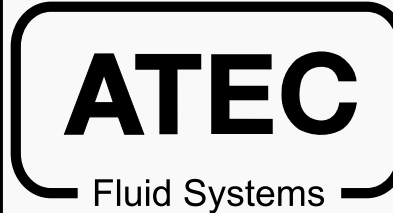




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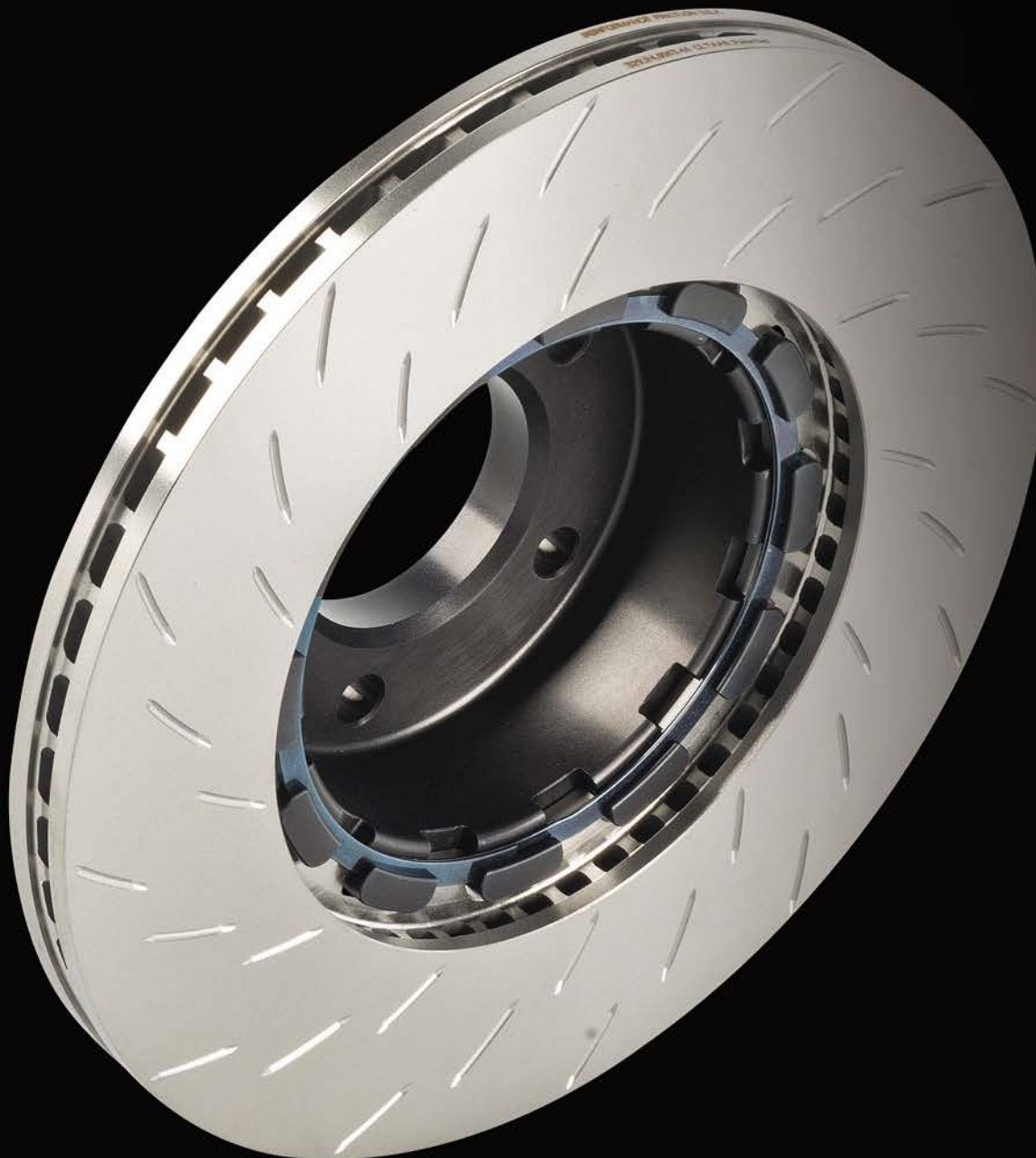
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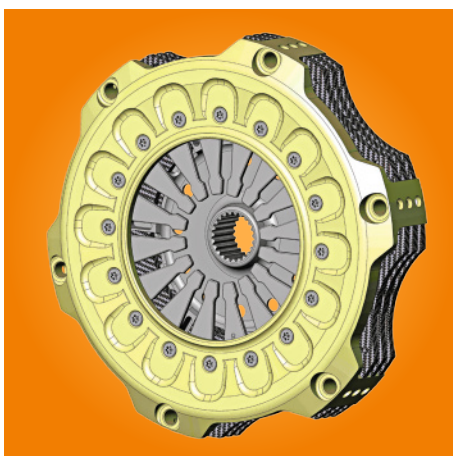
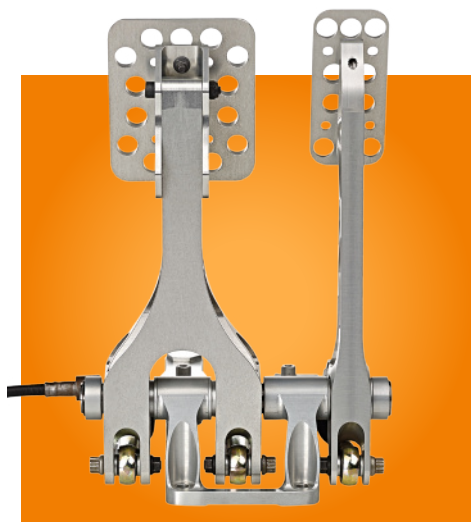
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SHOW STOPPERS

