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9 JANUARY 2020

Ferrari's new plan to topple Hamilton

Legendary team opens up...

On its mistakes

'We have to be honest,
there have been a lot'

On the engine accusations

'We are known worldwide –
integrity and compliance is key'

On Vettel and Leclerc clashing

'They realise Ferrari
was the big sufferer'





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A new decade, a new chance, a new Ferrari?

The 2008 manufacturers' crown seems a long time ago now. That's the last occasion Ferrari won a Formula 1 title, and last season was another campaign of missed opportunities against Mercedes.

It's true that, during its latest wait, Ferrari has generally been competitive – and narrowly could have won the drivers' championship in 2010, 2012 and 2018 – but it's now getting perilously close to the 16-year gap between its 1983 and 1999 constructors' crowns.

That period did, however, act as a prelude to the team's finest era of domination with Michael Schumacher. As Scott Mitchell shows on page 16, the team is again going through a change of approach. It's not as significant as the one Ferrari experienced in the 1990s, but then it doesn't need to be. The legendary Italian squad has produced good cars over the past three years – it's lost out more through the apparently minor details that now make the difference at the front of F1. Its bosses have identified that, admitted to the problem and are seeking to change it. It can only be a good thing for F1 if they succeed because that is what is needed to challenge Mercedes, which is now arguably the greatest F1 team of all time.

The deal to keep Charles Leclerc until the end of 2024 is very much a sign of intent – along with Max Verstappen (who Red Bull has just confirmed for another four seasons), Leclerc is one of the drivers most likely to challenge Lewis Hamilton for his crown. How Sebastian Vettel reacts to Leclerc's position – and the events of 2019 – should provide a fascinating subplot, but it will be more interesting if the two Ferraris are battling with Hamilton, not behind him.

Leclerc also leads a list of stars heading to Autosport International in Birmingham this week. Our guide starts on p34. See you there!



Kevin Turner
Editor

kevin.turner@autosport.com

**NEXT WEEK
16 JANUARY**

Hamilton vs Schumacher,
plus all the highlights
from Autosport
International



COVER IMAGES

Motorsport Images/Dunbar

PIT & PADDOCK

- 4 Leclerc and Verstappen get new deals
- 6 Mazda tops Daytona 24 Hours test
- 8 Meeke ready to look beyond the WRC
- 11 Sainz leads Dakar as Alonso hits trouble
- 13 Opinion: Kevin Turner
- 14 Opinion: Marcus Simmons
- 15 Feedback: your letters

INSIGHT

- 16 How Ferrari plans to strike back
- 24 Guerrieri: losing but winning
- 30 What is Extreme E?

AUTOSPORT SHOW PREVIEW

- 34 Autosport International introduction
- 36 Preview contents and show info
- 38 Rallying greats
- 43 Visions of motorsport in 2090
- 44 BTCC rising star: Jake Hill
- 48 How to find the key attractions
- 50 All the exhibitors

CLUB AUTOSPORT

- 62 Ace Ginetta team to Mini Challenge
- 64 Works Formula Junior Lotus returns
- 66 Opinion: Stephen Lickorish
- 67 National report: Mallory Park
- 68 Abbie Eaton's new challenge

FINISHING STRAIGHT

- 70 What's on this week
- 72 From the archive: 1962 Italian GP
- 74 Autosport 70: Lotus back on the up?

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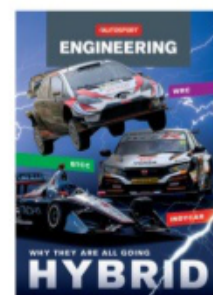
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FREE INSIDE

ENGINEERING SUPPLEMENT



Why some series are turning to hybrid power and the challenges of cutting carbon emissions are tackled this month.



Catch Leclerc at Autosport International this weekend. For full preview, see p34

VERSTAPPEN AND LECLERC IN FOR THE LONG HAUL

FORMULA 1

Those who enjoy Formula 1 silly seasons have been plunged into gloom, with the announcement this week that Max Verstappen will race on with Red Bull until the end of the 2023 campaign following on the heels of Ferrari's confirmation just before Christmas that Charles Leclerc will remain until the end of 2024.

Leclerc joined Ferrari for 2019 after just one season in F1 with Sauber, and secured Ferrari's first win of the year in the Belgian Grand Prix in September, before making it back-to-back successes in the following Italian GP. He finished fourth in the standings ahead of his four-time world champion team-mate Sebastian Vettel. Leclerc also grabbed seven pole positions, the most achieved by any F1 driver in 2019.

"I am very happy to be staying on with Scuderia Ferrari," said Leclerc. "This past season, driving for the most illustrious team in Formula 1 has been a dream year for me. I cannot wait to enjoy an even deeper relationship with the team after what has been an intense and exciting 2019. I'm keen to see what the future holds and I can't wait to get going again."

Team boss Mattia Binotto added: "With each passing race, our wish to extend our contract with Charles became ever more self-evident and the decision means he will now be with us for the next five seasons. It demonstrates that Charles and the Scuderia have a firm future together."

Verstappen, who was promoted to Red Bull from Toro Rosso partway into the 2016 season, has won eight grands prix with the team. He took a career-best third in the world championship in 2019 following Red Bull's switch to Honda engines.

"Red Bull believed in me and gave me the opportunity to start in Formula 1, which I have always been very grateful for," said Verstappen. "Over the years, I have grown closer and closer with the team and, besides the passion from everyone and the on-track performance, it is also really enjoyable to work with such a great group of people. Honda coming on board, and the progress we have made over the last 12 months, gives me even more motivation and the belief that we can win together. I respect the way Red Bull and Honda work together and everyone is doing what they can to succeed."

PABLO ELIZALDE AND VALENTIN KHOROUNZHIY

FERRARI LONG-TERMERS

Charles Leclerc's new deal means that he will spend at least six seasons at Ferrari. What of those who have enjoyed (or endured, in some cases) a similar stint?

MICHAEL SCHUMACHER

STARTS 179
WINS 72
WIN RATE 40.2%

The daddy. Schumacher joined Ferrari in 1996 when it was at a low ebb, and from 2000-04 secured five titles on the trot. Continued until the end of 2006, when he stepped away from the sport for the first time.

SEBASTIAN VETTEL

STARTS 101
WINS 14
WIN RATE 13.9%

Well, he'll have racked up six seasons at Maranello by the end of this year, anyway. Joined in 2015, and was runner-up in 2017 and 2018, but needs to recover form.

RUBENS BARRICHELLO

STARTS 102
WINS 9
WIN RATE 8.8%

Twice runner-up in his stint at Ferrari from 2000-05, but totally overshadowed by team-mate Schumacher in a period that the team utterly dominated.

FELIPE MASSA

STARTS 139
WINS 11
WIN RATE 7.9%

On the strength at Ferrari from 2006-13, with the highlight behind his almost crowning in 2008. The low point was his 2009 Hungary crash – or team orders in Germany in 2010.

KIMI RAIKKONEN

STARTS 151
WINS 10
WIN RATE 6.6%

Took the crown straight off in 2007, but was dropped at the end of 2009. Spent 2014-18 back at the team, but wasn't as good as the driver (Vettel) who currently isn't performing as well as Leclerc.

CLAY REGAZZONI

STARTS 73
WINS 4
WIN RATE 5.5%

Plunged straight into F1 at Ferrari midway through 1970. Dropped for 1973 and went to BRM, but returned from 1974-76 to play second fiddle to Niki Lauda.

GERHARD BERGER

STARTS 96
WINS 5
WIN RATE 5.2%

Became a Tifosi hero in his 1987-89 stint, but only one victory came his way when he returned in 1993-95.

➔ P16 FERRARI PROSPECTS



Kubica 'returns' to Alfa team as reserve driver

FORMULA 1

Robert Kubica has joined the Alfa Romeo Formula 1 team as a reserve driver for 2020, with his backer PKN Orlen coming on board as a co-title sponsor.

It is a return to the team for which he won the 2008 Canadian Grand Prix (above) in its BMW Sauber guise for Kubica, who raced for Williams in 2019.

Kubica, who was linked with a simulator role at Haas and Racing Point, said: "This team holds a special place in my heart and I am pleased to see some faces still

here from my years in Hinwil."

Alfa principal Frederic Vasseur, whose team retains an unchanged race line-up of Kimi Raikkonen and Antonio Giovinazzi in 2020, said: "We are delighted to welcome Robert back home and we cannot wait to start working with him. He is one of the most brilliant in his generation and one who displayed the true meaning of human determination in his fight to return to racing after his rallying accident. His feedback will be invaluable as we continue to push our team towards the front."

VALENTIN KHOROUNZHIY

McLaren completes its senior restructuring

FORMULA 1

McLaren has completed a reshuffle of its senior staff ahead of the 2020 Formula 1 season, Autosport has learned, with long-time engineering chief Andrea Stella promoted to racing director.

Team principal Andreas Seidl arrived for 2019, as well as technical director James Key, and played a part in a new structure designed to end McLaren's previous style of 'matrix' management.

Stella has moved from his

previous role as performance director to a position Seidl temporarily held while he decided on a permanent successor. Stella will now take charge of race engineering and operations functions at race weekends, and will maintain his engineering responsibilities.

He will work closely with Key to ensure good correlation between track performance and technical developments. Paul James will continue as team manager, and Piers Thynne will remain as production director.

JONATHAN NOBLE

Mazda leads the way in Daytona 24 Hours test



DAYTONA 24 HOURS

Olivier Pla set a hot pace for Mazda Team Joest during a busy three days of IMSA SportsCar testing last weekend at Daytona.

The traditional three-day 'Roar before the 24' incorporated a wide variety of weather conditions and provided some interesting insight into what is expected to be another exciting season, which begins later this month with the Daytona 24 Hours. And while it's true the car count has shrunk in North America's premier sportscar category, with only 40 cars reporting for duty, down from 47 in 2019, there has evidently been no reduction in intensity or quality among any of the four classes.

One year ago in qualifying for the 24 hours, Pla's team-mate, Englishman Oliver Jarvis, established an impressive new all-time official lap record for the 3.56-mile oval/road course at 1m33.685s for an average speed of 136.792mph. The old standard, set way back in 1993 by PJ Jones in Dan Gurney's All American Racers Eagle-Toyota MkIII, had finally been eclipsed. Well, that mark seems set to take a pummeling when the teams reconvene in two weeks' time.

A slightly different specification of

Michelin tyre provided a few problems for some of the prototype teams in terms of consistency – and perhaps longevity – but there was no doubt about its speed. Ricky Taylor was the first to dip below the lap record, taking advantage of a sunny sky and cool temperature on Sunday morning with his Acura Team Penske ARX-05 by lapping in 1m33.617s. That was merely an appetiser.

The highlight of the weekend, for a few lucky drivers and a goodly number of spectators, came early on Sunday afternoon when the DPi cars ventured out for a 15-minute 'qualifying' session. The lap times would have no bearing on the race weekend, apart from being used to determine pit and garage positions.

When the dust had settled, Pla had established a new benchmark time of 1m33.324s (137.321 mph) for the #77 Mazda RT-24P he is sharing with Jarvis and Tristan Nunez. "We were anticipating that we would be a little bit quicker this year than last year," noted Pla, "and the direction from the team was very clear – drive as hard as you can. The team has spent quite a bit of time developing the car for the endurance races, and we were working on our race set-up all weekend, but we were always

pushing as much as possible."

The two Acuras were only a couple of tenths adrift through the efforts of Taylor, sharing with Helio Castroneves and Alexander Rossi, and reigning IMSA champion Juan Pablo Montoya, joined by fellow 2019 title winner Dane Cameron and Simon Pagenaud. "It's been a long three days but we made a lot of progress throughout the test, and now we're right there with the other manufacturers," said Taylor.

Brazilian Felipe Nasr, the 2018 IMSA champion, was predictably fastest of the Cadillac contingent, only another a tenth slower for Whelen Engineering/Action Express Racing. Jonathan Bomarito rounded out the top five, slightly frustrated by the fact that his #55 Mazda unexpectedly seemed to be lacking a little downforce in comparison to the sister car. Aside from that, the Mazdas exhibited solid reliability.

"One of our primary goals this season is to be successful in the endurance races, and even though today's results will mean very little on race day, it's great to know that we are on the right path," said new Mazda motorsport director Nelson Cosgrove.

Most of the prototype drivers noted concerns about tyre conservation, in the

TOP 6 DPi

POS	DRIVER (CAR)	TIME
1	Olivier Pla (Mazda)	1m33.324s
2	Ricky Taylor (Acura)	1m33.543s
3	Juan Pablo Montoya (Acura)	1m33.565s
4	Felipe Nasr (Cadillac)	1m33.652s
5	Jonathan Bomarito (Mazda)	1m33.660s
6	Tristan Vautier (Cadillac)	1m33.940s

TOP 6 GTLM

POS	DRIVER (CAR)	TIME
1	James Calado (Ferrari)	1m42.685s
2	Nick Tandy (Porsche)	1m42.686s
3	Tommy Milner (Corvette)	1m42.793s
4	Jesse Krohn (BMW)	1m42.844s
5	Laurens Vanthoor (Porsche)	1m42.903s
6	Philipp Eng (BMW)	1m43.021s

TOP 6 GTD

POS	DRIVER (CAR)	TIME
1	Bryan Sellers (Lamborghini)	1m45.322s
2	Dennis Olsen (Porsche)	1m45.818s
3	Alvaro Parente (Acura)	1m46.033s
4	Brandon Gdovic (Lamborghini)	1m46.077s
5	Andy Lally (Lamborghini)	1m46.225s
6	Mirko Bortolotti (Audi)	1m46.302s

Pla topped the overall times, with classes (right) headed by (top to bottom) Hanley (LMP2), Calado (GTLM) and Sellers (GTD)



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knowledge that they will need to double-stint rubber during the 24 hours. But on race pace – at least at the test – there seemed to be little to choose between Mazda, Acura and Cadillac, with all eight cars within one second during the fastest session.

There were several notable changes to the driver line-ups compared to years past, including Scott Dixon and Ryan Briscoe lining up alongside Renger van der Zande and Kamui Kobayashi in the 2019 Daytona-winning Wayne Taylor Racing Cadillac. Kobayashi ended the test on a high note by posting the fastest time in the final session.

Having lost his ride with Dale Coyne Racing – and his part-time long-distance sportscar role with the Chip Ganassi Ford GT team – Sebastien Bourdais instead has joined Joao Barbosa for the season aboard the Mustang Sampling Cadillac now run by JDC-Miller MotorSports, with Loic Duval adding further depth for Daytona. “It’s discovery time for me,” said Bourdais. “It’s a new car, a new team and a new situation. We have a little late start, but obviously we are in the thick of it now. The Cadillac is quite exciting to drive here, it really moves – a big change from driving in the GT class. It’s a good atmosphere with the team. We



DOLE



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are getting to know each other and making the most of it.”

An expanded field of six LMP2 cars was topped by Ben Hanley (DragonSpeed ORECA), a half-second clear of Nicolas Lapierre (Tower Motorsport by Starworks ORECA).

Only seven GTLM cars will make the race, but last weekend they were bracketed by a scant 0.446s, with James Calado’s brand-new Risi Competizione Ferrari 488 GTE edging Nick Tandy’s factory Porsche 911 RSR-19 by just 0.001s. “I think we’ve put ourselves in good stead for a good base for the race weekend,” said Calado. “I’m looking forward to coming back at the end of the month with a goal to win.”

Tommy Milner served notice of the effectiveness of the brand-new, mid-engined Corvette C8.R by being barely a tenth of a second slower and narrowly ahead of Jesse Krohn in the best of BMW Team RLL’s M8 GTEs.

Lamborghinis bossed the 18-car GTD entry, which included nine different manufacturers, as 2018 champion Bryan Sellers posted comfortably the fastest time for Paul Miller Racing.

JEREMY SHAW

IN THE HEADLINES

JUNIOR CHAMPIONS IN FIA F3

Two of the top teams in the FIA Formula 3 Championship announced deals with junior champions over the Christmas period. Prema Racing will run Dane Frederik Vesti, who won last year’s Formula Regional title with the Italian squad and made a strong FIA F3 debut in Macau. ART Grand Prix has snapped up French talent Theo Pourchaire, winner of the 2019 German Formula 4 title, and Russian Alexander Smolyar, who took third place in the Formula Renault Eurocup.

DRUGOVICH STEPS UP TO F2

Felipe Drugovich will step up to the FIA Formula 2 Championship this season with Dutch team MP Motorsport. The Brazilian dominated the 2018 Euroformula Open series, but had a disappointing season last year in FIA F3 with Carlin. Autosport understands that MP has bolstered its engineering line-up with a pair of Italians: Paolo Angilella, who ran Felix Rosenqvist and Mick Schumacher to Euro F3 titles with Prema; and the much-travelled Daniele Rossi, who switches from Carlin.

BENTLEY DEAL FOR MORRIS

Seb Morris, the 2017 British GT champion, has been promoted to the full-time Bentley factory line-up for this year, and will race in the Intercontinental GT Challenge. The Welshman will drive an M-Sport-run Continental GT3, beginning with the Bathurst 12 Hour opener next month.

VILLENEUVE’S NASCAR TEAM

Jacques Villeneuve, the 1997 Formula 1 world champion, and his friend Patrick Lemarie will run their own FEED Racing team in this year’s Euro NASCAR series. Both Villeneuve and ex-BAR test driver Lemarie will race in the top division, with Lemarie’s car piloted in the Euro NASCAR 2 division by 17-year-old Belgian Simon Pilate. Villeneuve scored three podiums on his first taste of the series in 2019.



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Meeke looks to life beyond WRC as Lappi bags last drive

WORLD RALLY CHAMPIONSHIP

Kris Meeke is not a man to sit still for long. He may have accepted the fact that his full-time World Rally Championship career is over, but, living in the mountains with Cyril Despres and Sam Sunderland for neighbours, his next challenge won't be far away.

The Northern Irishman was present at the Saudi Arabia start of the Dakar Rally last weekend, when he might genuinely have ended up co-driving Despres if his co-driver Mike Horn hadn't made it back from the Arctic Circle in time, and talked openly about life after the WRC.

Meeke, who lost his Toyota seat at the end of last season, told Autosport: "I think it's not possible [to continue in WRC]. At 40 years old, you know around this moment life can change a bit. It happened now. I'm still in talks with Toyota to be involved, maybe in some testing, we'll see. I keep my options open. I look at all the things that will give me passion."

Asked if he would be sad to turn his back on a full-time WRC drive, the five-time world rally winner added: "No. I would have loved to continue, but as the situation arrived like this I'm realistic. I look to the future. I have a passion for it and I still want to do some competitions. Dakar is for sure something I want to look at."

"The WRC has been my life from so long – it's a bubble and when you are inside it's the most important thing to you. When you step outside there are many, many other challenges in

life and in motorsport."

M-Sport's confirmation of Citroen refugee Esapekka Lappi alongside Teemu Suninen and Gus Greensmith in a trio of factory Ford Fiesta WRCs shut the final door open to Meeke to lengthen a career at the pinnacle of rallying that began in 2003.

"When the market is like this, it's not possible [to drive at M-Sport]," said Meeke. "At this stage of my career, I have to be realistic with where it's at. I don't drive for nothing. I don't spend 200 days a year away from my family for nothing, so I think that's the case, as Lappi will take a salary from Citroen so he doesn't need any money. For me, full time in the WRC, I think it's finished."

Greensmith starts nine of the 13 WRC rounds this season after impressing M-Sport managing director Malcolm Wilson with his speed when he came off the bench for the injured Elfyn Evans last season. Wilson said: "I must admit, the pace he showed in Portugal was far better than I expected last year, but this season's got to be all about the experience."

The 23-year-old Brit added: "I have been waiting for this opportunity my whole life. Now I have it. I owe a lot to everyone at M-Sport and Ford who have helped me progress as a driver, but there is a lot more to come."

"During the off-season I have made some big improvements to myself outside of the rally car. I have never been fitter. I have never been faster."

The WRC starts with the Monte Carlo Rally on 23 January.

DAVID EVANS

Aston secures Brit Ford men

LE MANS 24 HOURS

Aston Martin has dipped into the pool of former Ford drivers to fill the vacancies in its Le Mans 24 Hours GTE Pro line-up. Richard Westbrook and Harry Tincknell, both stalwarts of the American manufacturer's programmes on either side of the Atlantic, have been snapped up for the 2019-20 World Endurance Championship finale in June.

Westbrook, who raced a Chip Ganassi Racing Ford GT in the IMSA SportsCar Championship and at Le Mans in 2016-19, will share the #95 Vantage GTE with Nicki Thiim and Marco Sorensen. Tincknell, who was part of the Multimatic-run WEC squad, will drive #97 alongside Alex Lynn and Maxime Martin.

AMR team principal John Gaw described the two Brits as the "pick of the bunch" of available GTE Pro drivers after the withdrawal of Ford and BMW from the WEC. "We wanted drivers with good GTE experience who would fit in," he explained. "We sat down with our existing drivers and asked them who they wanted, because the chemistry in the team is important. It helped that Richard and Harry are British, but that wasn't fundamental in the decision."

Westbrook called signing for Aston "a proud moment for a Brit".

"It's a good time to be driving for Aston, because it will be the third Le Mans for the new Vantage," he said. "It has shown itself to be competitive on all tracks in the WEC so far this season."

Darren Turner and Jonny Adam, who respectively drove the #95 and #97 cars at the 24 Hours last year, will remain with their Aston GTE Am teams for the French enduro. Aston currently has no plans for Westbrook or Tincknell to race at any of the WEC rounds leading up to Le Mans.

GARY WATKINS



Junior Johnson 1931-2019

OBITUARY

Tributes have poured in for a man nicknamed in the 1960s as 'the Last American Hero', Daytona 500 victor and multiple NASCAR title-winning team owner Junior Johnson, who died five days before Christmas. He was 88.

Born Robert Glenn Johnson, he smuggled 'moonshine' liquor and became a driver to fear after starting his racing career in the early 1950s. He pioneered the use of slipstreaming when NASCAR introduced paved 'superspeedways' such as Daytona, where he scored his most famous victory in the 1960 Daytona 500.

By the time of his last race in 1966, Johnson had racked up over 50 victories, and his focus switched to his team, Junior Johnson & Associates. Cale Yarborough won three titles for the squad in 1976-78, before Darrell Waltrip became champion in 1981-82 and 1985. The team ended its top-line NASCAR presence in 1995, but still lies third in total number of wins, behind only Richard Petty Enterprises and Hendrick Motorsports.



Although a Democrat voter, Johnson was given a Presidential Pardon in 1986 by Republican Ronald Reagan for his conviction in the 1950s when he was caught in one of the decade's biggest alcohol raids. Johnson spent a year in prison from 1956-57 after being found on premises that had a moonshine still. Despite this, his driving skills meant he was never caught actually transporting moonshine illegally.

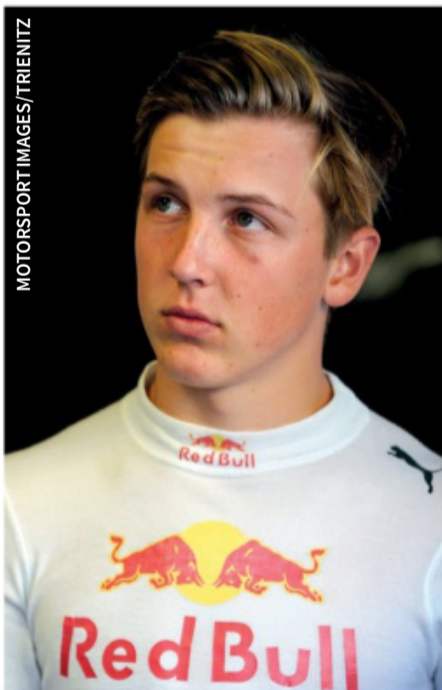
NASCAR's move into the mainstream as a commercial sport in the 1980s only increased the folklore around Johnson's southern roots and escapades. Current NASCAR Cup champion Kyle Busch

called Johnson "one of the great legends of our sport". Jeff Gordon, one of the key drivers in NASCAR's expansion, added: "One of the most respected and coolest racers I ever had the pleasure to spend time with. NASCAR wouldn't be what it is today without him."

Johnson was among the first inductees to the NASCAR Hall of Fame in 2010, joining NASCAR founder Bill France Sr and his son Bill France Jr, and seven-time Cup champions Dale Earnhardt and Richard Petty.

Johnson, who suffered from Alzheimer's, is survived by wife Lisa, son Robert Glenn and daughter Meredith.

JACK BENYON



Lawson, Tsunoda top big NZ entry

TOYOTA RACING SERIES

New Zealand's keenly anticipated Toyota Racing Series will be back to full strength for the first time since 2017 when it begins next week.

The format remains the same, with five consecutive weekends of triple-header events, beginning at Highlands Motorsport Park on 18-19 January and ending with the New Zealand Grand Prix at Manfeild on 15-16 February.

But the new Tatuus-built FT-60 chassis, basically the same car as that used in Regional F3 and Formula Renault, has brought a full 20-driver international field.

A trio of FIA F3 racers have entered: reigning TRS champion Liam Lawson (left) and fellow Red Bull Junior Yuki Tsunoda, plus Lirim Zendeli. Formula Regional race winner Igor Fraga and top 2019 FRenault rookie Caio Collet, plus Spanish F4 champion and Fernando

Alonso protege Franco Colapinto add further depth.

From the UK single-seater scene arrive Swede Lucas Petersson, who raced in British F3 in 2019, and American Spike Kohlbecker, who was runner-up in National FF1600.

Petersson and Collet are among those in the line-up at Mtec, which is now working in conjunction with French powerhouse and FRenault Eurocup title winner R-ace GP.

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Sainz leads as Alonso hits strife

DAKAR RALLY

While Fernando Alonso endured mixed fortunes on the first week of his Dakar Rally debut, fellow Spanish motorsport superstar Carlos Sainz had moved into the lead as we went to press on Tuesday.

Two-time Formula 1 champion Alonso set a blistering pace on some sections, but spent a couple of hours sitting in the sand rebuilding his Toyota's suspension on Monday. By the end of the third stage on Tuesday, Sainz (above) led after a masterful 265-mile section in the Saudi Arabian desert on this, his second Dakar in a Mini.

Alonso's (below) hopes of a top result were blown on Monday, when he slipped from 11th on day one to 47th place. The 38-year-old Spaniard dropped more than two hours with damaged suspension aboard his Hilux, having been caught out by poor visibility after 75 miles of the 230-mile test from Al Wajh to Neom. "We collided with something in the dust," said Alonso. "We don't even know what it was, because we couldn't see anything."