STEVE RENDLE examines what the brake-manufacturing sector will have on offer at AUTOSPORT Engineering this year



Braking efficiency is a critical factor in improving lap times in motorsport and, as in all areas of racing technology, manufacturers apply cutting-edge design and engineering to every component in the braking system, including pedal boxes, hoses, calipers, discs, pads and hydraulic fluid. In the search for improved performance, the general trends in brake component development are, perhaps not surprisingly, to reduce component weight, while improving braking efficiency, primarily by increasing heat dissipation and developing improved friction materials.

A number of brake component suppliers will be exhibiting at AUTOSPORT Engineering, all promoting a wide range of new products to suit the varying needs of a diverse group of customers, from professional

teams to grassroots competitors looking to improve performance on a tight budget.

Italian manufacturer Brembo will be exhibiting new products aimed specifically at GT-racing and WRC competitors. The company has developed a new six-piston aluminium-alloy GT caliper, featuring an innovative quick-release mechanism, which enables mechanics to change pads quickly and safely when the pressure is on during a pit stop, and also allows a wear sensor to be fitted to monitor pad condition during a race. Other recent Brembo developments include a new range of 390mm-diameter discs, again aimed at GT competitors, which feature a wider air gap between the friction surfaces, and a new ventilation pattern, offering increased heat dissipation and reduced weight. The company has also introduced a revised master-cylinder design, providing

the option to fit a magnetic piston-travel sensor – a useful tool to aid the analysis of braking system efficiency.

For WRC competitors, Brembo has developed an all-new caliper design featuring liquid cooling. Machined from aluminium-alloy billet, the lightweight caliper structure features integral cooling-fluid reservoirs and radiating surfaces to facilitate liquid circulation and maximise cooling, providing a temperature reduction of around 80–100°C. This allows the use of more aggressive pad compounds, while preventing excessive overheating of the calipers. Other rally-specific developments include an improved forged caliper, which can be mounted in either leading or trailing configurations to suit individual vehicle requirements, and a new WRC disc, offering reduced weight and more efficient ►

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► ventilation. A new handbrake mechanism has been developed for 4WD cars, which can be fitted with two parallel master cylinders, one controlling the handbrake, and one differential release, enabling a delay between differential release and handbrake actuation, ensuring that only the rear wheels lock when disconnected from the transmission. Finally, Brembo will be exhibiting a completely new pedal-box assembly aimed at both racing and rallying needs, which features an optional remote driver-operated bias adjuster.