Alonso admitted his preparation for Dakar – including three warm-up events – helped as he and co-driver Marc Coma dismantled the suspension and completed

as much work on the car as they could.

"We had contact with the team and we were informing how the progress was going," continued Alonso. "At one point they told us that if we could get this and that out, we could almost repair it. We have been training on this for months, so it was also part of the preparation. We had to cut the front circuit, so we had to drive carefully without front brakes, but it is more experience. I wanted to live the Dakar with all the extras and this is part of the race. I'm glad to be here and to continue."

Alonso admitted he "tiptoed" through the opening section and was 11th at the end of the first competition. He was then running in the top-five split times when he hit trouble on Monday's test. He backed that pace up with a fine fifth place on Tuesday's loop from Neom to Neom.

At the end of the third section, Sainz held a near five-minute advantage from former team-mate and 2019 Dakar Rally winner Nasser Al-Attiyah.

Al-Attiyah, Alonso's team-mate in the Toyota stable, overcame three punctures on Monday keep himself in the hunt for back-to-back wins on the marathon event, which finishes in Qiddiya a week on Friday.

DAVID EVANS



COOK SERVES UP SECOND COURSE IN BTCC AT BTC

BTCC

British Touring Car Championship 2019 long-shot title contender Josh Cook will remain with the BTC Racing squad for another year.

The 28-year-old, who joined the BTCC in 2015, signed a last-minute deal to drive a Honda Civic for BTC Racing at the start of 2019 and finished fourth in the championship table with three wins. He was also runner-up in the Independents Trophy standings.

"This will be the first time I've gone into a season with the same car as I've raced in the previous campaign, and that's important," said Cook. "We'll now be able to look at the data from 2019, which was a strong year for us, and we will be able to go to a circuit and start from a strong foundation."

Joint team principal Bert Taylor said that retaining Cook on the driving strength was important to help the squad continue its progress through to 2020. "When you look at teams like WSR and Team Dynamics, their success is built on consistency and that is what we will have," he said.

The Trade Price Cars Racing team has signed Bobby Thompson to drive one of its Audi S3 saloons in the 2020 campaign. The 2017 Volkswagen Racing Cup champion will be entering his third year in the BTCC. He finished 22nd in 2019 with two top 10 finishes in a Team Hard VW CC.

MATT JAMES



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Searching for F1 gold

The latest edition of a grand prix reference tome ranks all the races according to merit, adding fresh and welcome stimulus to the eternal 'greatest era' debate

KEVIN TURNER

Trying to judge when Formula 1 was at its best is almost impossible and depends very much on who you are asking. What do you care about more: close racing, great characters or spectacular cars? What about technical innovation versus a pack of snarling Cosworth DFV 'kit cars'?

We've previously looked at raw statistics and asked Autosport readers to try to come up with an answer. There almost certainly is no definitive 'greatest era', but the debate can provide insights into what fans want and how to make that happen, particularly pertinent given the upcoming rule changes for 2021.

Previous analysis (Autosport, 14 February 2019) has shown that F1's closest eras in terms of the pace of the leading teams came during the DFV's life (falling mainly in the 1974-82 period we identified) and the manufacturer-heavy 2000s, particularly after the engine-development freeze at the end of the decade. In other words, reducing the variables by equalising engines unsurprisingly closed the field.

When it came to our reader vote, 1974-82 (magazine readers) and 1994-2005 (online) won out, but a new book uses another approach.

Roger Smith's previous editions of *Formula 1: All the Races* have long been useful reference books. But *The First 1000* version, published following the landmark 2019 Chinese Grand Prix, includes a bold attempt to grade all the GPs.

Smith gives each race one of five ratings: gold, silver, bronze, black/tragedy (think 1994 San Marino GP) and white/travesty (2002 Austrian GP, 2005 US GP). There are always going to be disagreements over rating races – it's strange to us, for example, that the 1990 Japanese GP is a 'black' whereas the 1989 event, which also included an unseemly clash between title rivals Ayrton Senna and Alain Prost, is a gold – but Smith's assessments are largely sound.

He does seem reluctant to describe any races as bad and half of the 1000 are rated bronze. Essentially a 6/10 race gets the same bronze rating as a 1/10. A grading with more options – perhaps marks out of five or 10 – would be more sophisticated and allow greater analysis, but would also take a lot longer. We applaud Smith for his effort and consider it a challenge for the future...

Taking a look at the golds does allow us to see which eras produced the highest number of great races. Smith describes them as "sensational, thrilling, spellbinding" and "extraordinary races or events so exceptional they occur once, maybe twice a season". Looking at the races selected, he has – quite rightly – also included virtuoso drives, such as Juan Manuel Fangio's 1957 German GP

victory and Senna's 1993 European GP wet-weather masterclass.

Downloading the book's free 2019 season section brings the total number of races to 1018, 126 of which are rated gold. That's 12.4%, so across the history of the world championship there has been one great race in every eight. But that's not consistent over time. Using Autosport's eras provides interesting results (see box). The best is 1961-73, with almost one in five GPs being a gold. That is worth remembering the next time people criticise a boring race and laud a previous era: there have always been dull GPs.

Perhaps surprisingly, given the much larger gaps (the biggest average winning and pole position margins were in this decade), 1950-60 is next up, though it should be noted that this is from a much smaller sample size. Worst of all is 1994-2005 at one gold in every 13 races, affected by Michael Schumacher's domination and the sprint-stop-sprint nature of the refuelling era that tended to discourage wheel-to-wheel racing. It's hard not to believe that this era's success online has something to do with the age of most social-media users!

So, our voting threw up 1974-82 and 1994-2005 as winners, while the 'gold' analysis from Smith's book puts 1961-73 on top. For technical innovation, you could make a case for the 1983-93 period that included 1000+bhp turbos, semi-automatic gearboxes and active suspension, not to mention the Prost-Senna rivalry.

What does this tell us? Probably that every era has its strengths. What you feel is the best depends on your criteria. But it's clear that close racing – and at least the possibility of overtaking – is important to many, hence the constant calls to curb downforce levels and 'dirty' air.

A final thought. Smith rates three of last year's races as gold (the German, Hungarian and Brazilian GPs), giving a conservative 14.3%. Only three seasons – 1984, 1990 and 2018 – score more than three golds, indicating that the past two years have been among the best, with the caveat that there were more races than in previous seasons. F1 has emerged from the 'dark' days of Mercedes domination (2015 is one of only four seasons not to have a single gold race), even if the Silver Arrows have yet to be beaten to a title.

If Ferrari or Red Bull can take the last step to battle Mercedes for a whole season, that could provide a few more 'golds'. And that's before the new rules, designed to create closer racing and allow more teams to fight at the front, arrive. Here's hoping we'll have another strong candidate for F1's greatest era in a few years' time. 🏆

For your copy of *Formula 1 All the Races: The First 1000*, priced £65, visit veloce.co.uk or f1-1000.veloce.co.uk

AUTOSPORT ERA GOLDS

PERIOD	RACES	GOLDS
1950-60	83	15 (18.1%)
1961-73	141	27 (19.1%)
1974-82	138	18 (13.0%)
1983-93	175	22 (12.6%)
1994-05	202	16 (7.9%)
2009-18	194	19 (9.8%)



Barnet flair

For those who can recall Mark Blundell's 1980s coiffure, the thrilling Formula Ford exploits of this British racing hero will remain etched in the memory

MARCUS SIMMONS

The mid-1980s was a terrific time to be a teenaged motorsport fan in the UK. Actually, make that a terrific time to be a teenager – full stop. At our school, 20-odd miles from London, the biggest trauma for the small smattering of indie kids was that the Smiths, the Cure and the Cocteau Twins all announced dates at separate venues in the capital on the same night – imagine that embarrassment of riches today. And we'd all rather New Order focused more on their guitar-led roots than heading down the dance route, but still, *Blue Monday* was pretty decent at the school disco.

At the race track, the British Formula 3 Championship was bursting at the seams after an early-1980s slump in grid numbers. Underneath that on the UK ladder, Formula Ford 2000 had turned into a white-hot arena of talent after its first few years of being populated mainly by FF1600 graduates who hadn't quite been good enough for F3. And for 1985, FF1600 had been rationalised – and enriched – at its top level by the pruning of its four major national championships down to two, with two junior series sitting beneath. Add to that many circuits hosting their own single-venue FF1600 championships of varying quality, with the Champion of Brands arguably the pick of them all.

Into that hotbed stepped a young Hertfordshire lad named Mark Blundell who, like many of his racing peers of the time, sported a haircut that made him look like a cross between a member of

“Blundell's mane was lairy, and so was the driving between him and his contemporaries”

Spandau Ballet and a graduate of a Division 2 football club's academy playing in the reserves. The mane on this ex-motocross ace was lairy, and so was the driving between Blundell and his contemporaries during that mid-1980s era. Damon Hill, Johnny Herbert and Bertrand Gachot would go on to become the most famous, but there were other great talents around in the forms of Paulo Carcasci, Dave Coyne and John Pratt. Beating Blundell, Hill etc to the 1984 junior FF1600 titles was Jonathan Bancroft, while Ross Hockenhull, Tim 'Son of Brands commentator Brian' Jones, Andy King and Allan Seedhouse could all ace them on their day.

The rivalry between Blundell and Gachot was particularly ferocious. Blundell had won 25 of the 70 races he'd contested in his novice FF1600 season in 1984, while Gachot had been racing in the same category on the continent. For 1985, Blundell secured a works

Van Diemen drive for the move to senior FF1600, while Marlboro-backed Gachot lined up with the ambitious Pacific Racing squad. Along the way, Gachot drove Blundell off the track and almost into a massive shunt at Castle Combe. When Blundell punched Gachot through his open visor in the paddock, he was apprehended by some west-country coppers who happened to be passing by and held for breach of the peace. Blundell won the Esso championship, while Gachot won the RAC British crown – but only after triggering a startline shunt in the Thruxton finale that sent Blundell into the barriers and confirmed the Belgian as champion.

The feud continued into 1986 in FF2000, where again it was one title each. Once more, Pacific-run Gachot ended up with a British championship, while Blundell, who was run by Ken Stanford's Anglo European Racing, was victorious in the EFDA European series. At this point, Blundell made the ambitious move onto the international scene for 1987 to compete in Formula 3000 with the family Fleetray Racing team, while Gachot – as every proper Marlboro-backed continental should do – lined up in British F3 with West Surrey Racing. Together with the brilliant Herbert, who'd been driving for the tiny Quest constructor in FF1600 and FF2000, you'd have said that any of these three – and not Hill, who'd just come out of a trying maiden F3 season – would be most likely to become a future Formula 1 world champion.

All this is why it's worth saluting Blundell, who last weekend announced his retirement from the cockpit after a poor single season in the British Touring Car Championship in 2019 with a Trade Price Cars Racing Audi. He's the last member of his mini-generation – who massively raised the ante in British single-seater racing and made what was going on within our islands the focus of the international teams in the higher ranks – to attempt a full racing programme at a significant level. His driving career probably went on a bit too long (we'll forget his British GT exploits of a few years ago...), but he was a great talent.

He's also kept his influence in the single-seater arena that brought him to prominence, originally as a management partner with his friend Martin Brundle in the 2MB company, latterly on his own as MB Partners, with drivers including Mike Conway, Tom Blomqvist, Callum Iloft and Jordan King among his stable.

Some will remember Blundell's 1993-94 F1 podiums with Ligier and Tyrrell, or his scarily committed 1990 Le Mans 24 Hours pole lap with Nissan, or his late-1990s stardom in Indycars. But for this fan who revelled in the furious battling of a golden crop of talent, the memories revolve more around the anticipation of a BBC Grandstand FF2000 Winter Series (he won that too, in 1985) grid lining up under a blinding low November sun, slippery patches off the racing line, at Brands Hatch. And by the way, for the gig I chose the Cocteau Twins – and I was yet another with a bit of a mullet. 🍷

YOUR SAY

Reading about Emmo being pushed onto the grass by Regazzoni at Watkins Glen while trying to clinch the title in 1974 was thrilling

CHRIS PECK

Welcome tribute to a glorious Formula 1 era

I just wanted to say that I've really enjoyed last week's issue about the 1974-82 era. I always love your retro issues. Reading about Emmo being pushed onto the grass by Regazzoni at Watkins Glen while trying to clinch the title in 1974 was thrilling.

And what a fascinating interview with a young Luca Montezemolo about his early days with Ferrari. I couldn't help thinking while reading it that the Scuderia is in need of a similar figure to get the best out of the team now.

I've long admired the varied career of Jacky Ickx as well, so that feature was also very interesting.

Happy 70th birthday to Autosport, and I look forward to more celebrations throughout the year.

Chris Peck
Exeter

One name that's missing from the top 50...

I've just got round to reading the Christmas double issue and was staggered to find that there was no place in the top 50 for Jamie Chadwick. What more has this woman got to do for your panel to give her the recognition that she richly deserves?

Champion in MRF at the beginning of the year, the first ever W Series champion and further excellent races in both single-seaters and in the Aston Martin in sportscars. She also became a development driver for Williams F1 and finalist in the Aston Martin Autosport BRDC Young Driver of the Year.

OK, Jamie may not yet be high up in the top 50, but she certainly deserved a place.

Simon Fenwick
By email

BTCC takes right route to attracting new fans

Can I just say, hats off to the British Touring Car Championship for keeping motorsport on free-to-air TV when other promoters are hiding the sport behind a paywall. It's fair to say that motorsport is in turbulent times, with the grassroots struggling with falling figures, both spectators and competitors.



The BTCC seems the only series actively trying to promote the sport by making itself as accessible as possible, allowing non-motorsport fans to channel hop and find a new sport. Promoters need to attract new fans into motorsport by making it accessible. The more spectators watching the sport on TV, the more will attend race meetings, take part or support the industry/sport in some way.

I hope other motorsport promoters notice the increase in viewing figures the BTCC has witnessed last year and take a leaf out of its book.

Elliot Mason
By email

Raising doubts about the Dutch Grand Prix

The Dutch GP organisers promise there will be no repeat of Indy 2005 because of their use of banking. Having seen the building work, I am more concerned about a repeat of Donington 2009! Grandiose plans ruining a wonderful track.

Add to that Dutch climate change laws. These force a 25% reduction of CO2 in 2020. Is the Dutch GP tenable?

Nicholas Binns
Wirksworth, Derbyshire

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INSIGHT

FERRARI'S FRESH START • ESTEBAN GUERRIERI SEES THE UPSIDE • EXTREME E'S VOYAGE TO SAVE THE WORLD



Ferrari

New year, new decade, new methods, new start

The Prancing Horse has come through its first-ever decade without an F1 title of any kind. Can it learn the lessons of its inability to capitalise on its rapid 2019 car?

SCOTT MITCHELL

PHOTOGRAPHY 

New Year's resolutions are often admirable attempts to try something new, or do something better. Then many of those resolutions hit early hurdles and old habits win out in the end – but still we do exactly the same thing the following January. Years are just abstract boundaries created to organise time, but we have done a superb job of turning them into something more. Years offer a narrative and cut history into manageable, bite-sized chunks. For example, how glad must Ferrari be to see the back of the 2010s, the first decade in which the team failed to clinch a single Formula 1 title?

A barren decade feels like a terrible milestone for Ferrari, which at least had constructors' championship successes to celebrate at the start of the 1980s and again in 1999. But it's a new year! So the slate is wiped clean, because a new year – let alone a whole new decade – heralds a new start. Now Ferrari and its fans can believe this millennium's Roaring Twenties will take the Italian team back where it belongs.

Like all New Year's resolutions, reality is not quite so simple. Ferrari needs quite a bit of work to make that happen, but there is evidence of a genuine plan in place to topple Mercedes. That has emerged from the team's top-down acceptance of its own errors last season.

"We have to be honest in terms of *mea culpa* for certain mistakes that happened throughout the season – the reliability, the driver issues, the strategy, and the list goes on," admits Ferrari CEO Louis Camilleri, whose job it has been – alongside president John Elkann – to take over the responsibilities of Sergio Marchionne, who died in 2018. "However, I am very much a glass-half-full person, and I see a lot of encouraging signs."

If the secret to beating Mercedes could be summarised in a three-step process, it may look something like this. Step one: admit to, and identify, errors from the past season. Step two: establish how those errors came to pass. Step three: change what is necessary to avoid a repeat. Because for all the misery of the past 11 seasons, and especially the V6-turbo-hybrid era, Ferrari's actually had a car capable of fighting for the title since 2017.

The most recent of those, the SF90 that dominated pre-season testing just under a year ago, was undermined by various factors: reliability, strategy, team and driver error. These conspired to turn a car that >>

Ferrari had title-winning speed,
but reliability, strategy and
too many errors cost it dear

scored nine pole positions in 21 races into a consistently wasteful package. Ferrari failed to win any of the first 12 grands prix and eventually won just three races in 2019. Mercedes 'only' scored 10 poles, but won 15 times. The upshot was yet another dominant title double for the Anglo-German team, while Ferrari clocked its lowest points haul in three seasons.

In theory, it is easier to learn how to make the most of a fast car than it is to overreach with a flawed one. That will be the silver lining Ferrari looks to in 2020, especially as team principal Mattia Binotto is aware of the potential it passed up last season.

"We led 406 laps, which is 32% of the overall laps of the championship," Binotto notes. "Certainly, Mercedes led more, but we led a lot more than Red Bull with 156 laps. But they [Red Bull] have won the same amount of races we have. Only three victories at the end of the season is not matching with the true performance of our car.

"The reason for not winning more was we were not reliable enough, because of some driver mistakes, because of some strategy mistakes. There has been a lot of that. If there is anything we have learned it is

"Only three victories at the end of the season is not matching with the true performance of our car"

that to win, we need to be perfect in all the areas. The only times we won, we have been perfect in every area: team strategy, drivers, car reliability. It shows the level of competition that we are facing at the moment."

Binotto's not wrong. Mercedes has been an unstoppable force since 2014 and last season was no exception. Lewis Hamilton's sixth title was earned by his joint-best year in terms of wins (11), and neither driver nor team is showing any signs of slipping up. Even so, being aware that it must be better is just the first step for Ferrari. Drilling down into the detail and applying the necessary changes are the tough parts. Camilleri and Binotto both know this is not the work of "one day", and some solutions will have been in the works for some time.

For example, Ferrari's reliability weakness has been apparent since Charles Leclerc was robbed of victory on just his second start for the team, with a late electronic fault in Bahrain. It could even be argued that it had already been hinted at in the Australia opener, where Ferrari was nowhere. Having thought it was half a second clear after the first week of pre-season testing, Ferrari was not surprised to see Mercedes close the gap in week two. But when Mercedes dominated in Melbourne and Ferrari failed to even finish on the podium, Binotto admits it suffered a "cold shower" – a little ironic, given it was hurt by "a bad choice in terms of cooling and power-unit management" in the Australian heat.

More significantly, though, Ferrari also had issues in qualifying in Austria and Germany, race-ending failures in Russia, and a suspension problem in the United States. For many months, it has been working on toughening up its processes, from design to validation to trackside management.

"Pitstops were also not good enough," says Binotto. "In many occasions ours were over six seconds, which is not acceptable for a Ferrari team. We need to be perfect from a team point of view. It's not a matter of skills. It's not a matter of individuals. After all, the way we are approaching the problems is through practice. It's through a lot of training, a lot of analysis, a lot of tools. It's a lot of methodologies showing that we need to improve ourselves 360 degrees. And that's the challenge we are facing."

This all sounds encouraging. But there will be elements that Binotto and Camilleri are not in control of. Drivers make mistakes. Sebastian Vettel and Leclerc both did last season. Vettel spun while fighting Hamilton in Bahrain, and he should have been the one to inherit victory when Leclerc suffered his late problem. Leclerc hit the wall in Azerbaijan qualifying when he looked a strong pole contender, then crashed out in Monaco while trying to recover from a low grid slot (caused by Ferrari >>

2019 STATS

TEAM	WINS	POLES	PODIUMS
Mercedes	15	10	32
Ferrari	3	9	19
Red Bull	3	2	9

DRIVER	TEAM	LAPS LED
Lewis Hamilton	Mercedes	511
Charles Leclerc	Ferrari	246
Valtteri Bottas	Mercedes	185
Sebastian Vettel	Ferrari	160
Max Verstappen	Red Bull	156

FERRARI'S 2019 AS PERCENTAGE OF TOTAL

Poles	9	43%
Laps led	406	32%
Wins	3	14%

Leclerc throws down an early marker, overtaking Vettel for the lead in Bahrain



SUTTON

Newly signed contract
cements Leclerc's
position at Ferrari



SUTTON

President John Elkann
tasked with co-steering
the Ferrari ship



SUTTON



Leclerc's 2019 pace advantage is unarguable – seven pole positions versus Vettel's two

HONE



Team-mates' off-track relationship said to be convivial and respectful

ANDRE

failing to send him out for an extra lap in qualifying, an error that meant he was knocked out in Q1). The mistakes didn't end there. Vettel lost victory in Canada because of his well-documented off and run-in with Hamilton while rejoining. The four-time world champion also lost his chance of a strong result in Italy, when he spun under no pressure early in Ferrari's home race.

The drivers' relationship needs to be managed better, to avoid a repeat of the race-ending collision between Leclerc and Vettel in Brazil. Hamilton and Valtteri Bottas have not fought for intra-team status in their three seasons together at Mercedes and, even if they did, it's hard to imagine either of them losing their cool like Vettel and Leclerc did during the most tense moments of their 2019 battle.

Ferrari has a role to play in that, but it stands by its belief that neither driver has a problem with the other and that the Brazil crash acted as a trigger for everyone to get into the same room and have some sense knocked into them. That was the lowest point, there is no denying that, but the important thing for Ferrari is that it never happens again.

"Behind closed doors they actually get on very well," says Camilleri. "There's great respect between them. They joke together. And there's quite a great relationship. Brazil was a nightmare. However, now the air has been cleared. And I think you sometimes need a crisis to put the goalposts in the appropriate place. They both realised that Ferrari was the big sufferer in the collision that they created, and it gives Mattia a much better way of managing them."

Exactly how Vettel and Leclerc turn that into a harmonious on-track dynamic next season will be vital to Ferrari's title hopes. There is no doubt that Leclerc forces Vettel to raise his game and, when Ferrari was at its strongest, it was Leclerc who had the higher peaks. That, Ferrari admits, had an impact on Vettel. As will Leclerc being given a mammoth new contract over the winter that cements his future at Maranello until at least the 2024 season.

That gives Leclerc the time to smooth out his rough edges and translate his obvious ability into a title challenge. It may also be the confidence boost he needs to make that step sooner rather than later. If Vettel responds in kind, Ferrari has a powerhouse line-up – and one, it claims, that has a better understanding of how to play the team game. To put it simply: more upsides, fewer problems.

"We can be stronger," says Binotto. "We have meetings with the drivers before the race to discuss scenarios, what may happen, what can be the team's strategy. And believe me, that type of meeting at the very start of the season was full of embarrassments and difficult

“Brazil was a nightmare. But I think you sometimes need a crisis to put the goalposts in the appropriate place”

to manage. But we are getting used to it. By the end of the season, it became more and more comfortable.

"The reason for needing to manage them is high because both of them are good drivers and need to be respected as individuals. Both of them, when starting the race, they have one objective – it is not beating their team-mate, it is to be first under the chequered flag."

Of course, the final step to achieving this is the performance of the 2020 car itself. While the Ferrari SF90 was relatively competitive over the balance of 2019, it had bigger peaks and worse lows than Mercedes. Balancing that equation will be important this year. Binotto and Camilleri talk positively about Ferrari's progress through 2019 after the inadequacies of its aerodynamic platform were exposed early in the year. And it is broadly accepted that, by the end of the season, the Ferrari was better through the corners than it was at the beginning.

"We hadn't a lot of downforce on the car," admits Binotto. "We improved what were the main issues: race pace, stability under braking, and understeer. We had extra downforce, different aero



Leclerc's stricken car is recovered after Interlagos clash

configurations and different set-ups in the second half of the season. The car was improved, if you look at the cornering performance. If on average we were six tenths off the pace in the first half, we were able to reduce it to two tenths in the second half. That gave us the opportunity at least to be often on pole position."

It is difficult to assess exactly how much progress was made with the car's aero characteristics because of the controversial and well-documented focus on Ferrari's engine legality following its upturn in form after the summer break. A run of six straight pole positions and a straightline speed advantage at certain tracks concerned its rivals, while Ferrari never denied it had a power advantage and maintained it was that plus its lower-drag aero concept that was giving it a top-speed edge.

Eventually, the FIA issued multiple technical directives around exploiting fuel-flow rules and the burning of oil for performance gains. The most relevant TDs came into effect before the United States and Brazilian Grands Prix and coincided with Ferrari's qualifying form immediately slipping, which left rivals convinced the tightened-up rules were responsible. Ferrari insisted nothing had changed with its engine and claimed its performance shift was a result of circuit characteristics and a change in set-up approach. The matter is still something that clearly irritates Maranello, which unsurprisingly insists it was doing nothing untoward.

"Being checked I think it's normal, and is good because through the checks you are proving your legality," says Binotto. "The number of checks on our cars multiplied. The reviews have been shown to the FIA, the details have been discussed. Whatever could have been done through collaboration with the FIA has been done. We have never changed our way of operating the engine for the last part of the season, showing that our power unit has full legality. Had that not been the case, if there would have been any non-legality, it would have come out at the very first check."

Camilleri, who has been frustrated by the accusations levelled at his team, is even blunter: "Ferrari is a public company. It's known worldwide. Integrity and compliance is key. I think people need to factor that in when they try to look at these allegations."

Even so, if Ferrari comes out of the blocks firing in 2020, it is hard to imagine accusations disappearing. In fact, Ferrari is probably going to attract questions or criticism either way. Targeting more downforce with its 2020 design will come at the cost of greater drag and therefore reduce straightline performance. The FIA's efforts late in 2019 mean there is closer scrutiny over fuel and oil rules than ever before, and if Ferrari >>

VETTEL

STILL HERE, STILL TRYING TO IMPROVE

For a driver who had just finished fifth and been beaten by his new team-mate in the championship, Sebastian Vettel was in a decent mood at the end of last year's season-closing Abu Dhabi Grand Prix.

He took aim at a rumour he had heard that he was about to retire from F1 in good spirits and with good reason. Supposedly, Charles Leclerc's rise and Vettel's own error-strewn season, plus the attraction of life away from the demands of F1 now that he's had his third child, meant Vettel had grown tired

of the circus. Shockingly, that rumour has proven to be wide of the mark.