AP Racing will be using the show to promote recent developments in its Radi-CAL range of products, including two new asymmetric-design calipers intended for use with iron discs – a forged monobloc six-piston caliper developed specifically for GT3 and endurance racing, and a four-piston caliper designed for the WTC series, which is lighter and stiffer than its predecessor. Additionally, AP will also be showing a new push-type, dual-bore master cylinder, which uses an innovative design to minimise low-pressure pedal travel, using two bores of differing diameter connected by a common piston. To complement these products, AP will also be presenting its new Radi-CAL R4 brake fluid, which has the highest boiling point of any brake fluid currently available. The new fluid has a boiling point of 340°C, providing a firmer brake pedal and prolonging the life of metal components within the braking system as a result of its enhanced lubrication properties.

Goodridge will have its latest range of brake fluid-compatible hoses on display, including the recently developed G-Flex 711 and G-Max 825 ranges of braided hoses and

'Trends in brake development include weight reduction and improved efficiency'

associated fittings. These products are designed to provide a stepping stone between the company's entry-level and high-end professional hoses, offering a high-quality PTFE lining without the expense of the ultimate lightweight, maximum-flow option. These hoses are designed to appeal to grassroots competitors, but have been adopted for use by professional teams, including the M-Sport Bentley Continental GT3 squad. Goodridge's Martin Taylor says that the company has also been working hard over the past 12 months to upgrade the protective coating used on its range of mild-steel fittings. The new coating, which will use a matt-black dye rather than the current yellow/gold, has a lifespan 10 times greater than that of the existing coating, and all plated fittings will be upgraded to the new specification from the spring of 2014.

French friction-material manufacturer CL Brakes will offer four compounds of disc pad, with varying friction coefficients to suit track-day use, circuit racing and rallying, as well as compounds offering very low pad and disc wear without sacrificing friction levels, and a very high friction-level pad optimised

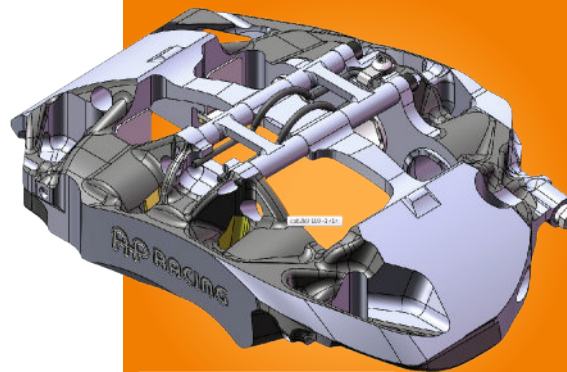
to provide shorter stopping distances with relatively heavy cars, such as those used in WRC, WTCC and NASCAR. CL has also developed a patented pad design with a grooved backing plate designed to reduce the piston contact area and improve cooling, reducing heat transfer through the piston to the brake fluid.

Kirk Skaufel, Sales and Marketing Director for the specialist US-based brakes manufacturer Tilton Engineering, believes AUTOSPORT Engineering to be the ideal place to meet the European market. California-based Tilton will be exhibiting two new pedal assemblies targeted at grassroots motorsport, in the form of its 600-Series Overhung and Firewall-mounted units. Both products incorporate forged-aluminium pedal arms to provide rigidity and reduced weight, and adjustable pedal-pad position to enable the pedal ratio and angle to be changed to suit a driver's preferences. The company will also be showing a newly redesigned master cylinder, featuring dual outlet ports, which allows the option of running brake lines to the top or rear-mounted outlet port, while the other port can be blanked off, or used for a brake-pressure sensor, brake-light switch, or bleed fitting, according to the user's requirements.

The South Carolina-headquartered manufacturer PFC Brakes will also be present at AUTOSPORT Engineering, having recently been chosen as the official brake supplier to Renault Sport Technologies for its new Clio R.S R3T rally car. The company's pads, discs and calipers are said to incorporate a number of key innovations, including piston cap insulators. ❁



AP Racing will also display its latest range of clutches



AP will show GT3, WTC and endurance racing calipers



South Carolina's PFC Brakes will be attending



Brembo's new calipers will be on show

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ON A CHARGE

The battery suppliers at AUTOSPORT Engineering are finding themselves operating in an increasingly relevant area of motorsport technology. **ANDY BROWN** finds out why

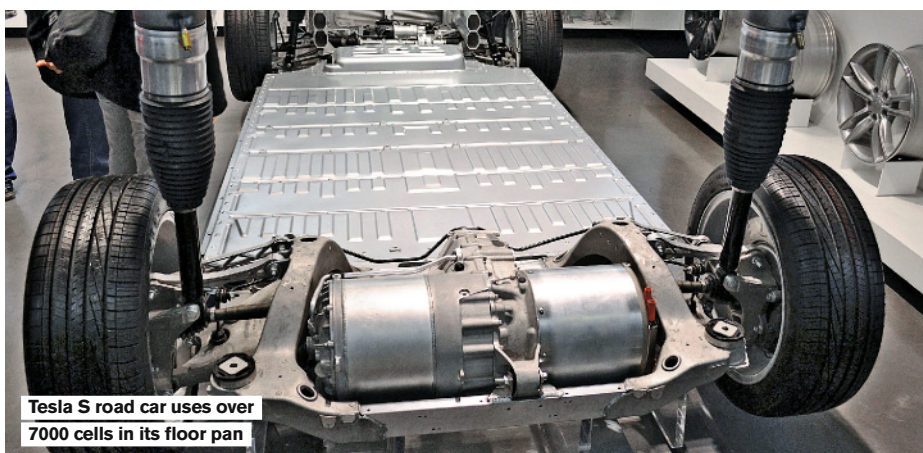
When on-board electric starter motors were removed from top-flight single-seat racecars late in the last century, the battery ceased to be a major component. In my time at Leyton House, the on-board batteries were small, not much bigger than a paperback book.

But as environmentalist pressure has driven manufacturers to husband the world's reserves of oil, and to consider the adverse effect on the atmosphere of burning this oil, they have been driven to seek alternative forms of vehicle on-board energy storage, and so have turned to the once-humble battery as a 'clean' and convenient alternative to the internal combustion engine (ICE) – but using batteries does have drawbacks. Chief amongst these are weight and size. Far from being a mere 'paperback', the battery alone on the Tesla S weighs more than an F1 car, and takes up the whole floor pan.

Perhaps at this point we should look at the definition of a 'battery'. What is most commonly referred to as a battery, i.e. the 'AA' in a TV remote, is more accurately called a 'cell'. A battery is a collection of cells, all linked together. The Tesla battery uses over 7000 cells. (Panasonic has recently announced the delivery of the one-billionth cell to Tesla, and the car has only been in production since 2012.)

The term 'battery' could also include the vitally important control circuitry that takes care of how fast the battery is charged and discharged. Should just one cell in the battery be charged at too high a rate, or be allowed to be discharged at too low a rate, the chemistry within the cell can become unstable, and fire is then a strong possibility.

The above is what is required for a road car of moderate performance, the most important factor perhaps being the range, which is now quoted at just over 300 miles on a full charge of 85kWh. This battery would be considered as having a high energy density. This required energy capacity highlights another problem with the all-electric car. Even with a 'high power wall connector', meaning that you can recharge at a rate of 20kW (compared to the normal maximum of 3.1kW with a trusty 13-amp



Tesla S road car uses over 7000 cells in its floor pan



Tesla's battery weighs more than an F1 car

fuse) you are still looking at over four hours to fully charge the car from 'empty'. Hence a pit stop to plug into the mains in Formula E is impractical, and why the drivers will change cars at around half-distance instead.