That does not make 2020 entirely business as usual, though. Over the Christmas break, Ferrari has made Leclerc its long-term priority by awarding him a new deal running to at least 2024. To a degree, that is just a formality. Even Vettel could see Leclerc was the

"IN ORDER TO IMPROVE HIMSELF, HE'S ALWAYS VERY ANALYTICAL. HE'S NOT EMOTIONAL"

future at Maranello. But it reiterates that Leclerc is going nowhere, which means if Vettel wants to stay at Ferrari beyond 2020, he must prove he is capable of beating him or decide if he is happy slipping into the shadow of another driver.

Adjusted to include only fair comparisons, Leclerc was 0.129 seconds quicker than Vettel last season. Vettel was also ahead of Leclerc at the finish of 10 of the 17 races where they were both classified. So there is plenty of evidence to back up Ferrari team principal Mattia Binotto's

description of Vettel as a "key driver" who is "central to our project".

"He has been uncomfortable with the car at the start of the season, certainly with the braking instability," says Binotto. "I think the challenge [of Leclerc] for him has been a good benchmark as well because having such a fast team-mate gave him some headaches. In order to improve himself, he's always very analytical. He's not emotional in that respect, he's looking at the data, to compare the sectors, looking where

he's eventually slower or faster. In the first part of the season, he was put under a lot of pressure. I think he reacted very well in the second half."

That is no guarantee Vettel will reassert himself over Leclerc in 2020. But it suggests he may be able to, because it's clear that Vettel can still dig deep and bring out his best.

That is the level Vettel will want to be at if he is to stay in F1 beyond this season. Anything less would struggle to appeal to him, as well as being a poor fit for a driver of his stature.





MAUGER

Ferrari appears to believe Vettel has the capacity to reassert himself



emerges with a less potent machine on the straights then rivals will probably look across to the team in red and say 'gotcha'.

Alternatively, if Ferrari emerges with a rapid car in the corners and is still quick on the straights, the raised eyebrows will return. Especially as Ferrari is also overhauling its engine architecture, with Binotto calling it a "significant" change and citing cylinder technology as an area that has undergone a "big review". You could look at this and say that Ferrari's engine concept has changed, so cynics need to back off. Or you could suggest Ferrari has changed it because it feared being caught. Or you could say it's just looking for other areas now that a couple of loopholes have been closed off.

There comes a point where such questions get tiresome, although it is at least understandable that rivals look at matters in such a way. But the likes of Red Bull and Honda believe F1 is now set for a cleaner fight on the engine side in 2020, and that means giving Ferrari more of the benefit of the doubt.

"We cannot be the favourites," says Binotto. "The ones that won

"Where teams have done very well, there was a lot of stability and they learned to work very closely together"

the championship this year, the ones that won the last six titles, are setting the bar and had the fastest car by the end of the [2019] season. So we are the challenger. That's where we are positioning ourselves."

Such pragmatism will serve Ferrari well, as it helps shift the team away from the perils of arrogance and vague ambition. The grand aim of winning an F1 title again will fail if the message that spreads through the corridors at Maranello is simply "we want to win". So the phrase "Ferrari needs a winning mentality" – Binotto's predecessor Maurizio Arrivabene's favoured expression late in 2017 – is not one you will hear the current boss say. Or the current boss's boss, because the Camilleri/Binotto axis is quite different to the Marchionne/Arrivabene one, with a focus on process rather than demanding quick answers to deep-rooted problems.

"We are very much focused on the longer term," says Camilleri. "You don't build the team overnight. This is a young team in the sense that we have a lot of experience and talented people; however, a lot of them are new to their specific jobs and responsibilities. So we need patience, we need stability and serenity, because if you look back in the history of F1, where teams have done very well, be it McLaren, Ferrari in the good old days, Red Bull or Mercedes today, there is one common thread: that there was a lot of stability within the team and they learned to work very closely together. That is something we are very focused on. Mattia has been spending a lot of time to ensure that we have a cohesive, united team."

Actions will speak louder than words, but it is undeniably more encouraging for Ferrari to have leadership that knows that, in F1, the devil is in the detail. After all, the detail is where Ferrari has tripped up for a long time. It's clear that Ferrari knows the reality of its many, if small, shortcomings in recent seasons. Now the question is whether they have been, and will continue to be, addressed and Ferrari genuinely kicks its habit of underdelivering. Otherwise, however you want to define 2020 – the new year, the new decade, the new start – it will not matter. It will simply be another point in time where Ferrari was not quite as good as it needed to be. ❄️

NEXT WEEK

MICHAEL SCHUMACHER VS LEWIS HAMILTON 16 JANUARY ISSUE

As Hamilton closes on Schumacher's remaining records, we compare the two giants of 21st century Formula 1.

LOOKING ON THE BRIGHT SIDE

Esteban Guerrieri narrowly lost out in the 2019 World Touring Car title fight with Honda. But the fact that he is still racing on the international stage at all is a major victory

JACK COZENS

Glancing at Esteban Guerrieri's CV, it's easy to characterise his career – in single-seaters, at least – as one full of setbacks that never fulfilled its potential. But for a driver who has adopted the nickname 'The Tiger' in the World Touring Car Cup, a phoenix is perhaps a more appropriate mascot considering Guerrieri has, more than once, reinvented his career in the face of adversity.

Born and raised in Buenos Aires, Guerrieri and his family were of moderate social standing, so he didn't have to go to the drastic lengths some go to in order to raise budget, but equally his journey wasn't without sacrifices.

"In 2000 when I did my debut in Formula Renault in Argentina when I was 15, we had two bags of clothes in the bus terminal in Buenos Aires," says Guerrieri, who persuaded his parents at a young age to move him to a bilingual school after hearing his idol, Ayrton Senna, speak about the importance of learning English. "So my mum, my brother, my sister, my father, they were all working, all saving money.

"This is something that I always appreciate about my family, that my dad sat with my sister and my brother and he asked them, 'Is it OK if we save this money for Esteban to race next year?' This was in 1999, and they said, 'Yes, let's save the money for Esteban.'"

That money, plus help from his team as his personal budget only covered half a season, helped Guerrieri claim the Formula Renault 1.6 Argentina crown, and he was then one of three drivers – alongside future World Touring Car Championship dominator Jose Maria Lopez and Mariano Altuna – picked for a programme that took Argentinian drivers to Europe and placed them at the Italian Lucidi Motors team the following year.

Three years in Formula Renault categories on the continent, which culminated in the 2003 Eurocup title, preceded a solid 2004 campaign in Formula 3000 – after failing to reach a deal

with Toto Wolff that would have given him a role in Mercedes' Formula 3 programme for 2005 – that yielded a podium and joint-sixth in the drivers' standings with Lopez (who got the nod by virtue of his two podium finishes to Guerrieri's one). But then came what Guerrieri describes as "one of the chances of my life" when he tested for Arden at Jerez, as the team evaluated drivers for the 2005 GP2 season, which would also have involved a tie-up with Red Bull's scheme.

"But that test was not great for me," says Guerrieri. "I did only a few laps, and in Jerez there is only one shot in the morning with the weather and then the track is a bit slower, and I didn't know the track."

"THAT JEREZ TEST WAS NOT GREAT FOR ME. I DID ONLY A FEW LAPS AND I DIDN'T KNOW THE TRACK"

Instead, he took a "step backwards" by moving to F3, first with Midland, then Manor, before racing for British F3 start-up Ultimate Motorsport in 2007 and 2008. Guerrieri became "part of the family" during that spell with the Mygale-equipped team run by Barry Walsh, who was keen to buy into the Toro Rosso F1 team. The 'collapse', as Guerrieri puts it, of Walsh's property development business put paid to those and Guerrieri's ambitions.

But his nearest of misses came in 2010, as Guerrieri thought about throwing in the towel. Having raced in Superleague Formula in 2009, he was contemplating completing the studies he had >>





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sacrificed to move to Europe when he was called up for the final round of the Formula Renault 3.5 season with RC Motorsport.

A fourth and a fifth marked a good return, but results weren't the most important part of that weekend. Instead, it was his introduction to Igor Salaquarda, whose ISR team was taking over RC's entry, and a subsequent offer to coach Salaquarda's son Filip, who in 2009 had scored a solitary point for Prema. "They were paying for testing, and Igor said, 'Esteban, do you want to stay to coach my son, Filip?'" says Guerrieri. "I had no money, and 'OK,' I said. And after the two days of testing, Filip was first, he was P1."

Come January and February, ISR was still holding out for a paying driver to take the second seat, but few were forthcoming. Guerrieri was at his mother's house in Argentina, planning his return to education, when he received a phone call. "I remember that day," he says. "I got this phone call from Igor: 'Esteban, what are you doing?' There was nothing but to study. 'OK, do you want to come and do the first race of the year?' So I said, 'OK, yeah, but give me at least two races,' because one race is difficult to prove that the car is good."

Salaquarda honoured that request and gave Guerrieri, now 25, a final shot. Three retirements from the first three races was hardly an auspicious start, but Guerrieri won the second race at Spa and, having been replaced by Alexander Rossi in Monaco, then earned a full-season agreement when he scored a double victory at ISR's home race at Brno.

“I COULDN'T RAISE THE BUDGET. SO I COULDN'T GET THE... THE BREAKTHROUGH TO FORMULA 1”

It was a campaign Guerrieri describes as “incredible”, even though his defeat in the title race was not without controversy. His disqualification from victory in the opening race at Silverstone, after his car was protested for a piece of tape affixed to his hastily rebuilt machine following a qualifying crash, is well remembered as the points he forfeited there would have crowned him champion ahead of Mikhail Aleshin (and Daniel Ricciardo), but he also missed the entire Hungaroring weekend when ISR elected to withdraw both cars.

“We got to scrutineering [and were told], ‘No guys, you cannot race with these chassis because they are cracked underneath,’” he says. “For Igor, his was a new team, and he thought that he was getting f***** by the French. He’s a guy with principles, and he said, ‘Esteban, I’m sorry, but we’re going to quit this weekend.’ I was there fighting, I was P2/P3 in the championship, really fighting for it. I was crying. We left the circuit and we didn’t race.”



In another development typical of his career, the F1 momentum stalled – this time once and for all. Guerrieri's relationship with the Manor team behind Virgin's grand prix operation was strong, following his spell at the team in F3 and living in Sheffield, and Guerrieri and team boss John Booth agreed a priority contract that would have given him a shot in an MVR-02 for 2011.

The stumbling block was the budget. Guerrieri can't recall the exact amount – he guesstimates \$5-6million; the reported number was \$8m – but regardless of the actual figure it was still a whack to raise for a driver not unfamiliar with walking to race tracks because he was short of money in his pockets.

"He [Booth] sent me the proposal, with the official intention to race, and I went to the government in Argentina, to some connections I had here, but I couldn't raise the budget," says Guerrieri. "So I couldn't get the... the breakthrough to F1."

Two years and two runner-up finishes in Indy Lights followed, >>

MULLER

ANOTHER LYNK IN THE TOP-THREE CHAIN

A combination of Balance of Performance measures and compensation weight may have kept Yvan Muller and his Cyan Racing Lynk & Co team-mate Thed Bjork out of the fight at the 2019 WTCR season finale, but by securing third overall Muller completed a remarkable run of top-three placings in each full season of World Touring Cars he contested during the 2010s.

The campaign was a mixed one for Muller, who waited until the seventh round at Ningbo in September for his first victory, then during the same event achieved the single biggest WTCR points haul yet by recording two wins, two poles and a third-place finish.

That propelled Muller into the title fight, but the four-time World Touring Car champion was always playing catch-up and his charge ultimately fizzled out at Sepang in December, as the Lynk & Co 03 struggled to match the pacesetting Hyundais and Hondas thanks to a combination of poorer acceleration onto the straights and the burden of carrying an additional 130kg through the corners

compared to the lightest car.

But there was still silverware for Muller, who turned 50 in 2019, as his and Bjork's total helped Cyan to claim the teams' title in its first year running Geely's Lynk & Co 03. After coming out of retirement for the 2018 season, Muller reprised the role he had carried out to devastating effect with Citroen by undertaking a great deal of the off-season development work on Geely's first TCR challenger, which won eight races during the 2019 WTCR season.

"I lost an opportunity to claim my fifth title, but the feeling to win the team title in the first year with a new car that we have developed together with Geely Group Motorsport is fantastic," says Muller.

After a couple of years in the shadow of Jose Maria Lopez at Citroen and his brief retirement in 2017, Muller's runner-up placing in 2018, and his position last year at the head of a four-car Cyan Racing attack oozing quality, suggest the evergreen Frenchman should be among the favourites for the 2020 title with a year of Lynk & Co knowledge under his belt.



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Cadwell Park - 2nd / 3rd May
Donington Park National - 30th / 31st May
Brands Hatch Indy - 27th / 28th June



Snetterton 200 - 18th / 19th July
Silverstone International - 8th / 9th August
Anglesey Coastal - 12th / 13th September
Mallory Park - 4th October



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which didn't pave the way for an IndyCar move, after which Guerrieri finally made the call to return to Argentina and race in Super TC2000. It was while Guerrieri, now firmly off the radar, was competing there in 2016 that he got his WTCC break in a Campos Racing Chevrolet.

For a career that's included so many setbacks, Guerrieri's rise to prominence on the world stage is just deserts for a fiery yet amiable individual with an undeniable talent. The way he has

“MY BIGGEST CHALLENGE WAS TO GROW WITHIN ME. IF I HAVE ANOTHER CHANCE, HOW I WOULD ACT”

applied the lessons learned from his defeats is also in keeping with a philosophical outlook, which has undoubtedly helped him make the most of his opportunities in World Touring Cars – first with Campos, then standing in at the Honda WTCC squad, and for the past two seasons as a title-challenging factory driver for the Japanese make in WTCR.

Asked about the chances he has grasped in World Touring Cars, Guerrieri recalls a conversation with Autosport in the aftermath of his WTCR title defeat to Norbert Michelisz, saying: “Sorry, I want to interrupt because you remember [at the Sepang season finale] you were like, ‘Yeah, Esteban, you lost the championship, how do you feel...?’ Many asked me that. But my biggest challenge was to grow within me, and try to understand the opportunities and chances I had, why they happened, how they happened, what I



had to learn from that, and if I would have another chance, how I would act.

“That was, I would say, the most satisfactory process of my life so far – trying to make those chances that again, I couldn't get profit from, to then when I had a new one to try to do the opposite. Even when you lose, you lose in the result but you never lose really.”

Guerrieri's place at the Munnich Motorsport Honda WTCR squad has, at the time of writing, not been confirmed for 2020, but there is little doubt that he will be on the grid again this season. The omens are good too: in the previous three seasons, Guerrieri has placed fourth overall, then third, then second.

Not that he needs omens. Even if a title isn't forthcoming, Guerrieri seems happiest achieving personal growth by learning from his experiences. ✨

MICHELISZ FROM VANQUISHED TO VICTOR

By beating Esteban Guerrieri to the 2019 World Touring Car Cup crown, Norbert Michelisz made history – he became the first gamer-turned-racer to win an FIA world title. Granted, that's a slightly contrived claim, but 'world champion' isn't quite right, even if WTCR is an FIA world championship in all but name. The gravitas of such a win remains significant, even if the nomenclature doesn't quite offer Michelisz the reward he should have.

“A bit more than 10 years ago I was sitting at home dreaming about driving a racing car,” says the Hungarian, recounting his journey. “I really wanted to become a racing car driver somehow. On the inside I felt this was my destiny, but in our [family's] position, at 18 I realised that probably I was not going to make it.



“But then I was invited for a test when I was 21. That was 2005 and it was the first time for me driving a racing car because of my gaming results. Year by year I managed to climb higher. Coming from Hungary, to get a works seat was something unbelievable, let alone

winning races and being in a position to fight for a world title on two occasions.”

The test Michelisz recounts, with Zengo Motorsport, would act as a springboard to competition in domestic championships and, in 2008 and 2009, one-off outings in the World

Touring Car Championship with Zoltan Zengo's squad. A full-time competitor since 2010, Michelisz has won at least one race in WTCC/WTCR each year since 2015.

He would, and perhaps should, have become the first gamer to become an FIA world champion two years earlier. He wasn't Honda's first choice for title challenger in 2017, but took up the mantle when Tiago Monteiro was injured in a testing crash at Barcelona.

Even after all three Civics were excluded from the Ningbo round for using non-compliant fuel injectors, Michelisz came back fighting, with a victory at Motegi and a second place in Macau hoisting him within seven points of Thed Bjork ahead of the Qatar season finale. After he set the pace in practice, a master cylinder failure in qualifying derailed

his bid, limiting him to 11th on the grid for both races at a Losail circuit with precious few overtaking opportunities.

The resulting defeat left Michelisz “exhausted”, but he credits that loss for influencing his successful bid during the 2019 finale at Sepang.

“It's completely the other side of the range,” he says, comparing his two title run-ins. “Because 2017, especially after Qatar, for me was very disappointing. I really thought I would win it after free practice because we had the best car, but then suffering the brake failure and missing out on the top 10, I realised that it's going to be tricky. In the end, I was down. But the important thing is I was able to stand up, and it really helped me last season to understand how to approach the last weekend.”

TAKING IT TO THE EXTREME

The new off-road electric race series from the people who brought you Formula E has no less an aim than saving the world's most at-risk habitats

ALEX KALINAUCKAS

ALL PHOTOGRAPHY EXTREME E



Rallycross star Kevin
Hansen puts ODYSSEY 21
through its paces

Brazil's rainforest is one of five chosen locations blighted by climate change



NATHANIEL HAWLEY

If an electric motorsport series is to be established, the person to do it should be obvious: Alejandro Agag. After all, he and

his team created the blueprint for Formula E – an electric championship that's not just existing, but thriving.

Now he's doing it all again with a few differences and plenty of similarities. In 12 months' time, the electric off-road SUV racing series Extreme E will be just a few weeks away from its projected first contest. Since becoming FE chairman in December 2018 – although he carried on working as that series' CEO until last September – Agag has been busy getting his latest project out of the harbour.

Maritime references make sense here because the story starts with – and will intrinsically involve – a ship. This time last year, the RMS St Helena was preparing to make a journey to the

heart of central London for XE's floating launch. The £32million ex-Royal Mail vessel will act as the championship's primary paddock, from which everything else will flow.

In the year following that launch event, XE announced a five-round inaugural calendar for 2021. Beginning at Lac Rose in Senegal, the championship will hold events at five themed locations – ocean (Senegal), desert, glacier, Arctic and rainforest. These sites have been chosen precisely because they have been damaged by the climate crisis currently gripping the planet. This is XE's central aim – to use motorsport to address the looming environmental catastrophe.

“Success for this championship is to have a real impact and leave a real legacy behind in the locations where we race,” says Agag, “for motorsport to be an agent of change in those locations.”

XE has developed the ODYSSEY 21 SUV to act as the base prototype for the teams. So far, four teams have committed, but Agag is certain that he's “going to announce another four in the first three/four months of 2020” and that “10 teams for season one, maybe even 12, it depends” will take part in the inaugural campaign.

Manufacturers that decide to enter will be able to tweak the look of the ODYSSEY 21 by changing areas of the bodywork – including the engine cover, front and rear bumpers, side skirts and lights – to

“SUCCESS FOR US IS TO LEAVE A REAL LEGACY, FOR MOTORSPORT TO BE AN AGENT OF CHANGE”

resemble their road-going SUV models. They will also be able to develop certain areas of the car's powertrain, although non-works squads can compete using the base package.

As it stands, no manufacturer has committed to entering the first season, and it seems more likely than not that the privateer entries will use identical ODYSSEY 21s in 2021. If that sounds familiar, that's because it's the same model that Formula E used for its first campaign in 2014-15, and that didn't exactly work out badly on the manufacturer-entry front.

“I think manufacturers will definitely come into Extreme E, but probably in the second or third season,” says Agag. “Manufacturers like to see how it works, how it's developing. Having said that, we may have a surprise and have a manufacturer earlier.”

The teams that have committed to the first season will be well known to FE fans. Venturi Automobiles, Abt Sportsline and HWA >>

SHIVRAJ GOHIL

will all field XE squads, as will Veloce Racing – an intriguing initiative that is the sister programme to the Veloce Esports organisation, with backers including Formula 1 design legend Adrian Newey and double FE champion Jean-Eric Vergne.

The ODYSSEY 21 is currently going through a rapid development programme, which began with a test at the Chateau de Lastours facility near Narbonne in southern France last October.

“[The test was] the first time the chassis took a bit of a pounding,” says XE chief operating officer Carlos Nunes, who was previously FE’s head of technical operations. “Obviously [that means testing] the chassis components and especially the chassis itself, which has a high production time length. It’s one of the first things we’re going to pound around with and actually kill over the next few months. And then that will get a really thorough checking and visual inspection, and everything will then all be checked and passed for production. And then all the drivetrains and things that are less time consuming.”

Although the ODYSSEY 21 development car uses a McLaren Applied Technologies-built battery, the energy storage in the race cars will come from Williams Advanced Engineering. In WAE, XE is using a partner that has successfully produced a capable product to a tight deadline – it made the battery that powered the Gen1 FE car. Things will be slightly different in the off-road variety, though, as the plan is for the ODYSSEY 21s to discharge 400kW of power for race spurts around 6-10km in length. Think Dakar-style cars doing long rallycross laps.

The race cars are set to be delivered to the XE teams in August, with a group test being followed by a full race simulation.

“That’s where we find out things,” says Nunes. “Teams will find out things they’ve forgotten to buy. We’ll find out if all the signals and things are all communicating between the cars and TV, all the filming equipment and things like that.”

From there, the St Helena – currently being refitted in



Coastal site in Senegal highlights damage to the world’s oceans...

Liverpool and “getting ready for the biggest adventure of its life”, says Agag – will be loaded and dispatched to Senegal in November. Then the racing should begin. After Senegal comes Sharaan in Saudi Arabia (desert, unsurprisingly), Kali Gandaki Valley, Nepal (glacier), Kangerlussuaq, Greenland (Arctic) and Santarem in Brazil (again unsurprisingly, rainforest).

Each event is set to be a round-robin tournament – the top four from two races of two groups will complete a knockout competition, from which an overall winner will be established. It is understood that the size of the racing groups could be varied at different locations, so in places where space is not an issue, such as the desert, the whole field could compete together to establish the order for the knockout stages. The final plan for the race formats will be established at a special mock event in February 2021, which will not feature the ODYSSEY 21 prototype.

The initial plan was for the racing to be the central part of a documentary to be broadcast at the end of each campaign, in which every race winner and the overall champion would be revealed. The documentary will still happen – primarily to

“PEOPLE ARE GOING TO SEE WE’RE RAISING AWARENESS OF BIG PROBLEMS ALL OVER THE WORLD”



Development programme kicked off at Chateau de Lastours in southern France



...while Greenland turns spotlight on melting ice sheet

highlight the environmental issues XE wants to help tackle – but there will be a live-broadcast element to each round.

“We’re going to put all the focus, all the investment, into the broadcasting,” says Agag. “We’re going to have drones flying over the cars filming the show.”

As FE did so successfully ahead of its launch in 2014, XE has established a ‘driver programme’ of racers and rally drivers interested in taking part in the competition. It boasts some pretty impressive names too, including Sebastien Ogier, Andre Lotterer and Lucas di Grassi. For Agag, a “blend of formula drivers, rally drivers, rallycross drivers” would be ideal.

Midway through its first season, FE nearly collapsed due to a lack of funds. But Agag says there is no risk of this happening with XE, which he claims is “fully financed”, adding that the Hammersmith-based series (actually just across the corridor from FE’s office) is having to “tell a lot of investors that would like to invest that there’s no space”.

Using motorsport to try to tackle the climate crisis is certainly noble, but there are inherent inconsistencies.

The expansion of electric-vehicle usage is a step in the right direction, but SUVs have a certain image issue that the championship will have to overcome. Agag is confident the message will chime as he intends, however, mainly because XE is aiming to establish a positive legacy for the damaged environments in which it will race. This includes working with local organisations and charities on education programmes, and donating equipment, while the events – operating from temporary mini-paddocks – are also set to use as little infrastructure as possible, employing digital course markers. Incidentally, the championship is not affiliated with the FIA at this stage, but that could change.

“Once you see the location, the risk [regarding environmental concerns] disappears,” says Agag. “I always said, ‘Wait until you see the locations and then judge.’ Now with the locations when you see them, there’s no way we’re going to damage them.”

“We’ve been all around the world. We didn’t know when we launched this idea what we were going to find – if we were going to find locations to race, if they were going to be appropriate, if we were going to find destroyed locations that would not cause problems for some environmental organisations. They gave us the benefit of the doubt but they said, ‘OK, we want to see what you want to do before we say if we endorse or if we don’t.’”

“And we think once they see these locations, people are immediately going to understand we’re not only not doing any damage, but we are raising awareness of big problems that are happening all over the world.”

XE is set to be another electric racing series with big intentions. The multiple comparisons with FE’s preparation are deliberate – “We’re following the exact same template, to be honest,” explains Nunes – and that’s probably a very wise move.

Agag says FE “was not in my mind at all” a decade ago, and as XE is “just from my head” it certainly has the potential to be another success story. ❄️

EXTREME E’S ODYSSEY MAKES QUITE AN IMPRESSION

When Autosport first saw the final prototype – the car that completed a demo run at the 2019 Goodwood Festival of Speed was fitted with a powered-down 2014-15 Formula E motor – its hulking frame was resting on jacks at Chateau de Lastours. It’s enormous. But apparently the Spark Racing Technologies chassis doesn’t feel that big to drive.

“I had no idea what to expect,” says 2019 World Rallycross champion Timmy Hansen, who, along with his brother

Kevin and TCR Scandinavia driver Mikaela Ahlin-Kottulinsky, were at the first test. All three are in the XE driver programme.

“The car felt a lot smaller when you started to push – it didn’t feel like this big car that I was expecting. It was really agile on the [corner] entries. Coming in, braking – you could get the car

sideways. And when you went on throttle, if you kept the steering straight there was more front-wheel drive than rear-wheel drive, so that pulled you straight. It was really nice. I had some drift with the steering just straight, like you want in a four-wheel-drive car, and flat on the throttle it just recovered – so nice.

“Compared to a rallycross car it has incredibly good driveability. You lift the throttle and there is nothing, like you want, and when you press a little there is a little.”

For XE chief operating officer Carlos Nunes this feedback from drivers who know how an off-road car should feel is “vital”. He’s

pleased with Hansen’s response, saying “the old girl definitely reacts to the driver and the drivers seem to be enjoying driving it”.

Although the full complement of 400kW, 1650kg, 2.3-metre-wide cars is still some way off being assembled in the same place, the ODYSSEY 21 has already made another high-profile demonstration outing. The car participated in the shakedown for this month’s Dakar Rally in Saudi Arabia, and will then join the full field of competitors in the event’s last stage.