Close to the other end of the battery spectrum, is the F1 KERS system, which has

'F1 KERS systems have a very short range, discharging in less than 7 seconds'

a high power density. This system has a very short range, discharging in under seven seconds, with a power boost of 60kW (80hp) over that period – amounting to 400kJ per lap. (For 2014, the power is being doubled to 120kW or 160hp, with an intended 4,000kJ/lap, giving a KERS 'boost' for more than 30sec/lap.) The only way to do this is with bigger batteries, i.e. more weight. Hence all the fuss about the weight limit not being raised for 2014. (For comparison purposes, the 85kWh of the Tesla = 30,600kJ, 75 times the capacity of the 2013 F1 KERS system.)

So you can see how this technology is currently not scaling up so well. It highlights just what incredible stuff petrol really is. The Nissan ZEOD's batteries weigh 120kg, with a useable capacity of 36,000kJ, i.e. 300kJ/kg. Petrol comes in at 40,000kJ/kg. ▶

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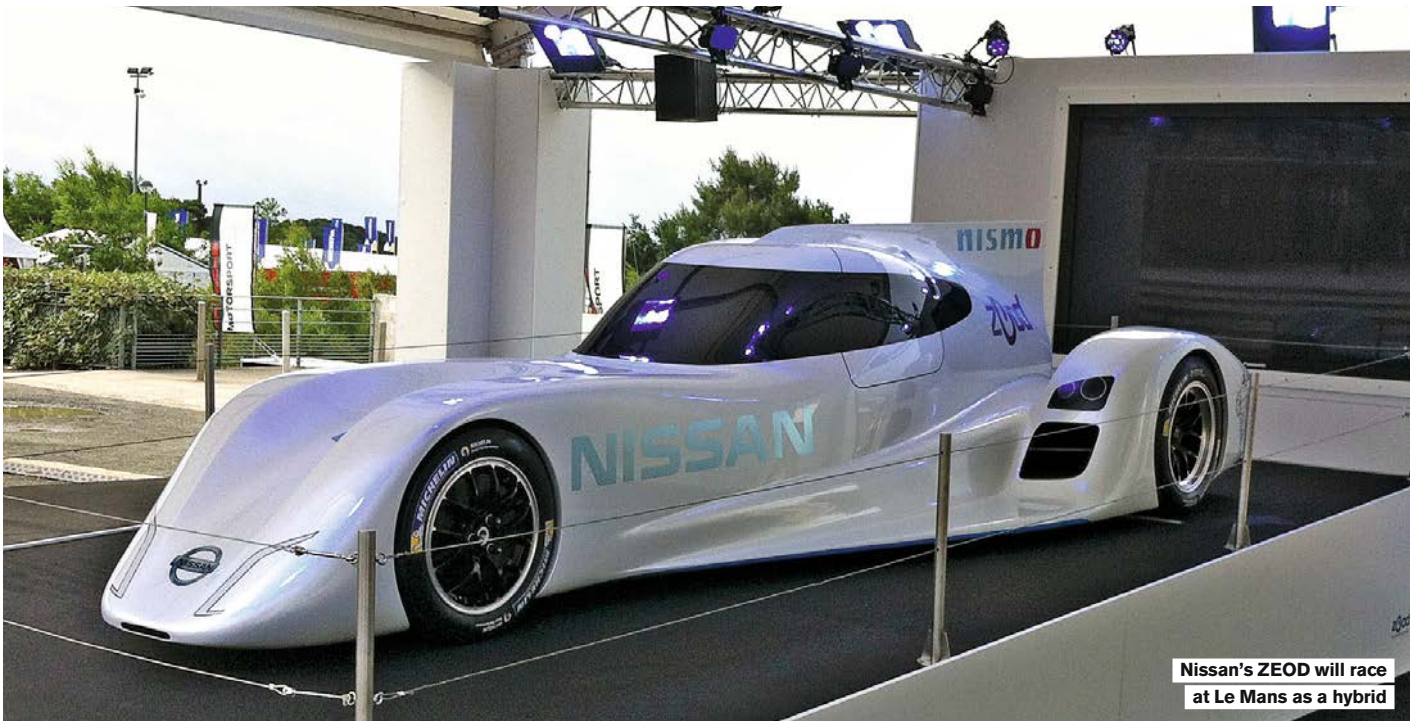
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► A major problem with petrol, however, is that only about one third of this energy reaches the rear wheels. Of the rest, again about one third goes directly out the tailpipe, the remaining one third dissipated as heat via the radiators – so there is still a lot to be gained by making an ICE more efficient. With battery power, it is claimed that 90 per cent of the available energy makes it to the rear wheels.

This is perhaps where the most practical solution to the current state of battery and ICE development comes in, i.e. hybrid set-ups, a combination of both ICE and battery/electric motor(s), and hence the mention of the ZEOD above. F1 cars are strictly hybrids, but are biased very heavily toward the ICE (as are LMP cars from Audi and Toyota). The ZEOD is closer to what the major motor manufacturers are proposing for road car hybrids. The hybrid does not have the recharge time problem by using the ICE to top-up the battery. The battery can also be recharged by harvesting the braking energy in a similar fashion to the F1 KERS system.

‘With battery power it is claimed 90 per cent of the energy drives the wheels’

Also with a hybrid, the ICE can be run at its most efficient settings (and be smaller than in a conventional car), and the battery/electric motors can be used to fill in the gaps. If you have an instantaneous mpg read out in your car, you will notice how poor the mpg is under acceleration but that, once at a constant speed, especially below 60mph, the fuel consumption is really quite low. Hence with a hybrid quite remarkable average mpg and range are achievable, making intercity travel more practical than in an all-electric vehicle. Then, once in a built up area, the ICE

can be turned off for zero-emission motoring as per the all-electric vehicle.

The Nissan ZEOD aims to emulate this cycle at Le Mans by running all but the last lap of a stint as a hybrid, i.e. with the ICE running and the battery being topped up. Then the last lap of each stint will see the car running on battery power alone. It could be said to be a perfect way to use motorsport as a technology demonstrator.

Some people may mock a Formula E race for requiring the drivers to stop at half-distance to change cars. But even running at race speeds for 30mins on battery power alone, it would have been impractical just a few years ago. Battery technology is advancing in the automotive world, and motor racing is once again being used for what many argue should be its primary purpose, i.e. leading the charge in developing new technology. So long as the major motor manufacturers continue to look at batteries as the successor (or augmentor) to the ICE, then motorsport should continue to look at their increased implementation as well. ❖





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NEW TUBE STARS

SS Tube Technology's new owners use AUTOSPORT Engineering to grow the business

Mike Dewhirst and Scott Roberts learnt the worth of exhibiting at AUTOSPORT Engineering with their former company. So it was perhaps not surprising, having acquired SS Tube Technology just over a year ago, that they soon took it back to the NEC.

These former directors of filament-winding specialist CTG established Polar Venture Management as a vehicle for growing a portfolio of engineering companies. SS TT, which manufactures exhaust systems, heat shields and thermal management solutions, proved to be the first acquisition. The company had grown quickly and, in order for it to develop further, it needed a different approach. Commercially, it was probably an ideal time for the then owners, Stuart Barron and Steve Ward, to realise their asset. "It was a successful company and that was the reason we bought it," says Dewhirst. Basically, it needed investment to take it to the next level.

During the first six months the new owners observed how the company operated, before putting their plans in place. Investment was made in new CAD systems, enabling exhaust systems to be designed faster. SolidWorks, and a bespoke package that sits within it, are now used to drive the downstream process. A six-axis laser cutting machine and CNC tube-bender have been purchased. Investment has been made in a new milling machine and workshop equipment, while hydro forming technology has been introduced. The company will also be developing ceramic matrix composite materials for heat shielding during 2014. Significantly, Polar Venture has acquired a 60,000 sq ft factory about a mile away from the current factory just west of Oxford. All the new processes will be housed there.

"Our strategy is to be an engineering-led business that enables customers to arrive at a technical solution more effectively, using less of their own resources," states Dewhirst. SS TT currently supplies around 30 per cent of the F1 grid, 80 per cent of IndyCar and

many customers in LMP, GT, DTM and rallying. The company has recently expanded into Japan.