Timmy Hansen, Mikaela Ahlin-Kottulinsky and Kevin Hansen have given crucial feedback



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THE SEQUENCE OF IGNITION

Autosport International returns to the Birmingham NEC this weekend (9-12 January) and it's ready to kick off the new decade and the 2020 motorsport season.

This year Autosport celebrates its 70th anniversary, so the show will be headlined by an ensemble of the most influential and successful racing cars from the past seven decades.

The Formula E grid will officially feature at the event for the first time, there's a 12-car celebration of the World Rally Championship and the Live Action Arena is set to host the fastest indoor drag race.

As ever, star names are an important fixture at the show. Charles Leclerc will become the first current Ferrari Formula 1 driver to appear at the event when he arrives on Sunday. Visitors to Autosport International will get a rare chance to quiz the 2019 Italian Grand Prix winner as he participates in a live Q&A on stage.

"I'm pleased to join Autosport International and have the chance to meet all the British fans," says Leclerc. "I appreciate the passion they have for motorsport and for Formula 1 in particular. It will be a wonderful opportunity to feel the love and the enthusiasm we usually experience at the races. I can't wait to be in Birmingham to feel that unique British motorsport vibe."

The four-day exhibition opens today (Thursday). The first two days are dedicated to the motorsport industry before doors open to the public on Saturday and Sunday. Here's what you can expect to see at the biggest motorsport show in Europe.





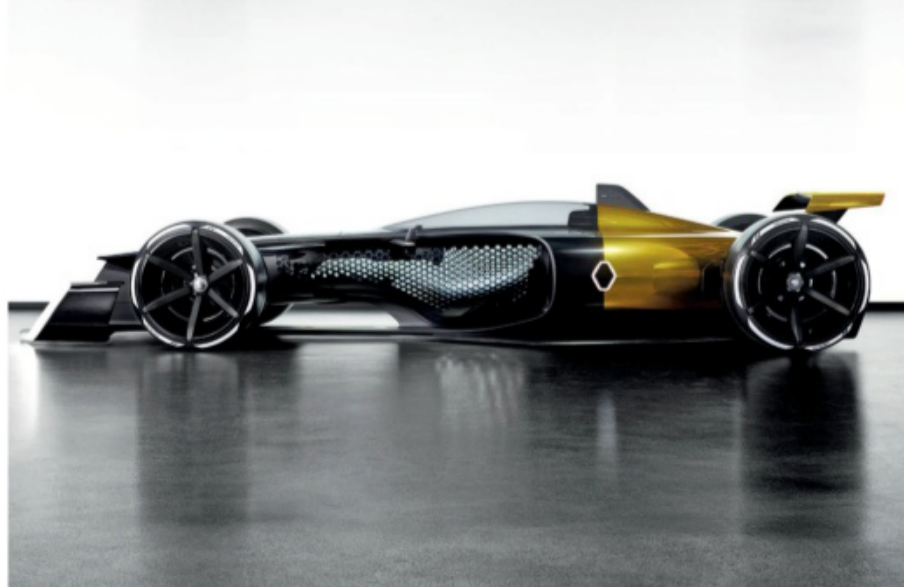
CONTENTS



MCKLEIN

P38 RALLY CAR SUPERSTARS
Twelve darlings of the dirt stages

P43 #AUTOSPORT2090
What will motorsport look like in another 70 years?



P44 JOINING THE CIVIC SOCIETY
Can Jake Hill's new car take him to the top of the BTCC?



JEP

P48 FLOORPLAN
Your guide to the 2020 Autosport International Show layout

WHO TO LOOK OUT FOR*

JONNY ADAM
Four-time British GT champion

DEREK BELL
Five-time Le Mans winner

GERHARD BERGER
Ten-time grand prix winner and boss of the DTM

DAVID BRABHAM
2009 Le Mans 24 Hours winner

ZAK BROWN
McLaren Racing chief executive

DAN CAMMISH
Four-time BTCC race winner

JAMIE CHADWICK
Inaugural W Series champion

KARUN CHANDHOK
Former grand prix driver and current Sky Sports F1 presenter

DAVID COULTHARD
Thirteen-time grand prix winner

DAVID CROFT
Sky Sports F1 commentator

KEVIN HANSEN
World Rallycross driver

JOHNNY HERBERT
Three-time grand prix winner and current Sky Sports F1 presenter

JOHNATHAN HOGGARD
2019 Aston Martin Autosport BRDC Young Driver Award winner

CHRIS INGRAM
2019 European Rally champion



LECLERC

MOTORSPORT IMAGES/GALLOWAY

TOM INGRAM
Thirteen-time BTCC race winner

ANDREW JORDAN
2019 BTCC runner-up

ESAPEKKA LAPPI
M-Sport World Rally driver

CHARLES LECLERC
Two-time grand prix winner and Ferrari Formula 1 driver

LANDO NORRIS
McLaren Formula 1 driver

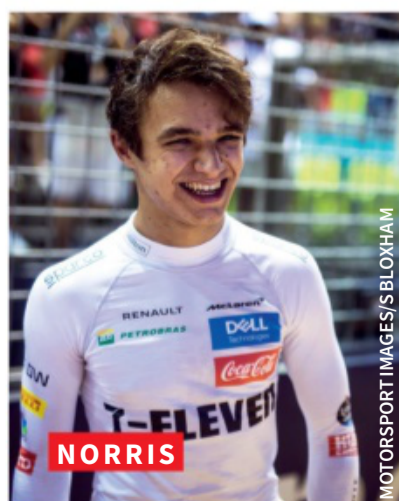
PAT SYMONDS
Formula 1 chief technical officer

COLIN TURKINGTON
Four-time BTCC champion

ARI VATANEN
1981 World Rally champion

MALCOLM WILSON
M-Sport team principal

*Correct at the time of print



NORRIS

MOTORSPORT IMAGES/BLOXHAM



VATANEN

MOTORSPORT IMAGES/ROMNEY

SHOW INFORMATION

9-12 JANUARY, BIRMINGHAM NEC

Open 9am-6pm each day (9-10 January are trade only)

TICKET PRICES (Saturday and Sunday)

Ticket type	Advance price	Door price
Adult	£34	£37
Child (6-15)	£21	£23
Paddock Pass	£45	£50
Child Paddock (6-15)	£32	£35
VIP Club	£125	£138

Tickets include a free seat in the Live Action Arena, except the Sunday 1430 performance – featuring Charles Leclerc – which costs an extra £5

For more information visit autosportinternational.com

ROUTE-FINDER

BY CAR

The NEC is very well connected to the UK motorway network, enabling direct travel from the M6, M1, M40 and M42. There's on-site car parking, with a free shuttle bus service to take visitors to the Piazza and Atrium entrances. For satnav users, the postcode is B40 1NT.

BY TRAIN

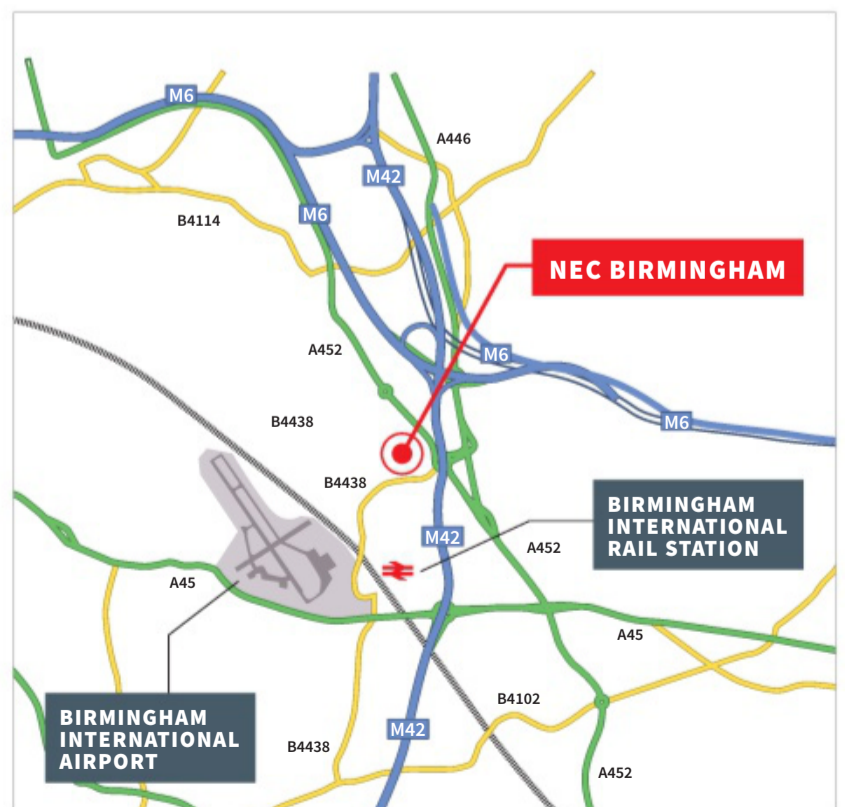
Walking to the NEC from Birmingham International Station takes just a few minutes. Connections from Birmingham New Street are regular and the station has excellent links to all major UK cities.

BY PLANE

The NEC is a short drive from Birmingham International Airport. The easiest way to reach the venue is by the Air-Rail Link, a free shuttle service running every two minutes between 0330 and 0030.

BY COACH

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





**RALLY CAR
SUPERSTARS**

Stand 3450

Hall 3

DIAMONDS OF THE ROUGH

WRC champion Ari Vatanen will join the most important and successful rally cars of all time at Autosport International this weekend

MCKLEIN

Last year the World Rally Championship swapped from Casino Square in Monte Carlo to Birmingham's National Exhibition Centre for its official launch. The covers came off the latest specification of Hyundai i20 Coupe, Toyota Yaris, Citroen C3 and Ford Fiesta.

At this weekend's Autosport International, gravel fans can trace the lineage of the contemporary breed back across the last half-century courtesy of a 12-car display that features the most revered machines ever to be fired up a stage.

Among the line-up is the Lotus Cortina driven by the great Roger Clark after he signed a works deal with Ford of Britain. There's also the wide-arched Ford RS1700T project from the 1980s that was canned before making a competitive outing. The famous Group B era is represented

also in the form of the raspy Lancia 037, and the Colin McRae and Richard Burns generation of the late 1990s is present in Subaru and Ford Focus forms.

To complement the ensemble, 1981 WRC champion Ari Vatanen will be at the show across Saturday and Sunday. He started 101 WRC events and tackled the gruelling Dakar Rally, so is well placed to recount what it was like to drive or compete against many of the cars on display.

Chris Ingram – who last season became the first Briton since Vic Elford in 1967 to win the European Rally Championship – will also be there to answer questions on stage from Alan Hyde.

For those wanting their 2020 fix, M-Sport will reveal the livery for its Fiesta WRC, and team principal Malcolm Wilson will be joined on stage by his headline new signing Esapekka Lappi and team-mates Teemu Suninen and Gus Greensmith.



MCKLEIN

1966 LOTUS CORTINA **EX-ROGER CLARK**

Roger Clark drove a Lotus Cortina for much of the 1966 season and then sporadically through 1967 and 1968. While it was never his most successful car, he competed on events as varied as the Circuit of Ireland and London-Sydney Marathon. Second places on the Acropolis and Coupe des Alpes in 1966 were the highlights.



1981 FIAT 131 ABARTH
EX-MARKKU ALEN



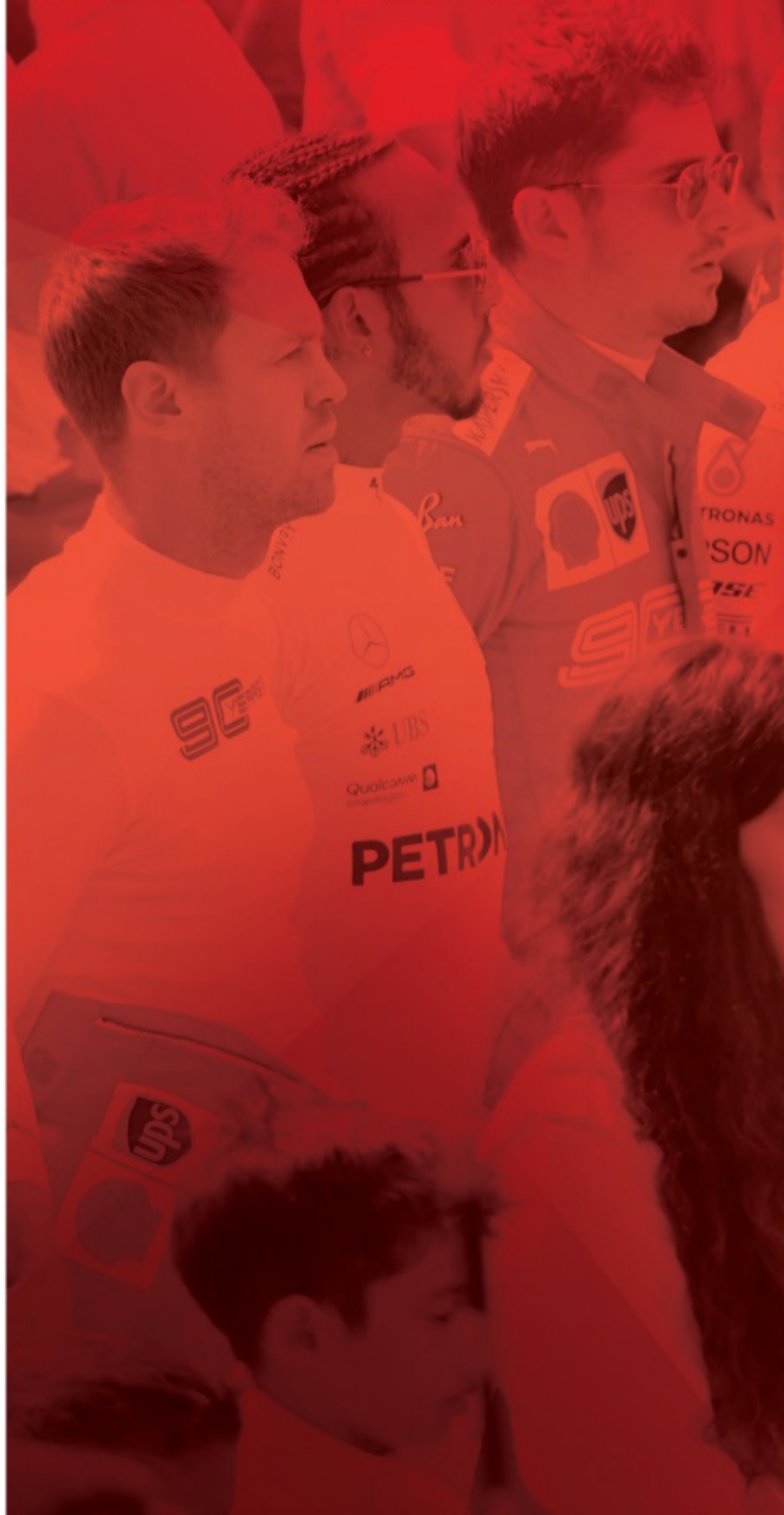
1980 TALBOT SUNBEAM LOTUS
EX-HENRI TOIVONEN



1980 VAUXHALL CHEVETTE HSR
EX-JIMMY McRAE

Originally built in the factory for Jimmy McRae, this Vauxhall Chevette HSR plied its trade in various British Championship events during 1980. Following a lengthy restoration by BGMsport, the car is now resplendent in the DTV Castrol colour scheme that McRae used 40 years ago.

**WANT MORE
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FORMULA E
AND MORE.**



1982 FERRARI 308 GTB



1983 FORD ESCORT RS1700T
EX-ARI VATANEN

The potency of the Audi Quattro changed the rallying landscape. Ford's first answer to the Group B conundrum was flawed, with the Mk3 Escort-based RS1700T running rear-wheel-drive configuration. The project was canned in March 1983. Three years later, a clean sheet of paper delivered the RS200.



1984 LANCIA 037
EX-FABRIZIO TABATON



1986 FORD RS200
EX-STIG BLOMQUIST



MCKLEIN

**1992 SUBARU LEGACY
EX-COLIN McRAE**

The Subaru Legacy RS launched Colin McRae's career. With it, he and co-driver Derek Ringer collected the 1991 and 1992 British Rally Championship titles and a second place in Rally Sweden. Signed full-time by the factory team to compete on the world stage, the duo scored their first World Rally Championship win with the Legacy in New Zealand in 1993.



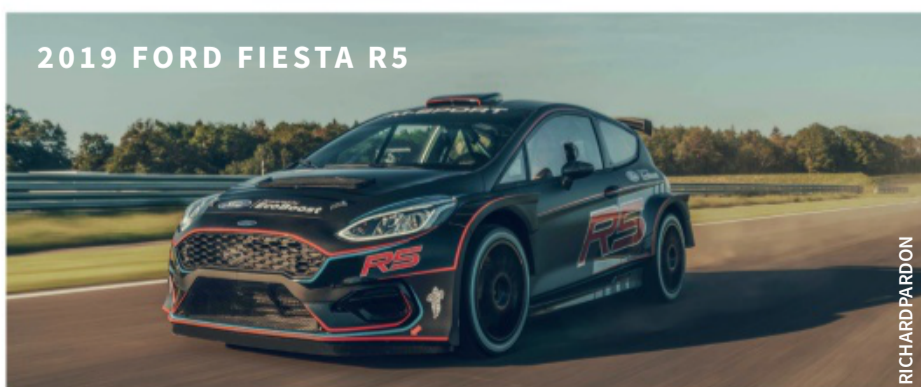
MCKLEIN

**1999 SUBARU IMPREZA WRC99
EX-JUHA KANKKUNEN**



**2001 FORD FOCUS RS WRC 01
EX-COLIN McRAE**

Three retirements from the first four rounds marked a miserable start to Colin McRae's third season in a Ford Focus RS WRC. But a hat-trick of mid-season wins in Argentina, Cyprus and Greece played him back into the white-hot, four-way title fight at the Rally GB finale. Ultimately, his 2001 was defined by the shocking crash that ruled him out of a Welsh win and a second title.



2019 FORD FIESTA R5

RICHARDPARDON

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FUTURE PROOF

As we celebrate Autosport's 70th anniversary, universities and engineers have been tasked with predicting the shape of motorsport in another seven decades

The execution of *Tomorrow's World* wasn't flawless, but it would frequently hit on themes pertinent to today. In a 1989 broadcast that previewed what homes in 2020 might feature, there was the equivalent of smart heating and an acceptance that each household would need to reduce its environmental impact. In addition, cash-less payments, mobile phones and semi-autonomous cars were all anticipated during the show's 38-year life.

While Gregor Grant, the founding editor of Autosport, might not have predicted the current hybrid Formula 1 era back when he sent the first issue to the printers in 1950 – certainly, it was several worlds away from the pram-wheeled 500cc Formula 3 cars that featured on that first magazine cover – perhaps today's engineers have a better shot at looking a further 70 years ahead.

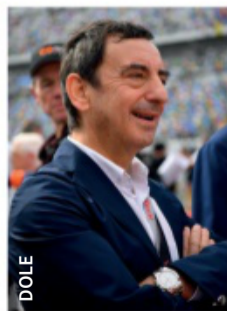
In that vein, concepts that predict 2090 race car and circuit design will be displayed at the Autosport International Show this weekend (9-12 January) to mark the 70th

anniversary of Autosport and F1.

The #Autosport2090 project has invited students, motorsport fans and engineers to preview the future of the racing world – focusing on its direction and the changing role of the driver.

Launched in association with the Automobile Club d'Ouest, organising body of the Le Mans 24 Hours, #Autosport90 will also predict the 2090 Le Mans grid.

Pierre Fillon (right), president of the ACO, says: "We introduced the disc brakes [to Le Mans] in the 1950s and hybrid power to motorsport in the 2000s. The goal of going faster and further on less energy is key to winning a 24-hour race. In 2090, racers could be flying as well as driving. The cars could be communicating with each other with increased autonomy to support the driver. We envisage pollution-free cars competing at high speed. The role of racing is to inspire and achieve



new heights in technology."

The #Autosport2090 project will cover a range of categories, including F1, endurance racing and off-road competition.

Universities, which account for a considerable proportion of motorsport research, have been able to submit their 'realistic' vision via concepts and 3D renders. The leading ideas are being analysed and debated, with discussions about hydrogen power, autonomous racing and artificial intelligence included. The most successful will be displayed at the NEC.

Autosport International sales manager Andy Stewart adds: "We are extremely excited about utilising the foundation Autosport has established over the past 70 years and turning our gaze forward with the #Autosport2090 campaign.

"With so many influential and respected industry professionals set to join us for another edition of Autosport International, we will be uniquely placed to lead the discussion on how we can expect the car, driver and circuit to develop by the time Autosport is celebrating another 70 years."

**BTCC
FEATURE**
Stand 2580
Hall 2



Honda's smooth ride stood out after two meetings at Thruxton

JOINING THE CIVIC SOCIETY

Jake Hill scored his maiden BTCC win in 2019. Now he has the chance to establish himself at the front of the pack thanks to a tried and tested chariot

MATT JAMES

PHOTOGRAPHY JEP



TICKETS AUTOSPORTINTERNATIONAL.COM OR PHONE 0844 338 8000

It was perfectly understandable that 2019 Trade Price Cars Racing driver Jake Hill might cast an envious eye over to his sister British Touring Car Championship team, which was just a few yards up the pitlane.

The Audi S3 represented a step forward for Hill in terms of competitiveness after his time in a Volkswagen CC. What's more, the brand-new TPC team had a close alliance with the established AmD Tuning operation to aid its introduction to the top flight. But AmD Tuning itself was entering a new era as it fielded a pair of ex-Eurotech Racing Honda Civic Type Rs – the older, but still highly competitive, FK2 model.

The FK2 Type R has had huge success in its five-year history in the BTCC, and AmD Tuning added impressively to the machine's trophy haul. Rory Butcher finished fifth in the standings and claimed three wins. He also lifted the Independents Trophy and the Jack Sears Trophy (for drivers who had yet to take a podium before the start of the campaign). His team-mate Sam Tordoff was also a one-time race winner during a truncated season.

For 2020, Hill has jumped from one side of the Essex-based operation to the other, and he will get behind the controls of the Honda for the first time. His green-eyed desire has turned into a golden opportunity and should give him a chance to make another step forward in terms of results.

In 2019 in the Audi S3, Hill had breakthroughs of his own. He left the first meeting of the season at Brands Hatch in April a remarkable sixth in the points table after scoring a second place in the dry-wet opening race of the year. He followed that up with a controversial on-the-road victory in the reversed-grid third race at Oulton Park in June, but was later stripped of what would have been a maiden win following an early incident with the Team Dynamics Civic Type R of Matt Neal.

Then he made the breakthrough for real at Knockhill when he led the reversed-grid race three from start to finish to land



A staggering 86% of S3's total BTCC points were scored by Hill in 2019

the big result.

That victory in Scotland was the first win for the aging Audi design, which was introduced into the category in 2014 by Rotek Racing. Hill, 25, finished 15th in the standings after 30 races with more points than he'd scored before. It was progress.

In just one season in the German car, Hill recorded 86% of the total points the Audi S3 has scored in all of its drivers' hands over the previous six seasons.

"I owe a lot to Trade Price Cars Racing and its boss Dan Kirby for giving me the springboard to be able to achieve what I did in 2019," says Hill, who had previously contested two and a half seasons with Team Hard, which followed a couple of other cameos stretching back to 2013.

"I wanted to move up the grid [in terms of competitiveness] and Trade Price Cars gave me the chance to do that. I knew that if I could do things with the Audi that hadn't been done before it would mark

a good season for us, and hopefully people would take notice."

While the team was run in conjunction with AmD, Hill was partnered with BTCC rookie Mark Blundell, so that meant the weight of responsibility in engineering improvements into the saloon chassis was on the Kent-based racer. It wasn't something that Hill shied away from.

"I've always enjoyed that side of things," Hill adds. "I think I'm quite good at working with an engineer and telling them what a car is doing. That was an important ingredient in 2019 to help make the car as good as it could be. What was also a real benefit was that we were able to work alongside AmD Tuning and its drivers.

"Sure, there were two different team names above the door, but it was important that we were able to work together as a crew. It just feels like one big team. There were some things that they unlocked on the Honda that could transfer over and we could try on the Audi too. Not everything worked, naturally, but some things did. That information flowed both ways and there was some input I was able to have that went onto the Hondas too. It was the way [AmD Tuning] boss Shaun Hollamby wanted us to be – he wanted the whole thing to be open and it worked well.

"Just being able to sit in on the data debriefs with the Honda drivers and watch what they were doing saw a benefit to us all. That also gave me a really good insight into the stronger points of the Honda – and there are plenty."

There was one particular venue that made up Hill's mind that he simply ►



Hill swapped to S3 after driving one of Team Hard's VW CCs

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Team boss Kirby (l) led Trade Price Cars for first BTCC campaign

had to get into the FK2 for the 2020 season. There were two visits on last year's schedule to the super-quick Thruxton circuit, and Hill was able to watch the onboard footage from Butcher and Tordoff's Hondas.

"It was like they were on a different circuit," describes Hill. "They looked so smooth and so easy to drive. No matter what we tried with the Audi, it was really hard work around there and it just went to demonstrate the difference between the two chassis. I was jealous so much. I simply knew that I had to get myself into one of those cars for the 2020 season.

"In the BTCC, ideally you want to be in a BMW or a Honda and I'm over the moon that I've managed to get the deal across the line. I will be staying with AmD, I will be in one of the best cars on the grid."

The benchmark for AmD reached new heights last season, and team boss Hollamby admitted as much as the final chequered flag fell at Brands Hatch in October. He said that winning one championship is a breakthrough, but it makes the desire to retain the crown even stronger. The whole ambition of the team has now ramped up.

Hill will be the focus of that added pressure. He isn't ruffled, however. "I have got to repeat what Rory did last year, that has to be a minimum goal," says Hill. "I've learned how to win races in the BTCC now, that was a major box ticked in 2019. So now, to keep the career progression going and keep myself on the path I want to be, I have to be consistently on the podium and consistently in with a chance of winning races. I need to prove I can do that, and I have a fantastic platform to work from."

The scrutiny might now be more intense, but Hill has the right equipment to grab his share of the spotlight. ■

➤ Hill will be at Autosport International Thurs, Fri and Sat morning



FOLLOWING THE BEATEN PATH

➤ As Jake Hill departs Trade Price Cars Racing to head to a dream seat in an AmD Honda, his place in the team for 2020 will be taken by Bobby Thompson. There are remarkable similarities between the former and the new occupier of the Audi S3.

Thompson is entering his third year in the British Touring Car Championship after two seasons with Team Hard in a Volkswagen CC. Those initial seasons have shown flashes of his pace, without him being able to mount any consistent threat.