To grow the company, Dewhirst and Roberts have turned to their experience of exhibiting at AUTOSPORT Engineering: "It attracted the kind of people who understood what we were doing and could spot the opportunities." SS TT had tended to rely on word of mouth, letting its products speak for themselves. This led to growth, but the pair feels that the company needs to be more in the public eye to get to the next stage. Dewhirst points out that an event in the UK is crucial for parts, like SS TT's, that tend to be bought and sold here, irrespective of where the race series is held. The company returned to the NEC last year. "We enjoyed lots of new opportunities, contacts with very senior technical staff from F1 teams and other top-level motorsport personnel. That included people who we had no way of getting to before. It's not a numbers but a who's who game." ❧



SS TT's current factory near Witney



SS TT's stand at last year's AUTOSPORT Engineering



THE GREAT ENTHUSIAST

IAN WAGSTAFF attempts to encapsulate the career of Tony Tobias, the driving force behind AUTOSPORT Engineering's success



Arguably, AUTOSPORT Engineering's head of business development is racing's greatest enthusiast. From Formula 750 driver to its most successful exhibition and advertising salesman, the ebullient Tony Tobias has bounded through the sport for five decades. His undoubted power-to-weight ratio and an unquenchable passion mean that, even in recent years, he lists Lewis Hamilton, Gary Paffett and even Martin Hines among his celebrity kart victims.

His enthusiasm began watching Formula 3 with such as Don Parker and Stirling Moss. Having a father with a newsagent in the Kings Road meant that he was able to deliver copies of AUTOSPORT to the nearby BRP

team founded by Stirling's father Alfred and manager Ken Gregory. From beginnings as assistant publisher of *The Singer Owner's Club Magazine* (his first competition, which he won, was a driving test in a Singer Chamois), he moved on to sell space on *Motor Racing*, which was to become the official organ of the BRSCC. A meeting at the very first Racing Car Show led to three years on *Cars and Car Conversions* before being offered the advertisement manager's post on *Motoring News*. Another three-year spell ended when proprietor Wesley Tee found that he was attending the Wingfield Racing Drivers School instead of selling space. The fact he was doing so at the request of the editorial department cut no ice.

A new publication, *Competition Car*, beckoned. In that time he worked with a number who were to become associated with AUTOSPORT, scribes such as Quentin Spurring, Nigel Roebuck and Chris Witty. It was no surprise then that he should move on to become AUTOSPORT's classified advertisement manager. The whole story would take many pages, suffice to say that about 20 years ago Spurring offered him the advertisement manager's post at the then new *Racecar Engineering*. Shortly afterwards

he began to combine this with the job of selling AUTOSPORT Engineering. Two decades later he continues working for both and, as the industry knows well, still loves what he does.

The 1960s saw TT racing an Austin A35 with a Vic Derrington-based engine he built himself. "I have even been on the grid with Graham Hill." He became the highest-placed newcomer in the Formula 750 championship, driving a DNC. He dominated AUTOSPORT's coverage of F750 having been 'adopted' by the magazine. Witty christened him 'Captain' Tobias after a contemporary reggae song. In the mid-1970s, he was declared AUTOSPORT's favourite F750 driver.

At about the time of his 70th birthday, the Motor Sport Industry Association gave him its Service to the Industry award, and the bar at AUTOSPORT Engineering was named after him. One day he might slow down but the industry doubts it. Recently he dashed from the SEMA Show in Las Vegas, where he is on the awards judging panel, to Professional Motorsport World in Cologne to the NEC Classic Motor Show. Trying to keep him steady through all this is his wife, Dixine who, TT will be the first to agree, really runs AUTOSPORT Engineering. ❧

'Tony lists Lewis Hamilton, Gary Paffett, Martin Hines among celebrity kart victims'



Tony Tobias hands out an award to Greaves Engineering, first-time exhibitors at AUTOSPORT Engineering in 2013



John Surtees attended last year's show, and soon found himself on camera with Tony



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