His best finish has been a sixth place in the opening meeting of 2019 at Brands Hatch, when he took advantage of the mixed conditions to put the front-wheel-drive CC in a position it shouldn't really have occupied. He also set the fastest lap in that race, but the remainder of the season was full of frustrations and he completed the year in 22nd in the standings with only one other top 10 finish.

That might not seem like a stellar BTCC CV, but those who observe closely can see that the 2017 VW Racing Cup title winner has shown enough potential to merit a longer career in the series.

Trade Price Cars Racing boss Dan Kirby says he has watched Thompson's progress and admitted that he had tried to sign the Essex driver for its initial campaign in 2019. "He certainly has the talent to make it onto the podium," says Kirby.

Thompson himself has targeted the Jack Sears Trophy as his goal for 2020, the contest that runs for drivers who have yet to make it onto the overall podium in a race. He was third in the JST in 2019 and wants to build on that success.

"I am confident I can build on what I've achieved so far," says Thompson. "The Audi has now been a winner in the BTCC in Jake's hands. This is going to be a new start for me, and I've got to aim high."



THIS NEC OF THE WOODS

Your guide to the key displays at the 2020 Autosport International show

70 YEARS OF AUTOSPORT

Hall 1 / Stand 1150

1 As we celebrate 70 years of Autosport, visit our display of the most pioneering and successful racing cars from those seven decades of motorsport. From the Jaguar C-type of the 1950s through to the hybrid Mercedes W06 grand prix car of 2016, the sport's gamechangers have been assembled. Each decade is also accompanied by an official Bell Racing helmet.

MOTORSPORT LIVE

Hall 2 / Stand 2260

3 The Motorsport Live stand is offering ticket options for all grands prix on the Formula 1 calendar and every round of the MotoGP World Championship, the iconic Le Mans 24 Hours, the historic Isle of Man TT and more. Visit the display to enter the Autosport International Mega Prize Giveaway to win one of three motorsport experiences across F1, MotoGP and Le Mans.

BUSINESS FORUM

Hall 3a / Stand E190 (Thurs/Fri only)

5 In celebration of Autosport Engineering's 30th anniversary, the show introduces the inaugural Engineering Business Forum. This will feature keynote speakers, panel discussions and debates focusing on the future of motorsport, technologies that were advanced beyond their time, and how the industry affects our day-to-day lives.

AUTOSPORT STAGE

Hall 1 / Stand 1150

2 At the heart of the Autosport International show is the star-studded Autosport Stage. Over four days, the biggest motorsport personalities – Charles Leclerc, Lando Norris, Ari Vatanen and plenty more – are interviewed and will be answering questions from the public and offering their exclusive and personal insights on the past season as well as their predictions for the year ahead.

FORMULA E

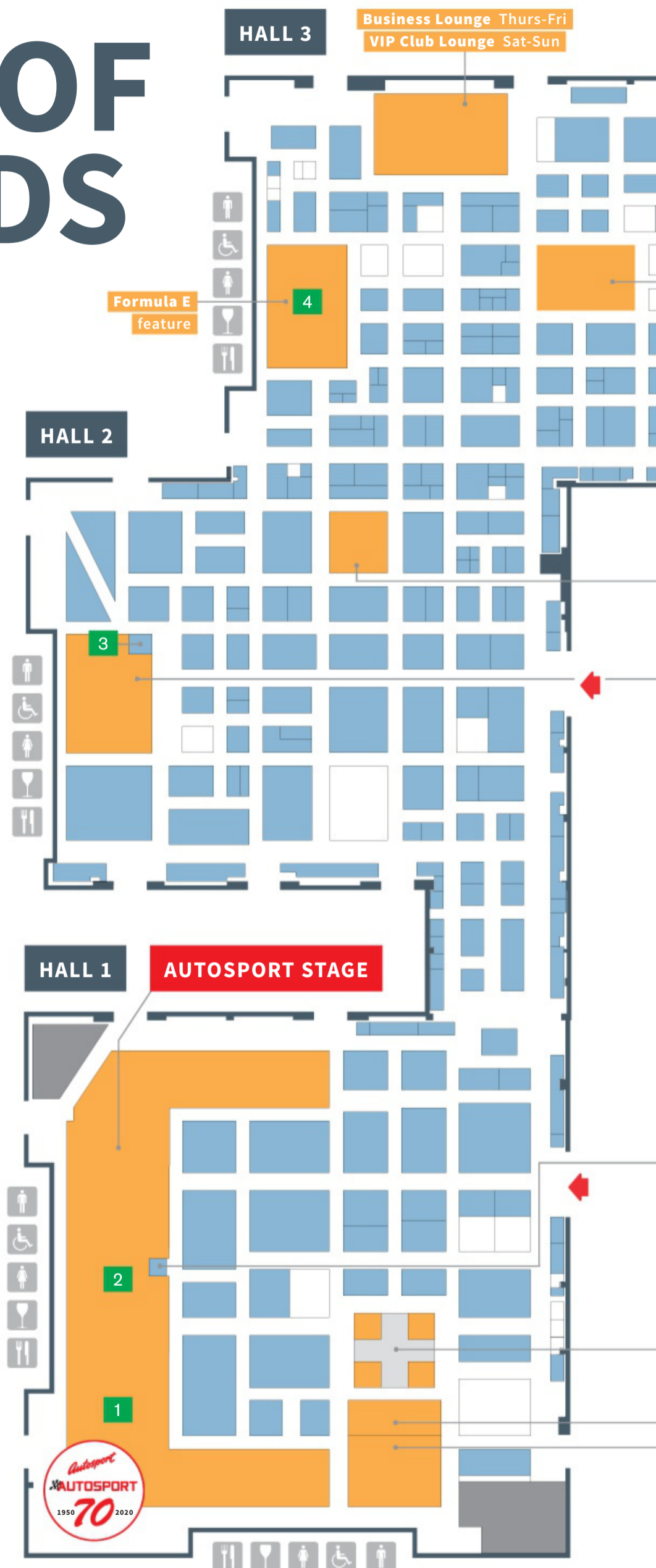
Hall 3 / Stand 3310

4 Later this year, Formula E returns to the UK for the London E-Prix, set in the capital city's docklands. As well as being able to purchase tickets for the double-header season finale, attendees to the 2020 Autosport International show will be able to get up close with the stars and cars of the fast-growing all-electric world championship.

LIVE ACTION ARENA

Hall 5

6 The firm favourite that is the Live Action Arena is back once again for 2020. Included in the ticket price is your pass to the UK's largest indoor race track. Every year it provides one of the highlights of the show – this time, that will take the form of a record-breaking indoor drag race. Seating 5000 racing fans, the Live Action Arena is a true sensory overload.





A-Z OF EXHIBITORS

EXHIBITOR	HALL/STAND NUMBER	EXHIBITOR	HALL/STAND NUMBER	EXHIBITOR	HALL/STAND NUMBER
3J Driveline Ltd	E464	Bruderer Ltd	E242	Energie Racing Parts	E350
#TrackAddict	W780	Bruntingthorpe Proving Ground	E840	Engine Parts (UK) Ltd	E230
195mph Limited	1665	BTRDA Clubmans Rallycross	W730	Epartrade.com	E421
24H Le Mans	1530	BWRDC	1444	ETS Racing Fuels	3570
5 Club Racing	2390	Camcoat Performance Coatings	3341	Euro M-Sport	3763
750 Motor Club	2280	Canossa Events	1440	EVO Corse	E702
920Engineering	3231	Car Audio Security	4520	Extreme E	3420
Absolute Alignment	3856	CARL Factory	3340	Extreme Performance Tyres	2861
ACS Motorsport	2780	Carless Racing Fuels	3570	F1 Authentics	2372
Active Simulators	2170	Carspunk	4531	F1 Model Helmets	2850
Advanced Fuel Systems Ltd	E640	Castle Combe Racing Club Ltd	2493	Ferrea Racing Components	E646
Advantage Motorsport	2640	Celtic Tuning	4730	FEV	E780
Aero Tec Laboratories Ltd	3653	Central Motorway Police Group	W550	Focus Racing Cup	2473
AeroCatch	2692	Central Scanning	E122	Force Racing Wheels Ltd	3854
Aford Awards	2610	CES Europe Ltd (Pit Equipment)	E580	Force Technology Ltd	E781
AiM Technologies	2454	CGTech VERICUT	E112	Ford Mania	W650
Alutight - Perma Grit	2620	ChronoLive	3225	Formula E	3310
AM Group Redback	E542	Cirrus Research	E385	FOUR Car Audio	4450
Anglo American Oil Company Ltd	1230	CL Brakes	E644	FP Zero/Maximum Motorsport	1453
Antigravity Batteries	3442	Clarendon Speciality Fasteners	E562	FreeM	3531
AP Racing	E530	Classic Sports Car Club	3720	Funcup UK	2380
Aptec Motorsport	E400	Club Racing UK	2180	Funk Motorsport	3751
Arai Helmets	3446	Cobra Cord	2628	G&S Valves Ltd	E650
ARP Automotive Racing Products	E520	Cobra Cord	W840	Gala Performance	2775
Arrow Precision	E442	Cobra Seats Ltd	2760	Gathercole Race Engines Ltd	E673
ASK Kugellagerfabrik Artur Seyfert GmbH	E886	Cobra Sport Exhausts	4155	Gazeboshop	2816
ASNU (UK) Ltd	E626	Compbrake Motorsport	3430	Goodridge (UK) Ltd	E684
AST Suspension BV	2470	Corbeau Seats Ltd	2570	Grand Design Systems	E584
Asta Tools	2743	Coventry University	3221	Great British Sports Cars	3721
Aurora Bearing Company	3266	CTE Advanced Tech	E370	Greaves 3D Engineering	E480
Autographed Collectables	2355	Daz's Models/		Green Filter USA	E761
Autoshine and Tinting Ltd	4550	Dan's Motoring Memorabilia	3850	Greenpower	E181
Autosimulation Ltd	3624	DBA	E754a	Gripper Differentials	E420
Autosport Bearings and Components	E774	Demon Tweaks	2550	GRP4 Fabrications	3640
Autotel Race Radio	2691	Deranged Vehicles	2715	GTMA	E100
AutoXotica Ltd	2743	Deranged Vehicles	4820	GTR Drivers Club	W630
Baldur's Control Systems	3860	Devonshire Motor Company	4240	GTROC	4170
Barnstorm Motor Events	4750	Diamondbrite	4650	Hadleigh Castings Ltd	E202
BB Motorsport	3710	Diecast Race Models	2820	Haltech	3753
Bcomp Ltd	E841	Dimsport Srl	E422	Hamilton Classic	1485
BDN Automotive	E301	DKM GmbH	E770	Harald Pihl	E410
Bell Racing Helmets	1324	Dmitri Sribnyj	E430	Hardwire Electronics	3443
Big Bobble Hats	1646	DMS Technologies	E806	Harper Adams University	3214
BK	2494	Docking Engineering	E843a	Hauck Heat Treatment	E631
BMW Car Club	4370	Dogs Trust	W705	HB Bearings	E604
BMW RDC	2270	Draper Tools	2560	HCI Systems Limited	E601
Bosch Motorsport	E450	Dream Car Giveaways	4552	Heaunique	2490
BRAID	E320	Drenth Motorsport Gearboxes	E784	Hedtec	2374
Bremsen Technik (UK) Ltd	E470	DTA FAST	E624	Hel Performance	E641
Brian James Trailers Limited	1330	Duramat Ltd	2742	Helix Autosport Ltd	E701
Bridgwater & Taunton College	3226	Dynojet UK	E170	Henleys Love Sweets	W830
BriSCA F1 Stock Cars	W410	Earls Performance Products	E843b	Home AV Direct	4530
Britcar	2754	EBC Brakes	3644	Hortons Books	1486
British Motorsport Marshals Club	2392	Eco-Trailer	1475	HP Tuners LLC	4930
British Rally Marshals Club	3545	ECUMASTER	3674	HRX Srl	2790
Brown & Geeson Distribution Limited	2670	EcuTek	E613	Hypermotive	E881
BRSCC	1560	EEC Performance Systems	E330	Ifor Williams Trailers	2644
		Eibach UK	E790	Induction Group Technology Ltd	3774
		Elite Racing Transmissions	3241	Intercomp	E432
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				McGill Motorsport	W200
				Meteor Motorsport	3544
				MEV Limited	2673
				MG Car Club Ltd	3730
				MIA	3030
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				Motec Europe Ltd	E637
				Motordesign Sweden AB	3440
				Motordrive	2645
				Motorsport Ireland	1462
				Motorsport UK	1350
				Motul - Witham Motorsport	3755
				Mountune Racing	E474
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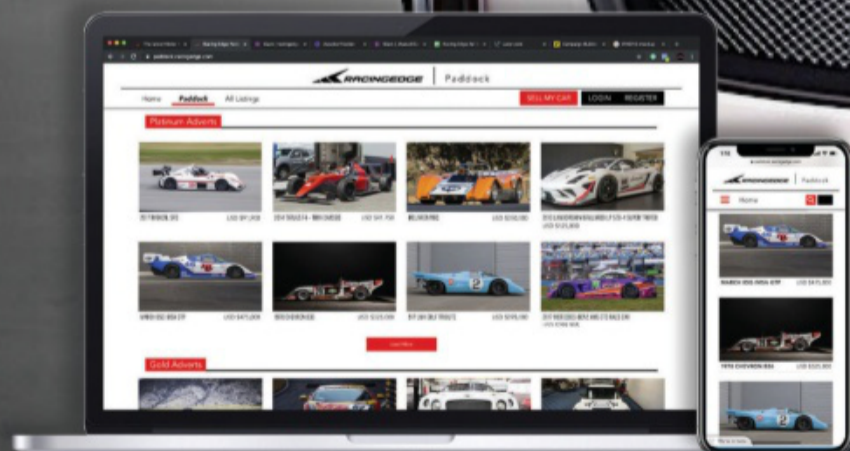
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HISTORY:

Hopkins Motorsport Ltd started in the early 1990's as a family-run race team that built its own transporters for a number of motorsport championships. Whilst still family run, the company has evolved to now being a leading manufacturer of race transporters to suit all levels.

To date we have built over 480 race transporters. We have built transporters for all forms of motorsport including every level of Formula/single seaters, every level of GT, W.E.C, and E.L.M.s, British and European Rally and Rally cross, FIA Truck racing, FIA Drag racing, World and European Karting. We have transporters located worldwide in Europe, America, New Zealand and the UAE.

Our vast experience allows us to create floor plans and layouts we believe are suitable for every team and formula. If you can't find a layout suitable for your specific requirements we will happily produce a bespoke design.

MANUFACTURE & DESIGN:

With the exception of the tail lift, all parts are designed and manufactured in house to keep build times to a minimum, allow flexibility in design and control quality. If we have not already built a transporter to suit your requirements we can offer a bespoke design as required.

NEW & USED SALES & REFURBISHMENT:

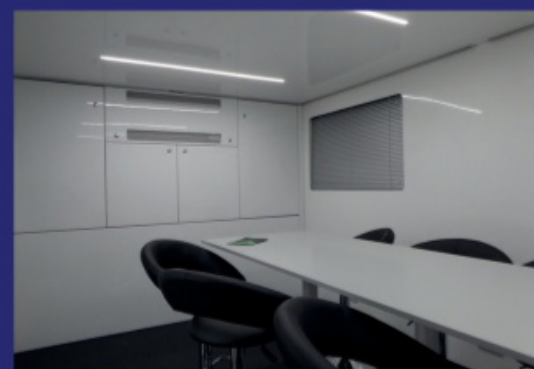
We have a selection of used transporters in stock typically from £40,000 to £140,000. Our range of new transporters starts from £140,000 to £450,000. All new builds are built to order to reduce lead times, with all major build components ready in stock.

REFURBISHMENT & PAINTWORK:

We typically refurbish 20 transporters a year internally and externally, including paintwork.

RENTALS:

We supply new and used transporters on short and long term rental.



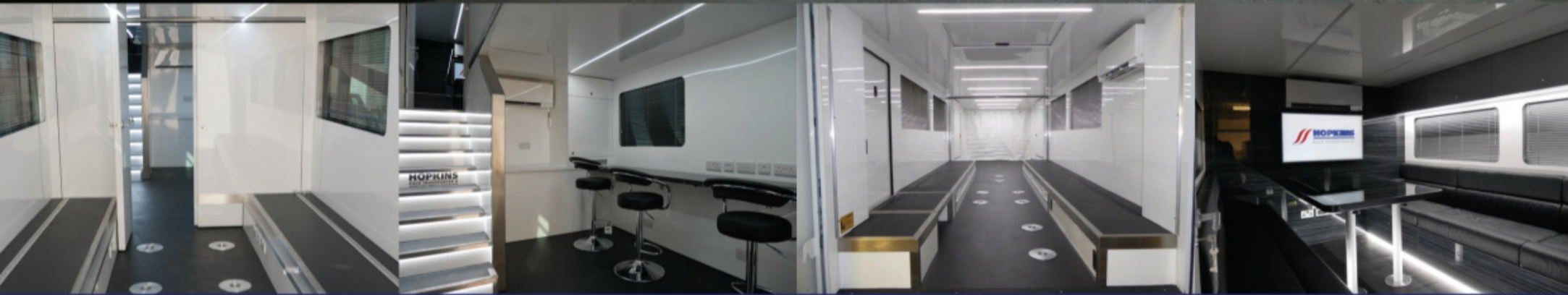
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With the world of motorsport changing to more and more fly away races and the costs of travelling across Europe increasing needs are changing to:

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- Top deck:** 2 cars or equipment during transit (Maximum length 10 meters).
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- Goose neck:** Management office & damper dyno room.
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POP UP ROOF RACE TRANSPORTERS.



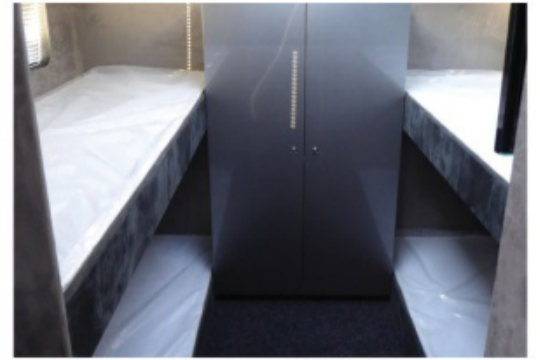
We were the first to develop the **Pop Up Roof Race Transporters** design that would also carry Formula cars. Our Pop up transporters are now the dominant force in The FIA F2 & F3 paddocks, the design will also carry other cars depending on overall width.

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There are many ways a race transporter can be configured with living accommodation depending on: **1.** The number of cars/bikes that need to be transported. **2.** Will the living be used for team personnel or a family. **3.** Will the kitchen area be used for hospitality/catering or team use.



We have proven designs for transporters with living based on both “Rigid trucks” and articulated trailers. The advantages of a transporter with living can be huge in terms of costs saved by feeding your team in house at the event, the cost saved in hotels bills and the time saved travelling to and from the hotel to the event.

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The build of a Hospitality vehicle goes hand in hand with the build of a race transporter as many teams competing in motorsport require hospitality to run alongside their race team to entertain corporate guests and sponsors at the circuit.

The style of a Hospitality unit can vary massively to suit the teams bespoke requirements taking into account several factors including: Will it only be used for hospitality or does it need to carry a car, does it require a kitchen, what floor space is available at the circuit and time available to set up.



We can provide whatever you require to suit your requirements including, gull wing floor vehicles, slide out pods, pop up roofs, large portable awning structures.

Our hospitality unit are now seen in many industries outside motorsport.

Elite will join Mini Challenge grid and (inset) will field all-rookie line-up in Ginetta Junior



ACE GINETTA SQUAD ELITE IN JCW MINI EXPANSION

MINI CHALLENGE

Leading Ginetta team Elite Motorsport will expand into the JCW class of the Mini Challenge this season.

Elite has been the team to beat in Ginetta competition, its drivers winning both the GT4 Supercup and Junior titles last season with Harry King and James Hedley respectively. It also won the 2017 Junior crown with Adam Smalley.

The squad's expansion into the Mini Challenge comes as the series joins the British Touring Car Championship support bill in place of the Clio Cup.

"It's something we've been planning for the majority of last year," explained Elite team boss Eddie Ives. "I have two mechanics who have been wanting to work with me for a couple of years; they were an integral part of the Eurotech Mini team two years ago who won it with Brett Smith. So they will look after the Minis – we've brought in some experience straight away.

"I can't speak highly enough about the support package with TOCA. It's [added] a bit of diversity in the team too – we now have a front-wheel-drive option for when they come out of Juniors. The timing was right for us to have a go at something else."

Elite has signed Lewis Galer as its first driver, after he had a tough debut season in the Mini Challenge, finishing 16th in the standings. The team has also bought a second car.

The squad will continue in Ginetta categories and is aiming to become the first team to power a rookie driver to the Ginetta Junior title after unveiling a line-up consisting entirely of racers in their first full season.

Louis Foster was just eight points shy of achieving that feat with Elite in 2018, while rookie Zak O'Sullivan was runner-up last year.

Two of the team's six drivers – William Aspin and Ginetta scholar Tom Lebbon – contested November's Winter Series but, for the rest, 2020 will mark their circuit racing debuts. The remaining four drivers are scholarship finalist Tommy Pintos, William Vincent (son of Formula Renault and Formula Vauxhall racer Chris), Seb Hopkins and Josh Miller.

"There weren't many second-year drivers on the market so I'm doing what I can to win it with a rookie," said Ives. "I'm quite confident – I'm not thinking I'm on the back foot without a second-year driver."

STEPHEN LICKORISH

Jewiss stays at Douglas for second F3 bid

BRDC BRITISH FORMULA 3

BRDC British F3 race winner Kiern Jewiss will remain with the Douglas Motorsport squad in the category this season.

Jewiss took the British Formula 4 title with Double R Racing in 2018, but struggled to replicate that form against his fellow F4 graduates last year – while Johnathan Hoggard was narrowly defeated in the title race by Clement Novalak, Jewiss ended up fourth in the standings after taking just one win.

He grew much stronger in the second half of the season and is looking to keep that momentum into 2020.

“I have a great relationship with the whole team and together we got the car into a great place towards the latter part of last season,” said Jewiss. “The challenge this time round is to pick up where we left off and start the season strong.



MOTORSPORT IMAGES/JEP

“As always in BRDC British F3, the competition is going to be incredibly tough, and there’s a few new changes to the car, but I’m as motivated as ever to have the best year possible.”

Douglas team boss Wayne Douglas added: “Ever since we first ran him in a Ginetta Junior, it’s been clear the immense talent Kiern possesses and he showcased it again last year. In particular, the way he ended the season was hugely impressive and bodes well for 2020.”



Duo will again share GT-R GT3 in GT Cup

HAWKINS

Tregurtha and Tilley back in Nissan

GT CUP

Former British GT4 champion Will Tregurtha will again team up with Grahame Tilley at the wheel of a Nissan GT-R GT3 for a full season in the GT Cup this year.

Tregurtha, who won the Ginetta Junior title in 2016 before taking the GT4 class crown the following year, partnered with Tilley from the Brands Hatch round of the GT Cup last season, taking a win in their opening weekend together.

“Being part of the GT Cup championship

has been a revelation to me,” said Tilley. “This is competitive GT racing, with slick and professional organisation, but with a friendly and supportive atmosphere.”

“Will will be supporting me as my driver coach and co-driver for the pitstop races. My car will again be prepared by Triple M Motorsport and over the winter they will be updating some aspects of the car to make it even more competitive.”

As well as the GT Cup outings, Tregurtha competed in Germany’s ADAC GT Masters in an Audi R8 LMS GT3 last year.

MALVERN AND JONES TO RACE GT3 BENTLEY

BRITISH GT

Scott Malvern and Nick Jones will step up to the GT3 class in British GT this year, remaining with Team Parker Racing.

The 2018 GT4 Pro-Am champions tested with multiple teams and manufacturers since the end of last season, but will stay in the familiar environment of Stuart Parker’s 2017 title-winning squad to drive the team’s Bentley Continental GT3 (pictured below in 2019).

Jones admitted he “didn’t expect” to make his GT3 bow with Parker, but stressed the continuity would prove helpful in his first season in the class.

“There is a good atmosphere in the team and it was important to keep as many things the same as possible, so the only change is the class and car,” he said.

“We’re going into the year with an open mind, looking to get on the podium and competing for wins. I might need a little bit of time at the start of the season, but I feel relatively comfortable. I’m sure we’ll be in the mix.”

One driver who will not be on the grid this year is 2017 GT3 champion Rick Parfitt Jr. After finishing 11th in a JRM Bentley last year, he will now switch to European competition for 2020.

● British GT will have its first title sponsor this year since Avon’s departure at the end of 2015, with investment provider Intelligent Money taking naming rights. Branded windscreen banners will replace the fluorescent yellow and pink colours of recent seasons. GT3 cars will have a predominantly white banner, while GT4s will have a black background.

JAMES NEWBOLD



MOTORSPORT IMAGES/JEP



Lotus Formula Junior to race again after 57 years in storage

HISTORICS

An ex-works Lotus 22 Formula Junior will race again after spending the past 57 years in storage.

Chassis 22/J/3 is the ex-Team Lotus car mainly driven by Bob Anderson during the 1962 season, with notable results including third places at Monaco and Goodwood.

It is now owned by category expert Andrew Hibberd, who plans to prepare it for racing. "I found it for sale via Instagram," he said. "We always wondered where the other works cars were. It needs a complete



rebuild, but we do plan to race it.

"The car still has its original parts including modified throttle pedal, all Lotus part-numbered components, Monaco-vented nose, Cosworth engine and so on."

At the end of 1962, the car was used to settle a bet after a journalist suggested Lotus had been using illegal engines. Works driver Peter Arundell went to Monza in December and set a time good enough for a new lap record. The cylinder head was then removed, and the capacity of the engine was checked and found to be correct.

"The 22 was sold on the spot to a Milan

racer," said Hibberd. "It then spent some time in a hair salon before being purchased in 1967 by the gentleman who I found the car with. The 22 then sat in the same Turin workshop until it left with me, 57 years to the day after leaving England."

- The role of Formula Junior in the career of the late Jim Russell will be a feature of the Jim Russell Trophy race meeting at Snetterton on 4-5 April. Russell was a Formula Junior racer in the later stages of his career, tackling the category in 1961.

PAUL LAWRENCE

FF1600 ace Foster targets busier 2020 schedule

FORMULA FORD 1600

Joey Foster is aiming for more frequent Formula Ford outings in 2020, after making just four appearances in 2019 in an updated Don Hardman Racing Firman.

Multiple Festival and Walter Hayes Trophy winner Foster, who switched to the Firman in late 2018, hoped to develop the car throughout 2019 but due to time and budget constraints only raced in the final two National FF1600 rounds plus the

Festival and Walter Hayes.

"Hopefully we'll be doing more races than we did [in 2019]. Four's not enough," Foster said. "Keith Bodicoat has created some great developments for the car and I've been working and progressing them with Ralph [Firman]. We've got a fair amount lined up."

Rory Smith, who finished third in 2019's National table with B-M Racing, is also unclear how many 2020 outings he will have as he is set to start an industry



placement for his university engineering course.

"From about July onwards I'll probably be in a job which might make things more difficult with testing and everything," Smith said.

Meanwhile, American racer Bryce Aron will compete in the National series with Cliff Dempsey Racing, having driven for Oldfield Motorsport in the 2019 Festival.

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IN THE HEADLINES

NEW CARRERA CUP TEAM

Simon Green Motorsport will join the Porsche Carrera Cup GB for the first time this season. The team has previously run cars in a number of different categories, including Britcar, the GT Cup and Classic Touring Cars. SGM will field Lee Frost and Lucky Khera – who began last season in the Ginetta GT4 Supercup before switching to the Carrera Cup – in 2020 as well as a yet-to-be-announced third driver.

STYLES JOINS F1000 GRID

Billy Styles will make his car-racing debut in the F1000 single-seater category this season. Styles is the second member of Motorsport UK's Advanced Apprenticeship in Sporting Excellence programme, after Jack Tomalin, to sign up to the series. "We offer an affordable and supportive environment for Motorsport UK AASE students to develop their racecraft," said F1000 championship manager Frazer Corbyn.

GTSCC HEADS TO THRUXTON

The GT and Sports Car Cup will make its Thruxton debut this season with an enduro race during the Thruxton Historic Festival on 6-7 June. The series for pre-1966 GT cars kicks off at the Donington Historic Festival in early May. The GTSCC also includes a return to the Castle Combe Autumn Classic and a finale at the Algarve Circuit.

REVOLUTION HEADS TO SPA

Revolution prototype machinery will appear at the Spa round of the World Endurance Championship this year after striking a deal with Britcar bosses. Britcar will run two non-championship races alongside the WEC over the 23-24 April event, and the Revolution Trophy will appear as a guest class as part of those contests. The Revolution made its racing debut last season, with a handful of cars competing in trial races for the Sports Prototype Cup.



Riman plans regular outings after dusting off rare Fiat 127

PLUM PUDDING

Fiat Racing champion Martin Riman competed in his Fiat 127 Sport for the first time in more than nine years at Mallory Park's Plum Pudding event on Boxing Day, and plans to race the unusual car regularly in 2020.

The previous outing for the 1.3-litre machine was in the final ever races for the Fiat Racing Challenge, also at Mallory, on 19 September 2010. The car has been stored since then while Riman has turned his attention to racing Citroen 2CVs.

"The car has just been sitting for about

the last 10 years, but we kept starting it up and thought we would do this," he said. "We just got it out of the barn and put on new brakes, windscreen and so on."

The 127 was one of around half a dozen such cars that raced in the Fiat category in the 1990s and early 2000s, but Riman has not found a home for it in recent seasons. Now he hopes to race the car more often after he "really enjoyed" its return, taking 18th and 14th in two Saloon Car races.

"The Alfa Romeo championship has a class for anything Italian, so I'm going to look at that," he said.

IAN SOWMAN

Tweaks to SMRC's racing schedule

SMRC

The Scottish Motor Racing Club will have a revamped calendar for the 2020 season, with the Historic Sports Car Club's Dunlop Saloon Car Cup headlining a two-day meeting at Knockhill in July.

The SMRC previously announced a return to a seven-round schedule, featuring an away round for all classes except for Formula Ford 1600 at Croft at the start of June.

Scottish FF1600 will instead

join the National grid at Anglesey for its own away round in August, while the Scottish Mini Cooper Cup has its customary second away meeting at Kirkistown.

The HSCC Saloons replace the Super Touring Championship, which had previously held a place at the annual David Leslie Trophy, in what Knockhill director of events Stuart Gray described as "the best of Scottish motorsport" double-header.

"We've worked very closely

with the HSCC over the past five or so years now and they recognised the enthusiasm there is for these sorts of cars, so we're thrilled to have them at Knockhill," he said.

Also joining the bill for the round on 4-5 July are the Modified Ford Championship and Super Lap Scotland.

Gray also confirmed the return of the British Superkarts in April, while Northern FF1600 and the Civic Cup will join the September event.

STEPHEN BRUNSDON





New Year's resolutions for club motorsport

Now the decorations are down and the celebrations over, here are Autosport's five realistic aims for the season ahead

STEPHEN LICKORISH

It's already two weeks since Christmas Day and, as the celebrations become an ever more distant memory, attention for many turns to making – and attempting to keep – New Year's resolutions. But forget about losing weight or doing more exercise, there should also be some targets set for the club racing world too. Whether that's for competitors, series coordinators, organising clubs or the governing body, here are some ideas for club motorsport to try to adopt in the next 12 months in order to thrive.

1 MORE COLLABORATION

Rather than rival clubs fighting tooth and nail against each other for every last competitor, working more closely together could actually benefit everyone. All too often in the past when one series has proved successful at attracting a large grid, another club has launched its own very similar category, splitting the competitor pool and damaging the health of both classes. That needs to stop, and instead organisers should work together, allowing different clubs to focus on different areas. This could also involve meetings where two or more clubs could buy track time together and share the costs, which is likely to lead to better-supported events. The 750 Motor Club and Vintage Sports-Car Club have collaborated on Austin 7 races in the past and this demonstrates what can be done.

2 STOP BOOKING TOO MUCH TRACK TIME

Several of the larger clubs were guilty of running meetings in 2019 that did not feature enough different series to fill the timetable. In the past, clubs have often tried to fit in too many races and have had to drastically cut these down in the event of delays. But last year, some meetings featured pointless practice sessions ahead of qualifying just to make use of the time available. With better planning and more collaboration, this could have been avoided – and it would help clubs too as their circuit hire costs would be slightly lower if they had fewer events. On a related note, clubs also need to become better at recognising when it's time to pull the plug on a struggling series rather than having it limp on – again freeing up space in the schedules to allow for fewer fixtures.

3 FOCUS ON THE FUTURE

As we enter a new decade, it's more important than ever to look forward, especially at a time when there's no shortage of technological advancements. Electric cars are becoming more common and an increasing number of international categories

are looking to adopt some element of electrical power. It's important that this applies to club motorsport too, and governing body Motorsport UK has to take the lead on this. Its technical committee has created an Electrified Vehicles Working Group to draw up regulations and investigate how electric cars can safely feature in the national racing scene. This presents great opportunities for clubs too – who knows, we could even have a new club dedicated exclusively to electric categories in the future.

4 STOP SHOOTING ITSELF IN THE FOOT

There were a couple of examples of bizarre decisions from authorities in 2019 because of loopholes in the rules. Take the incredible situation where a Ginetta Junior driver collected 12 points on his licence but, because some of those were accrued at the same meeting, they did not all count and he therefore did not receive the usual automatic ban. Then there was the British Formula 4 'non-race' at Croft, where worsening weather conditions led to the race being red-flagged after two racing laps – and yet, even with the countback rule being applied and the classified result coming after just one lap, it was still declared a proper race and half points were awarded. Decisions like these are baffling to the casual observer and any quirks of the rules need to be addressed to avoid mixed messages and confusion.

5 MOST IMPORTANTLY, MORE ENJOYMENT

Club motorsport should be all about a group of like-minded individuals spending their weekends doing something they love. It is all too easy for tempers to fray and for it to be taken too seriously. But that risks losing the very reason we are interested in motorsport in the first place. It should be all about the cars, drivers and some great racing rather than becoming a political dogfight or shouting match. That needs to be remembered sometimes.

Admittedly, some of these resolutions are far more achievable than others. And some cannot be considered resolved until towards the end of the year when preparations for 2021 begin. None of them are major changes or unrealistic, but each would have an impact to help ensure that the wonderful diversity and breadth of club motorsport in this country is allowed to continue. There are many threats on the horizon – and these little steps certainly will not overcome them – but it would make sure club racing is in the best possible place to weather the storm of rising costs, dwindling numbers of competitors and shifting attitudes it faces. 🍀

There was no stopping Hicklin as he stormed from 10th to complete Sports Car double



Hicklin wins final race of decade

**BRSCC
MALLORY PARK
26 DECEMBER**

Ashley Hicklin and Rod Birley each took double victories at the final UK car-race meeting of the 2010s at Mallory Park on Boxing Day.

Hicklin had the honour of being the very last winner to pass the chequered flag in the decade when his Radical SR3 came home almost a minute clear in the second of the British Racing & Sports Car Club-run Sports Car races after lapping almost five seconds per lap faster than any other car on the treacherously wet surface.

With the top 10 finishers reversed from the earlier race, Hicklin had to scythe through from row five, but he took the race-two lead from Steven Barnard's spaceframe Audi T'T halfway around the second lap. David Porter's SR3, which had started alongside Hicklin's car on the grid, was expected to provide a challenge but eventually finished a lapped third, ahead of Barnard and Caterham 310R driver Jon Curry.

Gary Mitchell was the only other driver to finish on the lead lap in his Global GT Light, in spite of picking up damage to

his car in the first part of the race.

The rallycross driver – who was also racing his Ford Puma in the Saloon races ahead of its appearance in the Autosport International Live Action Arena – passed Barnard around the outside at Lake Esses on lap five, only to immediately spin onto the grass, breaking the front splitter.

The earlier race was halted early after Nicholas Smith had the throttle stick open on his Caterham Roadsport, resulting in a headlong collision with the tyre wall at Gerard's Bend. Hicklin, who had taken the lead from Porter at the start of the second lap, was already comfortably clear, with Mitchell a distant third.

The opening Saloon Car encounter was also red-flagged after Julie Walford's Renault Clio stopped in an exposed position at the exit of Gerard's Bend. Unsurprisingly, Rod Birley – who claimed pole position by placing his entry the earliest of anyone – was well ahead of the chasing pack in his Ford Escort WRC.

Adam Chamberlain (Vauxhall Astra VXR) was a strong second, up from row seven of the grid, and used the event as preparation for a return to Turbo Tin Tops in 2020. He beat Simon Ward – who showed him the

RACE WINNERS

SPORTS CARS

Races 1 & 2 Ashley Hicklin (Radical SR3)

SALOON CARS

Races 1 & 2 Rod Birley (Ford Escort WRC)



Swan gets sideways in his Citroen Saxo

ropes around Mallory a couple of years earlier – into third position.

The second race, with its partly reversed grid, was a cracker. Having made a late entry and started the first race flat last, Oliver Barsby and his Honda Civic led for almost eight laps until Birley – who started 10th – eventually found a way through at Devil's Elbow. Simon Sheridan's Civic Type R was second for a long time, but was eventually classified fifth after Sheridan went straight on at Shaw's hairpin on lap eight.

Pickup Truck regular Ward was among the drivers to capitalise in his Vauxhall Astra GTE, and moved into second – ahead of Barsby – at the hairpin a lap later before slashing Birley's advantage. When Birley got boxed in by a slower Citroen C1 at the hairpin four laps from home, Ward pounced and led briefly, but Birley turned up the wick and blasted back ahead into the Esses on the next lap to take victory.

Barsby completed the podium, while Chamberlain emerged from a magnificent midfield scrap to take fourth from Sheridan and Carl Swan's Citroen Saxo.

IAN SOWMAN



Birley was a double winner in his Escort, but did have to overcome the threat of Ward

ALL PICS: JONES

EATON'S GRAND TOUR

The next episode in Abbie Eaton's racing career is a full-time W Series campaign in 2020

STEFAN MACKLEY

“**B**eing in the limelight with *The Grand Tour*, people are just expecting you to jump into any car and be quick straight away, so it's a different kind of pressure. But ultimately if I don't say yes to these things, I'm not going to be racing and racing is what I love and it's what I want to do.”

For Abbie Eaton, the past few years have been something of a rollercoaster both on and off the circuit. The 28-year-old Briton has gained a public profile for her role on Amazon's *The Grand Tour* as the show's official test driver. But it's on the world's race circuits where she wants her reputation to continue growing and make good on the promise she showed in club racing more than a decade ago.

She first came to prominence in 2009 after following her father, Paul, into motorsport, winning her class in the Dunlop Sport Maxx Cup. Another title came in 2014, this time in the highly competitive one-make Mazda MX-5 Supercup.

A season in the GT Cup yielded a single victory before she moved into British GT with Ebor GT in 2016 at the wheel of a Maserati GT MC GT4, finishing fourth in the class standings with Marcus Hoggarth.

It was to be her last season of competing full-time for three years due to the perennial problem many drivers face – budget. Since then she has had to look high and



Eaton is critical of male and female drivers being segregated, but will race in W Series this year



MOTORSPORT IMAGES/DUNGAN

WSERIES

Last full campaign was in GT4 Maserati in 2016



JEP motorsport IMAGES



Australian Super2 deal didn't work as planned

PAUL



Recent outings include in TitansRX series

TITANSRX

low for one-off drives. Not that it's been all bad, as she has sampled an impressive range of machinery, including a Ferrari 488 GT3 at Monza, where she took the Am class victory in the Blancpain GT Series in 2017.

Twelve months ago she had hoped to make her big break down under in the Super2 Series – the support championship for the premier Australian Supercars series. As with many of her drives, the deal was put together at the last minute with Matt Stone Racing to drive a Holden VF Commodore at the season-opening Adelaide round.

“We literally said yes to doing it two days before the cars were taken down, so it was all really last-minute. It just wasn't the best kind of environment to have my first go in it,” she says of a weekend where she took a best result of 14th. “The view was to do the full year, but the partner that we were speaking to about doing it long-term basically just ghosted me.

“I just feel like I wasn't able to give it my best shot, which means it's kind of unfinished business. I'd love to go back out there again and do it properly and do a full season in the championship.”

Not to be deterred, she moved her focus elsewhere and took part in the inaugural season of the TitansRX rallycross series in a Pantera RX6, against maiden Formula E champion Nelson Piquet Jr, British Touring Car champion Andrew Jordan and rallycross sibling royalty Kevin and Timmy Hansen. She competed in four rounds through the season, taking 13th in the points despite having never previously driven a rallycross car.

Most recently she got behind the wheel of an electric vehicle in the opening round of the Jaguar I-PACE eTrophy in Saudi Arabia in November. She took a best finish of fourth.

At last, though, 2020 has provided her with the chance to compete full-time once more, as she will race in the second season of W Series, the single-seater female-only category

“I WASN'T ABLE TO GIVE SUPER2 MY BEST SHOT, WHICH MEANS IT'S KIND OF UNFINISHED BUSINESS”

that was won by fellow Brit Jamie Chadwick in 2019.

Eaton had been approached about joining for the inaugural season but was – and still is – against the principle of segregating men and women.

“I just didn't agree with it – not the championship and spending money on females, which is brilliant – but with segregating men and women, and I still don't agree with that,” says Eaton, who prior to the evaluation test had only driven a single-seater on one occasion. “I don't think that long-term that's the answer to get more females into the sport.

“But now I've watched the series for the year and I've seen the people involved, and how they run it, there's no expense spared and actually what W Series is trying to do, [they know] it's not a long-term solution. They're looking at it as a solution for now to try to at least lift the profile of females in motorsport and just try to give them a helping hand.

“The thing that kind of made my mind up was that I was supposed to be in Australia all year, so I was like, ‘I've put a year of effort into trying to make this work – I'm not going to turn my back on that.’”

The season opener in Russia is a long way away – it takes place in May – but Eaton has already shown that she has the patience to wait for her next opportunity. ❄️



MODELS' ESOTERIC CHARM IS

SLOT CAR RACING 2020 SCALEXTRIC RANGE

It's testament to the Scalextric model range that many of the cars hold their own as standalone models. Far from being the preserve of the living room carpet – when time, space and parents' permission allowed – before an overzealous index finger meant you promptly smeared them along the skirting board, the slot racers don't look at all out of place on display.

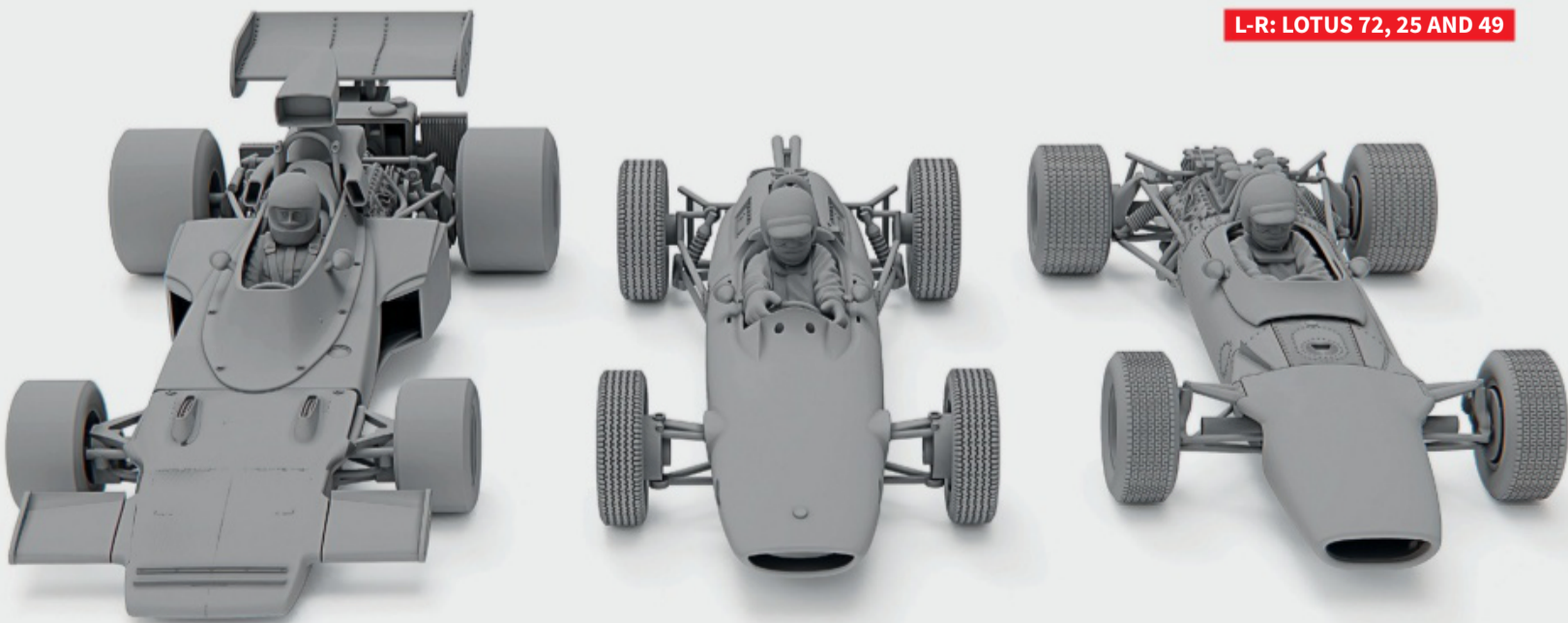
Earlier this week, Scalextric revealed its 2020 model range and several of the new additions piqued Autosport's interest. Both British Touring Car Championship title winner Colin Turkington and runner-up Andrew Jordan's BMW 330i M Sports have been scaled down. So too has the JRT-prepped gunmetal grey Lotus Cortina that Jordan campaigned at the Goodwood Revival. That stands out as a

fantastically niche choice to commit to plastic, but that makes it all the more charming.

Another Goodwood regular is the ex-Stuart Graham 'Faberge' Ford Capri, which is a near-permanent fixture in the Members' Meeting's Gerry Marshall Trophy.

Since it's only 351 days until Christmas, other models Autosport would like to see under the tree include the 12-wheeled twin pack of Tyrrell P34s from the 1976 Swedish Grand Prix, and the Ford Sierra RS500 of Graham Goode – the driver who gave the famous Blue Oval machine its first BTCC race triumph at Donington Park in 1987.

If we had to pick a favourite, and we do, then we'd go for the Genius of Colin Chapman Lotus triple pack – featuring the 25, 49 and 72. After all, those three starred (along with the ground-effect 79) in our F1 track-test special as we celebrated the 1000th world championship grand prix in our 11 April 2019 issue.



L-R: LOTUS 72, 25 AND 49



1976 SWEDISH GRAND
PRIX TYRRELL P34s

OFF THE SCALE



MERCURY COUGAR



FORD CAPRI Mk3



FORD SIERRA RS500

FINISHING STRAIGHT



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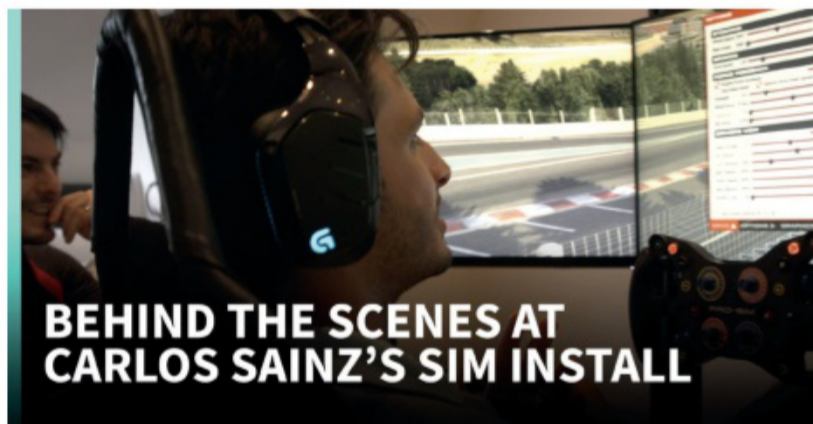
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BEHIND THE SCENES AT
CARLOS SAINZ'S SIM INSTALL



It's been drummed into us that simulators are of vital importance to the performance of a Formula 1 team and its drivers. So much so, the younger generation of grand prix drivers have set-ups in their own homes. Autosport teamed up with Cool Performance Simulators to visit the home of McLaren talent Carlos Sainz to check out his digital gaming rig. [Go to bit.ly/SainzSim](https://bit.ly/SainzSim)

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Round 1/4

Dubai 24 Hours, United Arab Emirates

10-11 January

Asian Formula 3

Round 2/5

Dubai, United Arab Emirates

9-10 January

Asian Le Mans Series

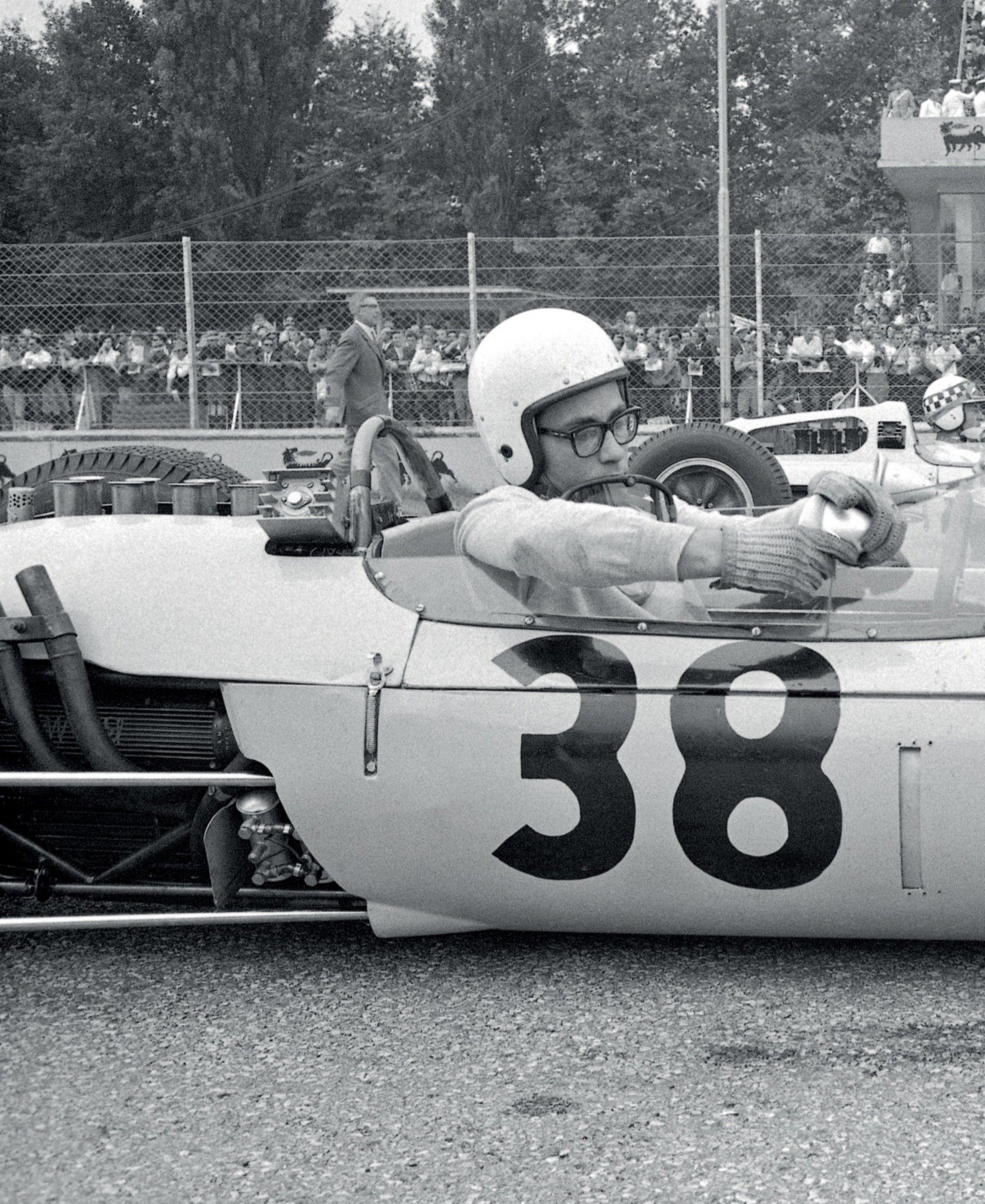
Round 2/4

The Bend, Australia

12 January

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FROM THE ARCHIVE

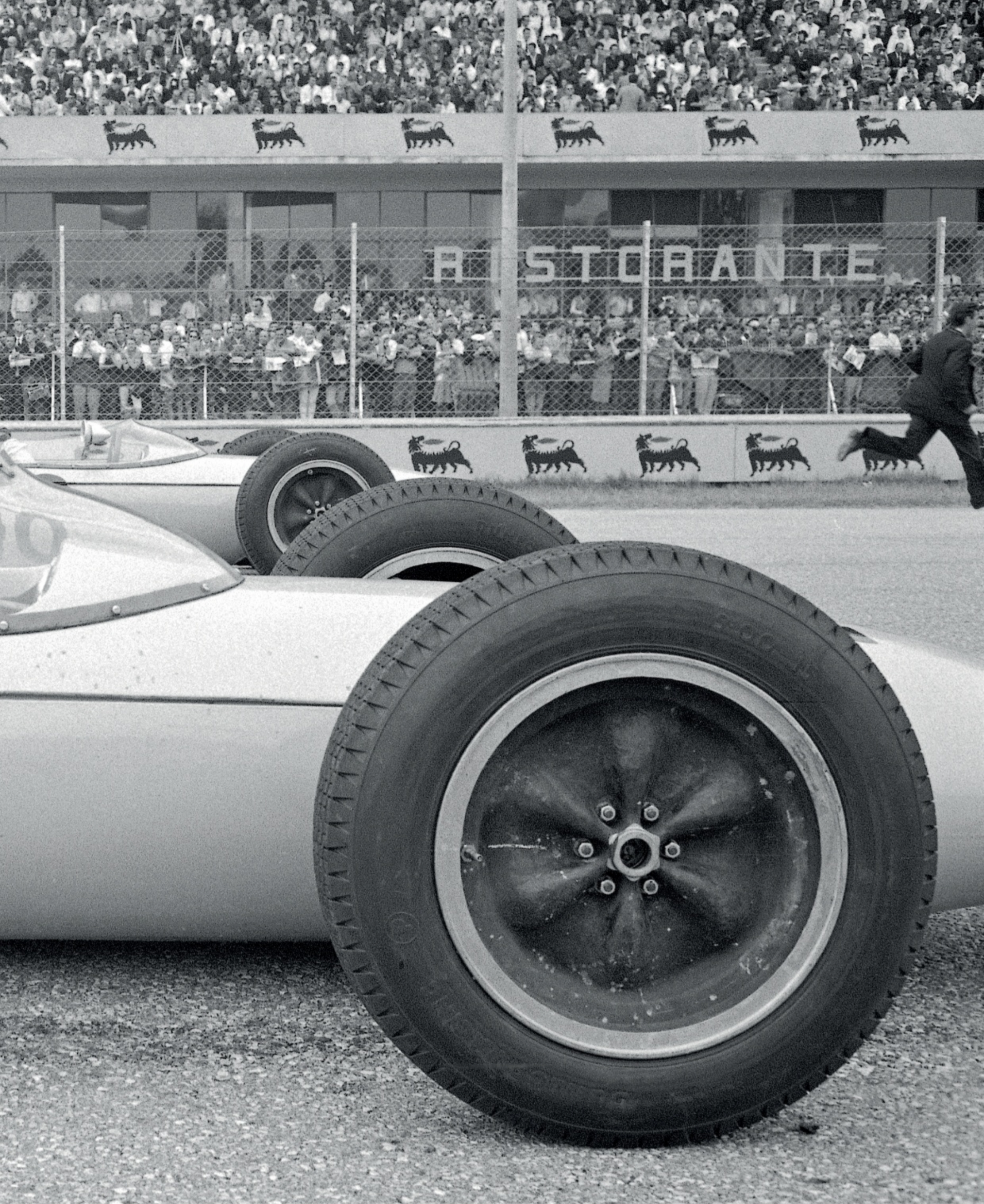
Masten Gregory (Lotus-BRM 24) adjusts his mirrors ahead of the start of the 1962 Italian Grand Prix at Monza. The US driver, known as the 'Kansas City Flash', qualified

in sixth place but ended up the final classified runner in 12th, nine laps adrift of dominant race winner Graham Hill (BRM P57), hamstrung first by overheating, then gear-selection

problems. Gregory's UDT Laystall Racing team-mate and fifth-place qualifier Innes Ireland (Lotus-Climax 24) sits alongside on the grid. Ireland's race was ended on lap 47 of 86 by cracked front suspension.

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Return to glory heralded for British motorsport icon

9 January 1992

'Lotus revival', shouted Autosport's cover on this day (9 January) in 1992. Team Lotus was – and still is – one of motorsport's biggest names, but it had almost died at the end of 1990, when Peter Collins and Peter Wright stepped in.

The squad's last title successes, in 1978, were becoming distant memories, but it had survived the 1991 season and things were looking up. The driver line-up was promising, with Johnny Herbert now full-time alongside Mika Hakkinen after a part-season in 1991.

"I felt it was better to go with somebody who we genuinely believed had a bit of extra-special ability – who may turn into somebody competitive," said Collins of the decision to take on Hakkinen for 1991. "My opinion on Johnny hasn't changed. Ideally he was the driver we would have liked

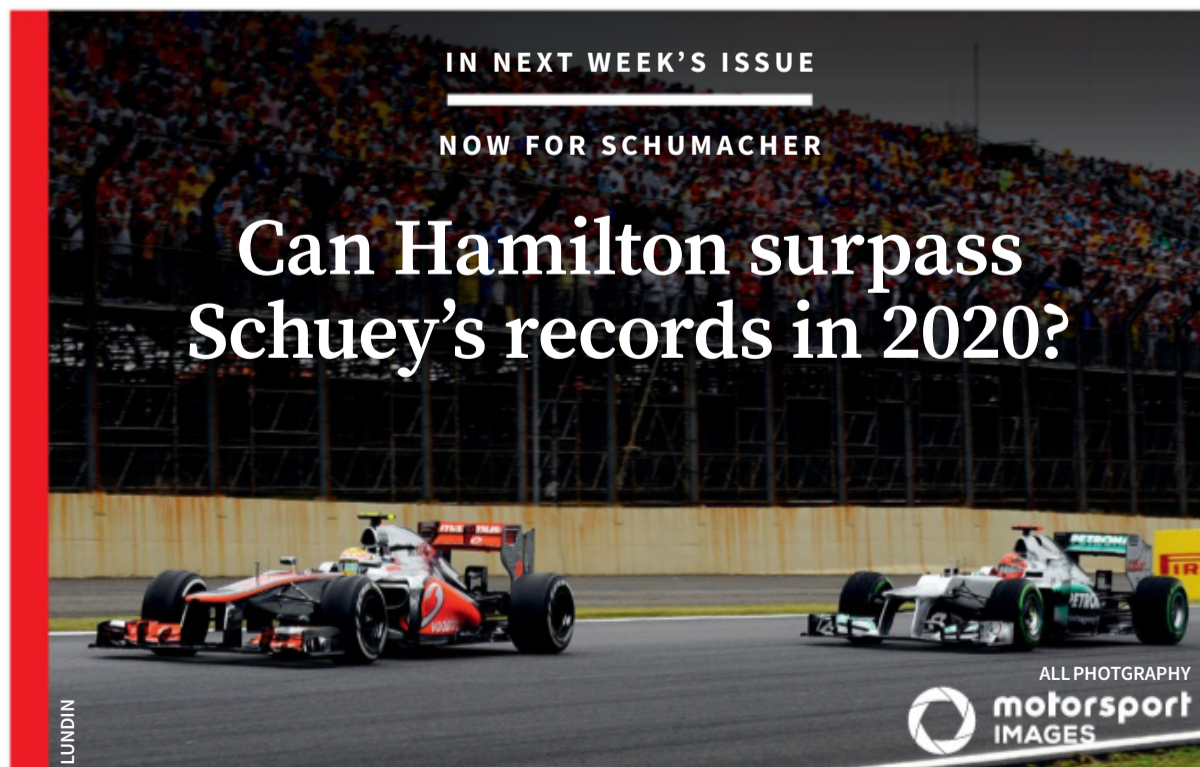
to have in the car [last year]."

Collins also talked of the difficulty of taking on F1's big three (*plus ça change*, though in this case he meant McLaren, Williams and Ferrari), and of hoping to add to Lotus's fine record.

As it turned out, 1992 was decent, with Lotus rising from ninth the year before to fifth in the constructors' table, but there were no podiums.

Team Lotus continued to struggle financially and would fail to see out the 1994 season. Hakkinen, of course, went on to prove Collins right at McLaren.

Elsewhere in the 9 January 1992 issue, Derek Warwick was confirmed as part of Peugeot's line-up for the Sportscar World Championship, which he would go on to win alongside Yannick Dalmas, and Autosport hailed a then-record crowd – 50,000 – at its International show in Birmingham.



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WHY THEY ARE ALL GOING





HYBRID



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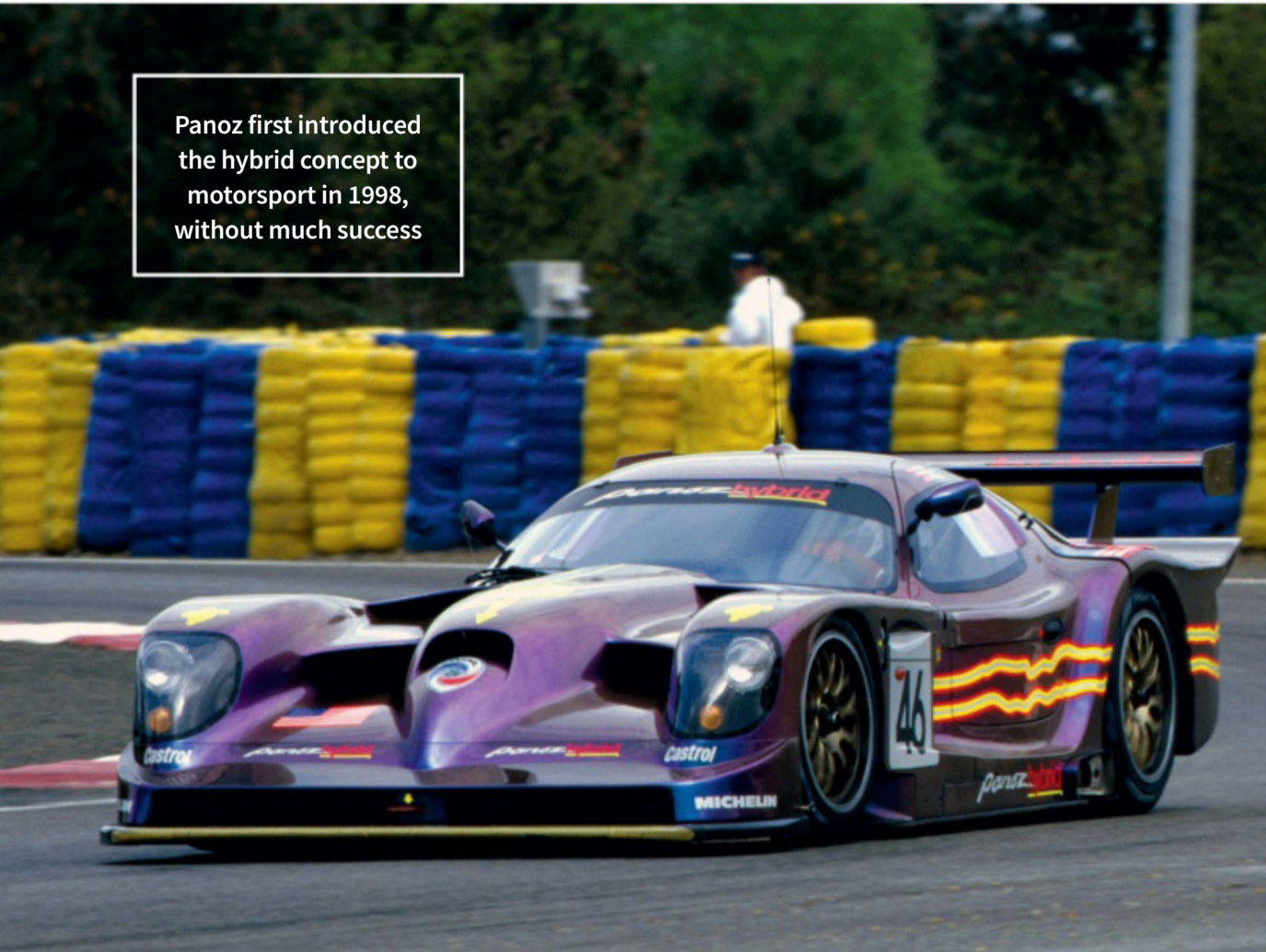
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Panoz first introduced the hybrid concept to motorsport in 1998, without much success



HYBRID ISN'T NEW OR FASHIONABLE, BUT A STEP IN THE RIGHT DIRECTION

Discussions over how best to future-proof motorsport are rife at the moment, and little wonder. As you can read in Lucas di Grassi's column on page 11, the pressures on sponsors to align themselves with environmentally responsible practices pose serious challenges that must be addressed.

So it was particularly notable that such diverse series as the British Touring Car Championship, IndyCar and the World Rally Championship each announced last year that they would be adopting hybrid power from 2022 (page 12).

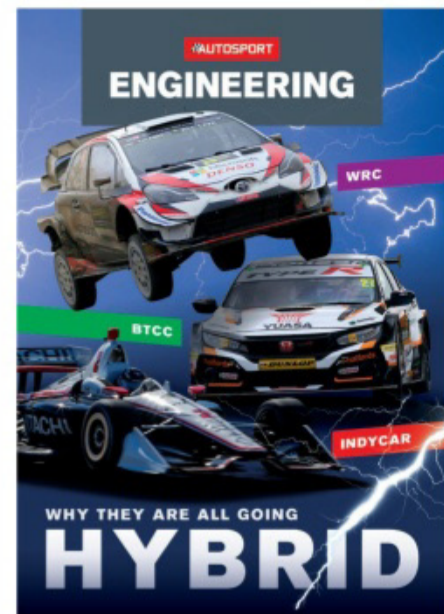
Using an electric motor to boost a conventional combustion engine is hardly new. Don Panoz broke the mould in 1998 by fitting a Zytec motor to his GTR-1, called the Q9 but better known by the nickname 'Sparky', which failed to pre-qualify for Le Mans that year. Compared with the fully-electric

powertrains in Formula E, hybrid could be seen as a half-measure, but that would miss the point entirely.

The start of this new decade is an exciting time for motorsport as we witness significant change. If the 2010s was the decade where electrification truly lifted off, this will be the decade when the rest of motorsport looks on alternative energy as not just another gimmick, but a solution to many of the problems facing the industry.

Hybrids may not appeal to the purists, and probably won't be the answer 70 years down the line, but they're a step in the right direction to keeping our sport intact – and that's to be celebrated.

Elsewhere in this issue, Marcus Simmons tells the fascinating story of HWA's rise (page 20) and Toyota WRC technical guru Tom Fowler tells David Evans how he spurned a career in nuclear power for mud and gravel (page 24).



COVER IMAGE

Motorsport Images/Abbott; JEP, McKlein

04

NEWS

Industry update

The latest developments in the world of motorsport engineering

09

ENGINEER'S VIEW

Andreas Roos

Audi's DTM project leader outlines his preferred roadmap for Class One regs

11

DRIVING CHANGE

Lucas di Grassi

Our columnist discusses the delicate task of decarbonising motorsport

12

FUTURE-PROOFING

The scramble for hybrid

Why the BTCC, WRC and IndyCar have all taken the same path for 2022

20

HWA'S EXPANSION

First DTM, now the world

How the outfit best known for its tin-top success has spread its wings

24

TOM FOWLER

Toyota's technical wizard

We meet the mountain bike racer-turned engineer behind the Yaris WRC

28

BAT ENGINEERING

The rejected IndyCar concept

Revisiting the bold vision for IndyCar's future, 10 years on

34

BE AN ACE ENGINEER

Iain Watt

The IndyCar-turned NASCAR-turned sportscar engineer shares his top tips



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Williams will retain involvement in WAE, which is now under new ownership

WILLIAMS ADVANCED ENGINEERING SOLD

Williams Grand Prix Holdings divests majority shareholding to EMK Capital

Williams has agreed to sell a majority equity stake in sister company Williams Advanced Engineering to an independent private equity firm controlled by EMK Capital.

Founded in 2011, WAE is the engineering services business of the Williams Group that owns the Formula 1 team. It currently employs over 300 people working in 40 different technology projects, of which around 20% are motorsport-based, including the Jaguar Formula E programme that is staffed by WAE employees.

Williams said it will retain a minority interest in the company, best known as the sole battery supplier for the first generation of Formula E

cars from its first season in 2014-15 until 2017-18.

“We have rapidly grown WAE from an embryonic one-client start-up to a business with many clients in multiple sectors,” said Williams CEO Mike O’Driscoll.

“The time is now right to sell a majority stake to enable WAE to further scale and develop its technologies. EMK Capital have a proven track record of success, which will enable WAE to take advantage of these emerging opportunities and realise its full potential.”

Meanwhile, WAE has contributed its aerodynamic expertise to JCB’s successful bid to build the world’s fastest tractor. In the hands of

TV personality Guy Martin, the JCB Fastrac reached a top speed of 153.771mph with an average of 135.191mph at Elvington Airfield to smash the previous record of 103.6mph set in June.

Working with technical partner Ricardo, which developed the two 750bhp engines and supporting systems for the 2006 JCB Dieselmax Land Speed Record car, WAE was tasked with reducing drag without changing the tractor’s integral shape.

After completing over 65 CFD simulations using Ricardo VECTIS software to optimise the front bumper, underfloor, cab and rear fairings, WAE achieved a 25% reduction in drag over the standard Fastrac tractor.

BRDC BRITISH F3 GETS ALL-NEW ENGINES AS MOUNTUNE REPLACES COSWORTH

Mountune will supply the BRDC British Formula 3 Championship with new engines this year as the MSV-run series continues with its package of upgrades.

The championship has run with normally aspirated two-litre Duratec engines prepared by Cosworth since its last significant upgrade in 2016, when it morphed from BRDC Formula 4 into its current guise.

The new Mountune engine will continue the same philosophy of its outgoing counterpart, which propelled Matheus Leist, Enaam Ahmed, Linus Lundqvist and



Clement Novalak to series titles, and complements previously announced aerodynamic and bodywork upgrades.

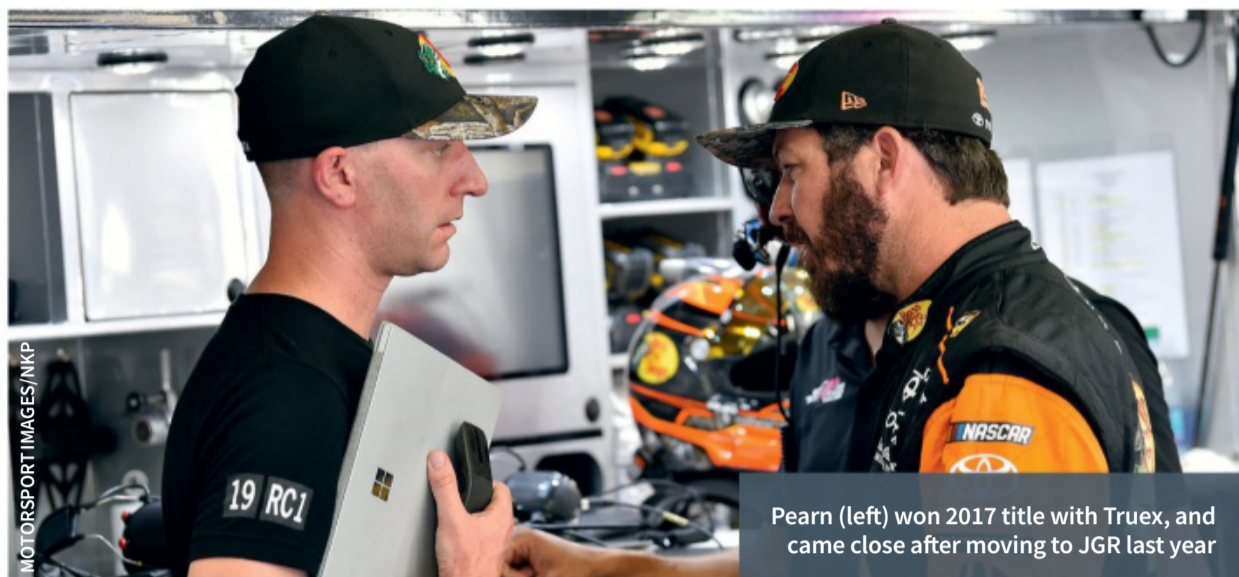
It marks a continuation of

MSV’s relationship with David Mountain’s company, which celebrates its 40th anniversary this year, having supplied Audi-based engines to the

single-make FIA Formula 2 Championship that ran between 2009-12, and before that in Formula Palmer Audi.

“We are delighted to be providing the BRDC British F3 Championship with engines for the 2020 season and beyond, and to restart our relationship with MSV,” said Mountain, who founded the company in 1980.

Mountune is best-known for its work with Ford products, but also built the two-litre boxer engine in the Team BMR Subaru that Ash Sutton took to the British Touring Car Championship title in 2017.



Pearn (left) won 2017 title with Truex, and came close after moving to JGR last year

NASCAR CHAMP TRUEX GETS BATHURST-WINNING CREWCHIEF

The identity of NASCAR ace Martin Truex Jr's new crewchief has been revealed, with 36-year-old Australian James Small stepping into the breach after Cole Pearn's sudden departure in December.

Small, a Bathurst 1000-winning race engineer with Ford Performance Racing in 2013, has worked with 2017 Cup series champion Truex for the past two years as his lead engineer and followed him to Joe Gibbs Racing for 2019 when a sponsorship shortfall forced Furniture Row Racing to close.

Small started his career as a driver, and was team-mate to David Reynolds when Reynolds won

the 2005 Australian Formula Ford title. Small went on to engineer Reynolds at Kelly Racing, and headed to the US with Richard Childress Racing in 2014 after running Mark Winterbottom/Steven Richards to Bathurst glory the previous year.

After Pearn stepped up as Truex's crewchief for 2015, the combination won 24 races and reached the championship-deciding final four on four occasions, with Truex finishing runner-up the past two seasons. Pearn explained that his decision was inspired by a desire to "spend time with my family and actually see my kids grow up."



Audi will face off against Porsche in new GT2 market

AUDI BEGINS DELIVERIES OF NEW R8 LMS GT2 RACER

Audi Sport has begun deliveries of its new R8 LMS GT2, the second car confirmed for the revitalised GT2 category for high-powered, road-based cars that begins this year.

Producing 640bhp, the GT2 is the most powerful model in the Audi Sport customer racing stable and intended primarily as a trackday car, although it is eligible for the European, Asian and US variants of SRO's GT2 Sports Club for gentleman drivers.

Costing €338,000 before VAT, it will be built in the same Boellinger Hoefe, Neckarsulm factory as its production cousin, the R8 Spyder V10. Audi Sport customer racing boss Chris Reinke explained that they share "closely" integrated manufacturing processes.

Porsche was the first manufacturer to commit to the new class, with its 700bhp 911 GT2 RS Clubsport model putting on two 30-minute demonstration races on the support bill of the Spa 24 Hours last July. The Weissach marque has also developed a 935 version, based on the GT2 RS, which takes styling cues from Porsche's 1979 Le Mans 24 Hours winner.

COMMODORE TO RACE ON DESPITE ROAD CAR AXE

The Commodore model will be run in Supercars until at least the end of 2021, despite Holden axing the model from its road car range. The struggling manufacturer confirmed that it will focus its road car sales programme on the SUV and light commercial segments.

The Commodore has been a staple of Australian motoring for more than 40 years and a regular fixture in domestic motorsport, debuting in the Australian Touring Car Championship in 1980.

Holden will honour a two-year factory commitment made last year despite its changing road car portfolio, and is also not ruling out continuing its Supercars programme beyond 2021, when the new Gen3 regulations are introduced.

It's ZB Commodore racer struggled against the controversial new Ford Mustang on its introduction last year, but parity adjustments helped factory team Triple Eight end the season strongly, with victories in each of the last six races.



Jamie Whincup won four of the last six races in 2019

IN BRIEF



JRM RELEASES NEW ROAD CAR

British GT race-winning team JRM has unveiled its plans to build a road-legal version of its Nissan GT-R NISMO GT3 (above). Limited to 23 editions, the 650bhp JRM GT23 will cost £380,000 and be a fully customisable package, available in multiple colour combinations. The Silverstone-based engineering firm, which won the 2011 GT1 World Championship with Nissan, embarked on a thorough redesign led by technical director Elliot Dason-Barber to reduce the overall weight and optimise weight distribution, requiring changes to the engine position, gearbox and suspension architecture.

F1 AERO HEAD GETS PRIZE

Jason Somerville, Formula 1's head of aero, was awarded the Dino Toso Racecar Aerodynamicist of the Year prize at December's World Motorsport Symposium for his work on F1's 2021 technical regulations. The award is named in honour of inaugural recipient Toso, Renault's chief aerodynamicist during its 2005-06 title-winning double, who died after a long battle with cancer in 2008. F1 managing director of motorsports Ross Brawn said the "prestigious recognition" was a "well deserved reward for all the work he and his colleagues have done over the past two years".

OMP BUYS BELL HELMETS

Italian safety product manufacturer OMP has acquired a majority share in Bell Racing Helmets, which supplied half of the 2019 Formula 1 grid including champion Lewis Hamilton (below) and Ferrari's Charles Leclerc. OMP Racing president and CEO Paolo Delprato commented that the unification "marks a revolution in the field of motorsports safety equipment" and was the "most important" acquisition in OMP's 46-year history.





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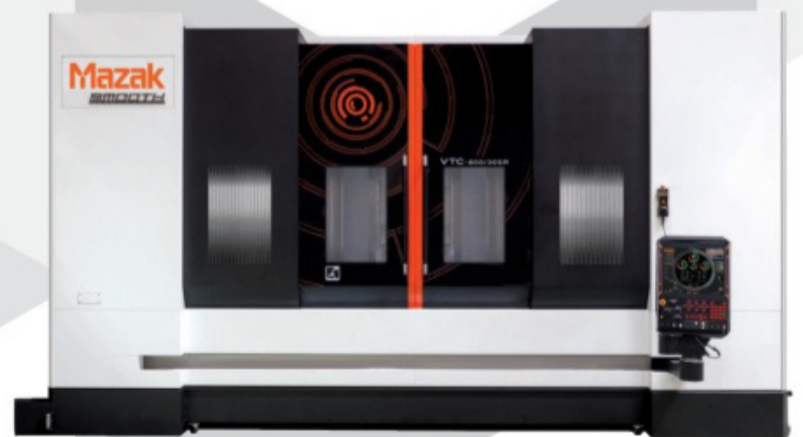
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PIRELLI RETURNS AS WRC TYRE SUPPLIER AS GOODYEAR ADDS WTCR TO ITS GROWING ROSTER

Pirelli will return as the control-tyre supplier to the World Rally Championship from 2021, after 10 seasons of open tyre competition.

The Italian firm, which held the last control-tyre WRC deal up to 2010, supplies junior categories in the World and European Rally Championships and won WRC 2 on last year's Rally

GB with Petter Solberg.

Pirelli, which recently signed a four-year extension to its Formula 1 agreement, saw off competition from current World Rally Car supplier Michelin to deliver all tyres used by Rally1 (World Rally Cars) and Rally2 cars (R5 class) for a four-year term until the end of 2024.

Since Pirelli's 2008-10 spell as an exclusive provider, Michelin has won every WRC event with the exception of Rally GB in 2017, when Elfyn Evans prevailed on DMACK rubber.

Meanwhile, Goodyear has won a three-year exclusive contract to supply the World Touring Car Cup, which has run on Yokohamas since

2006 including its previous guise as the World Touring Car Championship.

It follows shortly after the American brand's move to become the official tyre supplier to the LMP2 class in the World Endurance Championship from the start of the 2020-21 season and from 2021 in the European Le Mans Series.



BMW FE USING RENEWABLE FIBRES IN COOLING DUCTS

The BMW Andretti Formula E team has developed a cooling shaft made from renewable materials, the first time a works-fielded BMW racing car has used parts made with textile fibres.

The shaft has been made using plant-based flax, which produces the superfood flax seeds. BMW claims that it has greater absorption and impact-resistance properties than carbon.

Usage of renewable materials in motorsport has increased significantly in recent years, particularly as a lightweight solution for front and rear bumpers. BMW plans to develop its concept further to use in other racing programmes.

"The flax cooling shaft that we use in the BMW iFE.20 is further proof of the hugely important role of BMW i Motorsport as a tech lab for the BMW Group," said BMW motorsport director Jens Marquardt. "Our ambition is to always use the best suited material for each part."

BMW Andretti's Alexander Sims currently leads the Formula E points standings, having secured pole for both races in Saudi Arabia and converted his first series victory in race two.

MURRAY SUPERCAR TO HAVE RACING POINT INPUT

Gordon Murray Automotive is to work with the Racing Point Formula 1 team on the aerodynamic development of its T.50 supercar, which could compete in the new Hypercar class of the World Endurance Championship.

Former Brabham and McLaren designer Murray, 73, will use a 40% scale model in Racing Point's Brackley windtunnel to develop the car, which features a 40cm fan at the rear to generate downforce. His Brabham BT46B fan car famously won the 1978 Swedish GP, its only race appearance.

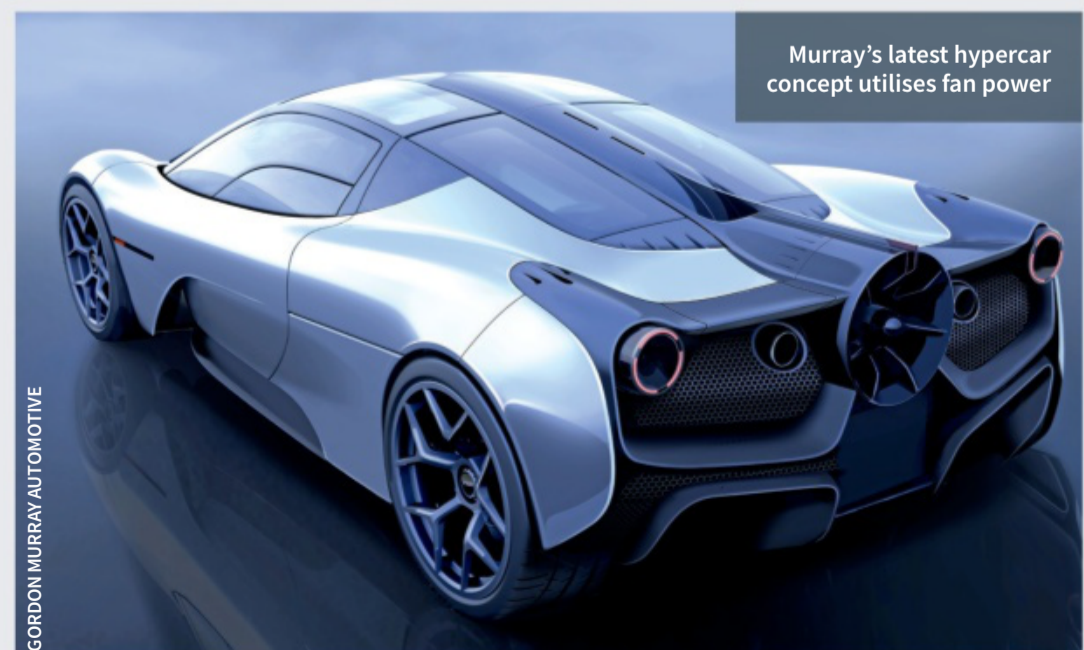
Like Murray's McLaren F1, the T.50 features three seats and a central driving

position. It will be powered by a Cosworth V12 capable of producing 700bhp.

Murray remarked that the ground-effect fan would be "much more sophisticated" than the Brabham's thanks to the input from Racing Point, which finished seventh in the constructors' standings last year.

"We were highly focused on achieving the purest possible form for the T.50, an objective we've achieved through world-first engineering innovations and active underbody aerodynamics," he said.

The completed design will be revealed in May. Just 100 cars will be built, priced at more than £2million before tax.





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ENGINEER'S VIEW ANDREAS ROOS

WHAT I WANT TO SEE FROM THE CLASS ONE REGULATIONS

Audi Sport's DTM project leader sheds light on the current status of Class One convergence talks and offers his own thoughts

As we saw at Fuji in the Super GT x DTM Dream Race, the differences between Super GT and the DTM starts with refuelling. We don't refuel in our series, they have to refuel during their regular season, but the goal is that the base Class One regulation for both series is the same. We held a steering committee at Fuji during the Super GT x DTM Dream Race weekend where we discussed the base regulation, and there are specific topics of differences. But in the end, the cars are getting very, very close between Super GT and the DTM.

Super GT has more freedom at the moment and in the future they still want to keep some aero and engine development. It's not 100% clear if our common aero package will be completely taken over to Super GT, and as long as this is the case the Super GT cars will have more performance and this is what we saw at Fuji. On paper and in reality, the Super GT car has more power and downforce.

We were quicker than them at Hockenheim, but I think the difficult weather conditions played a part there, and Super GT was not prepared for the first experience of the Hankook tyre. But now they have the experience, they could develop a bit and we saw their

performance at Fuji. That's what we expected – the performance of Super GT was much stronger than the DTM.

Balance of Performance was discussed during the weekend and will remain a talking point, but I think in theory the cars should get another step closer in 2020. But while Super GT has these development areas open, they will be still faster. So you have to do an equalisation, or BoP; this is something that will be discussed.

But where would I want to see Class One end up? There are two views. You can see it purely from an engineering point: you always want to have the most complicated and advanced car you can ever have, because as an engineer you always want development.

But you have to see what the manufacturer wants, and especially what the series wants and what the spectators want. In the end, the spectator wants great racing and I think we saw it in the DTM last season.

The fan doesn't see if the car is now half a second slower or faster. But with the overall package, you have to have a bit of a field where you can develop and work because this is what you want to do as a manufacturer. You always want to show that you are able to have or can develop the best package, but it has to be arranged so that everything matches between costs,

CV

2018-present	Project leader DTM at Audi Sport
2017-18	Project leader World Rallycross at Audi Sport
2012-17	Project leader track engineering LMP1 at Audi Sport
2006-11	Team Rosberg technical director, race and test engineer (below)
2005-06	Abt Sportsline test engineer
2004-05	ZF Sachs race engineering graduate engineer
2001-03	Team Rosberg apprentice mechanic and data engineer



“While Super GT has these development areas open, they will be faster”

marketing and development. We work together closely in Germany with [organising body] the ITR, [governing body] the DMSB, and the manufacturers to really make the best of all worlds.

While I worked more openly in the World Endurance Championship LMP1 programme, the DTM is restricted, so the DTM cars are always about attention to detail. You don't have a big window of development like an LMP car, so your hands are tied with the small things in DTM. But every single bit is getting more and more important. Where it may have been a secondary concern on an LMP car, it is a priority on the DTM car because it's one of the few areas you can develop. This makes it very interesting.

World Rallycross was a completely different experience – it was Audi's return after a long history in rallying on gravel. I took the uncommon route of LMP racing to rallycross, but as an engineer it's about analysing the details. You think, 'OK, here's where I do my work now!' ■



Super GT cars had the edge over the DTM runners at Fuji



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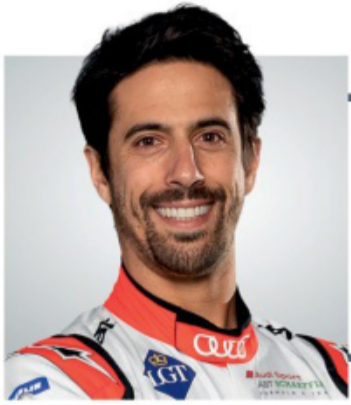
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DECARBONISING MOTORSPORT – AN IMPOSSIBLE TASK?

F1's plans to be net carbon zero by 2030 look good on paper, but there are many questions that still need to be answered

First of all, the decarbonisation of motorsport is a very complex subject. If motorsport exists purely for entertainment and has no purpose for improving technology or generating real societal value, then the Greta Thunbergs of the world will say, 'Why should it exist in the first place?' And they would have a point. It's a worrying idea, because some governments could accept it as a fair proposal and ban it.

Apart from Formula E, motorsport has been reactive to this topic and not proactive. Now companies are not moving forwards towards motorsport because their guidelines say they have to be either sustainable or renewable, so they cannot sponsor a sport that might be damaging to society.

Formula 1 has realised that it has to go sustainable or go obsolete, so they came up with this new programme that promises to be net carbon zero by 2030. It's a starting point, but 'net zero' doesn't mean anything. It really depends on the metric you take.

Do you consider all the carbon produced in every single point of the chain? Do you include the energy to run the machine that builds the tyres, or the energy used to melt the iron that builds the machine? For example, carbonfibre is very energy-demanding to produce and for each car a team produces, they make seven times

the amount of parts, so the amount of carbonfibre used to make the cars is huge. Will they be decarbonising that too?

This year I decided to offset the emissions I produced by flying. I worked out that I'll have to plant 1780 trees, which will cost me about \$2000 to do. But is this a viable solution for F1 in the long term? Does it really need to offset all the logistics carbon footprint or just add value to the part of the chain that matters?

The current F1 engine is very, very efficient but it is not viable commercially due to its complexity and the fact that emissions are not zero. Actually, regardless of which kind of fuel used, even e-fuels, if

“Net carbon zero doesn't mean anything, it really depends on the metric you take”

it is burned in the cities where people live, the harmful effect on individuals' health from those fumes and gases is still a huge society problem. In my opinion, it's not enough and to be net carbon zero by 2030 will be unachievable if you put the metrics by the right approach – even Formula E will have a hard time to achieve that.

Decarbonisation of motorsport also

needs to be cost-effective, which is the hardest point to solve. Now the FIA wants to introduce hybrids into the World Rally Championship, but no one wants to pay for it. It's the same for the World Endurance Championship. It used to be mandatory for manufacturers in LMP1 to have hybrid power, but it won't be anymore in hypercars.

To make motorsport carbon-free at the same time as reducing cost can only be done by developing new technologies, so the FIA has to come up with rules to force change. For example, teams will only use organic fibres to build the cars if it's mandatory to do so, because they are slightly heavier than carbon. But if it's no more expensive and

achieves just a little bit less performance, then who cares? The FIA can also tune the rules towards a more sustainable future – until 2017, the F1 fuel limit was 100kg per race and now it's 110kg because the greater aerodynamic performance caused the cars to use more fuel. So the efficiency of the car in terms of fuel consumption per race has actually decreased in three years, and that's counter-intuitive for the future.

Differentiation of performance in the future should be about sustainability too. For example, teams are allowed 20 tyres per weekend – this is a huge amount of waste and material used. There are ways of doing it – it could be that teams using fewer tyres in one weekend can take weight out of the cars and then there is a trade-off – but I don't see a unified force yet.

F1 is going towards a more sustainable future, but everything it's doing is very long-term, 10 years from now. I believe the agenda should be pushed much faster if we want motorsport to attract more young fans, investment, and government support. ■

F1's bosses have targeted being net carbon zero by 2030, but is that soon enough?



ANDRE



Aggressive aero introduced for 2017 made F1 cars less fuel efficient

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THE SCRAMBLE FOR HYBRID

Against the seemingly irresistible rise of electrification in mobility, why are series organisers turning to hybrid as the answer to the big sustainability question? We ask the coordinators of three major championships to explain

**BY JAMES NEWBOLD,
WITH DAVID EVANS,
MATT JAMES AND
DAVID MALSHER**



During a visit to the FIA GT1 World Championship's Nurburgring round in August 2010, FIA president Jean Todt expressed his hopes that all FIA-endorsed series would incorporate hybrid technology by 2013. His call to arms didn't materialise in that timeframe, with the negative reaction to Formula 1's V6 hybrid era dissuading many from taking the plunge, even before checking the balance sheets. But WTCR promoter Francois Ribeiro's projection of a "brutal,

violent" future for pure combustion motorsport is widely shared and by 2022 several major series will incorporate hybrid power for the first time, with many more set to follow suit.

On paper, you couldn't get a more diverse sample of championships than the IndyCar Series, World Rally Championship and British Touring Car Championship. They compete in very different environments – the Indianapolis Motor Speedway versus the Safari Rally, anyone? – cater to very different audiences, have

differing levels of manufacturer involvement – Hyundai's entry into the BTCC with the Excelr8 Motorsport-built i30 is unlikely to register in the same postcode as its support for the factory WRC programme – and are in varying states of health. IndyCar is on the up after its buyout by Roger Penske, the WRC still recovering from Citroen's abrupt departure in November. Yet each has drawn a line in the sand and committed its immediate future to hybrid powertrains.

This is particularly notable given the



WHAT WE KNOW SO FAR...

Of the three series approached by Autosport, the BTCC is the most advanced in its plans for 2022, with Cosworth Electronics signed up to provide hybrid systems on an annual lease basis for £25,000 each. A single 60-volt battery will drive a single motor integrated within the current Xtrac gearboxes, providing a boost of around 40bhp for a maximum of 15 seconds per lap. In place of ballast, boost will be restricted in line with a car's success. Upgrades to the current NGTC machines to facilitate the systems are expected to cost around £60,000-£70,000 each, but will be spread over several seasons, with cars eligible to compete until 2026.

Cosworth has supplied electronics including steering wheels and data-logging systems to IndyCar since 2012 and is likely to be among the three companies the series is talking to. A final decision is expected in the first quarter. Few details are known, but it is intended that a hybrid system will push peak engine output towards the 900hp mark from its current 700hp and make its existing push-to-pass system – 200 seconds of boost per race on road and street courses – more effective.

Likewise, little is known about the WRC's tender, with FIA rally boss Yves Matton admitting its efforts to introduce the finalised technical regulations "will be a quarter later than expected". It is understood that its usage will be limited to slower sections of competitive stages and road sections by the FIA. Matton says the delays aren't solely over the hybrid package, but defining a common safety package for the next generation of cars.

rise of fully-electric racing, with Formula E hoovering up manufacturers from other series – the World Endurance Championship lost LMP1 manufacturers Audi and Porsche despite a strong hybrid element, while Mercedes abandoned the DTM after 19 years of factory support – and the arrival of ETCR set to shake up the status quo in touring cars.

The DTM has confirmed it will spurn the fully-electric path and include spec hybrid components from 2022, the IMSA SportsCar Championship's DPi 2.0 formula

is being set for some degree of hybrid involvement from 2022, and hybrid technology is already being introduced to the KCMG-built Formula 4 machines for the Motorsport Games, so it could be argued the internal combustion engine still has some life in it yet. Even NASCAR is thought to be looking at incorporating hybridisation, showing a recognition that change is necessary without committing itself entirely to an all-electric future, with hydrogen fuel cells set to offer another alternative in the near future.

But where western powers launched the 'scramble for Africa' in a bid not to be left out of the new imperial age in the late 1800s, there is much more to this 'scramble for hybrid' than not wanting to be left behind in an age of changing mobility. Each series has its own reasons for joining the hybrid gravy train, so we approached FIA rally director Yves Matton, IndyCar president Jay Frye and BTCC series director Alan Gow to see how their priorities and challenges have differed. ►

How would you characterise the health of your series before the announcement, and how has it changed, if at all, since the announcement?

Jay Frye [JF] We've seen several years of continued growth and we're excited about the new aeroscreens coming in 2020, the new cars coming [in 2022] and, more recently, excited about the new ownership announcement. But obviously you always want to accelerate the rate of growth and while it's too early to say if the move to hybrid engines has done that – people want to see what you've done, rather than just listening to you say what you're going to do – in terms of people talking about us and talking to us, I'd say that it has had a good effect.

BTCC grids have been full thanks to stable regulations



“Clearly motor manufacturers and the man in the street are now starting to drive more cars with electrification involved, be it hybrid or full electric” Alan Gow

Alan Gow [AG] The health of our championship is the best it's been for decades, it's at an all-time high. It hasn't had any changes – we can't have any changes, we were already at the top with a full grid of cars.

Yves Matton [YM] I will say it's part of an ongoing process, but the health of the WRC for the moment is good. The feedback I have is that the manufacturers who are involved for the moment show interest in the regulations we are working on with

them hand-in-hand and they are interested to stay in the future. We will be 100% sure in the second quarter of the year.

Some other manufacturers are also following it, not involved in the technical discussions but have asked us to show them what we are working on and to meet them again once we are in a position with full technical regulations. It's not only the hybrid, there are some other main modifications in the philosophy of the World Rally Cars, but for sure [hybrid] was a big part of it.

Citroen's abrupt exit puts pressure on WRC to keep its remaining manufacturers



Frye hopes hybrids will help drivers restart their cars after an incident





Gow is confident the BTCC is on a strong footing

JEP
motorsport
IMAGES

What was the most significant reason behind the move to hybrid?

AG Relevance. Relevance to the world around us. Clearly motor manufacturers and the man in the street are now starting to drive more cars with electrification involved, be it hybrid or full electric. And we need to keep relevant to the world around us in the marketplace. We've always done it, that's why going back to 1991 we went to two-litre, that was a reason for doing that.

YM It's the trend of the current range of cars that the manufacturers are putting on the market and will have in the future in their range. The evolution of society means that hybrid or electric cars have

a great future. Maybe some other technologies will be part of the future, but for the moment it's this kind of technologies where the manufacturers are putting most of their marketing focus.

The road conditions we are using will be challenging for this technology and that's also maybe why manufacturers are interested to use this technology in our real conditions, because hybrid will apply to types of car that is maybe not the case for the moment. We will be able to show that hybrid is able to go everywhere.

JF It's important that we stay true to our DNA of being fast, loud and authentic, so whatever we did next was going to have to meet that criteria. The ideas we've come up

with have addressed a couple of areas. One is safety, whereby the drivers can restart their cars if they stall during a spin, so they are exposed for less time on track and our AMR Safety Team aren't exposed on track so often trying to bump-start stalled cars.

Then there's the racing aspect – having drivers able to restart their own cars means there should be less call for full-course cautions, so the pace of the race increases and drivers who have pulled a lead aren't going to lose their advantage as often. And then the other thing, going back to our original criteria – the 'fast' part – is that the hybrid gives us a big jump in horsepower. With our original proposal, ►

keeping the current basic engine architecture [V6 twin-turbo] but increasing capacity from 2.2 to 2.4 litres, we were aiming at 880, 900 horsepower by 2025. With the hybrid, we expect to be approaching that figure much sooner, so speeding the cars up, while also improving safety measures, are two major boxes checked by the hybrid units.

What would the consequences of not following this path have been?

YM It was quite clear from all the manufacturers who are involved in the championship now, and the manufacturers who could have some interest in the future, if we were not going to hybrid it would mean the World Rally Championship doesn't make sense for them. It's as simple as that.

AG In time, the series would have lost its relevancy, certainly to manufacturers and also to large sponsors, because nowadays electrification and hybrid is always on the

agenda every time you talk to a sponsor. It would have made a big difference going forward, the championship would have been a lot worse for it.

JF It's hard to predict what might have been by going another way, but it's important that, within the framework of a basically spec series, we are always looking to make progress in every aspect. In a spec series, it's easy to allow things to stay as they are and that's when you start to lose the technical relevance because you're no longer cutting edge and that part of the sport's appeal starts to fade.

There's no denying that going hybrid makes our on-track product more relevant to our current OEMs, Chevrolet and Honda, and other potential manufacturers, so the consequences of not going hybrid would be losing some of our appeal to manufacturers and fans who are into the engineering side of the sport, and also ignoring the opportunity to improve safety.

IndyCar plans to attract new OEMs with hybrid move



Matton says compromise has been key to satisfying WRC manufacturers





Was there any pressure to be seen to be doing ‘something’? Do you think this will be amplified for series that don’t have a hybrid element in future?

AG To be seen to be doing something, that’s reactive. We took a proactive stance on this, we were the first touring car championship in the world to put a pathway into hybrid, so we weren’t seen to be doing something, we were actually ahead of the curve. Being seen to be doing something is not relevant to us. A lot of championships in the next few years will be reacting, being seen to be doing something, but that’s certainly not the case for us. Not every touring car series in the world should go hybrid or electric because people are going to be driving non-hybrid, non-electric vehicles for a long time yet.

JF We speak to our manufacturers all the time and other potential manufacturers on a very regular basis, and they have some different hot-button topics. But if you drew up a chart of all those criteria you’d also see plenty of overlap, and one of those criteria that they want to see from any new racing series they might invest in is running

hybrid-supported engines. We have the opportunity to do that, and going this route doesn’t hurt our mission statement – to be fast, loud and authentic. In fact, this path enhances it, so we’re excited about it.

YM I think they are two different things. The first thing is hybrid is part of the process for the WRC to be more sustainable. Before the hybridisation of the World Rally Cars, we are the only championship who has [FIA endorsed] three-star events for sustainability. And we continue to work on other subjects – not only about the cars – to see how we can improve the championship, with working groups with the manufacturers and other stakeholders.

The WRC is a pro-am championship and the cars that are not World Rally Cars will stay as non-hybrid cars for the moment; it’s not the same potential tool for manufacturers because mainly it’s more customer products with a business around it. The approach is quite different. That doesn’t mean in the future we will not introduce other technologies or approaches for sustainable or different alternative

energies in the championships, but this is more longer term.

What is the strategy for its roll out? What will the biggest challenge be?

JF We got the 10 hybrid system RFPs [requests for proposal] back and three are of particular interest to us. When it comes to deciding which system we go with, both manufacturers [Chevrolet and Honda] will be involved in that process, and we expect to announce it in the first quarter of next year. Then we’ll decide a timeline for testing, the engine specifications and so on.

AG Keeping a cap on costs isn’t an issue to us because when we set out our stall of going hybrid, we put a very firm cost-cap on it. That’s not just a target to aim for, that’s all it can cost, it’s a contracted amount with Cosworth and the teams each year. I have no doubt that it’s a bit of a loss-leader for Cosworth because it’s their opportunity to make a mark in hybrid; they will get a lot of business out of it.

YM It will be common for everybody in the three first years, with a common software/hardware strategy. We want to ►

“Hybrid is part of the process for the WRC to be more sustainable. Before the hybridisation of the World Rally Cars, we are the only championship who has [FIA endorsed] three-star events for sustainability” **Yves Matton**

have hybrid technology, but we don't want to have the cost going much higher in comparison with the package we have for the moment.

The idea is to use this on road sections and to use it partly on special stages like a kind of power boost, but we want to keep the same level of performance, we don't want to improve the average speed. But it's not defined at the moment, we still have to finalise how it will work.

What has the feedback been like?

AG Absolutely positive. If you put a percentage on it, I'd say 95%. Probably the 5% that wasn't positive were people that still have a hangover from Formula 1, when the engines went quiet and they're worried that we would have the same effect. But obviously it won't, it doesn't drive off the exhaust system – that's why hybrid in F1 went quiet. Ours drives off the gearbox, so it has no difference to the engine note.

JF Honestly it's been very good. Right away, I'd say 80% were positive about it. Initially the other 20% were questioning what we were doing – is IndyCar going electric? That type of thing. But once we explained what we were doing, why we were doing it, I think we won over the doubters among the fans. As for the manufacturers, you consult everyone



LEVITT
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Gow says response to hybrid plan has been '95%' positive

JEP
motorsport
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you can and you try to meet as many of those different criteria as is practically possible, while also trying to get them on board with the way we're evolving and staying true to our DNA.

YM The manufacturers who are involved for the moment, I have positive feedback from all of them. The manufacturers are using this championship as a marketing tool, so we knew that there is no future for the manufacturers if there is not a hybrid connection for them.

WHY ETCR IS GOING AGAINST THE GRAIN

While hybrid has been the popular choice for many to follow automotive trends, WTCR promoter WSC Group has taken the bold step of forming an all-electric touring car series, ETCR, which is scheduled to begin in earnest next April after a few promotional appearances later in the year.

SEAT's performance brand Cupra, Hyundai and most recently Alfa

Romeo – represented by the Romeo Ferraris team that built the race-winning WTCR Giulietta – have all announced that they will build cars for the new series, while Romeo Ferraris has followed Audi and VW out of the WTCR exit door.

Series boss Marcello Lotti has targeted setting up regional ETCR championships from 2022, and professed himself pleased with

what he has seen of the Cupra (right) and Hyundai in testing so far.

"We reached our target in performance and also cost control," said Lotti in Macau. "Clearly, costs have to be at least affordable – not like TCR, but considering it's electric it will be affordable."

But was hybrid ever considered? "We decided to go full electric for ETCR because for us there's no sense

to have this bridge to go to new technology," says Lotti. "We considered it was much better to decide to develop immediately a full-electric vehicle, and I think it was a nice decision.

"Who knows? Tomorrow, probably hydrogen [will be the best option]. I think the best one could be nuclear! Why not? 15 years ago it was a fax, not an email."



“I’m always conscious of not hurting our smaller teams. We always do everything we can to get the best deal for the entire series” Jay Frye

Frye (right, with Dale Coyne) has put experience working in teams to good use in building relations



Have you had many complaints, and what have they focused around?

JF No, because we wouldn’t be able to supply them with accurate figures yet. One of the things we’ve always taken seriously is the economics of the sport, and I have the perspective of being a former team owner and director in NASCAR [with MB2 Motorsports and Team Red Bull], so I’m always conscious of not hurting our smaller teams.

We always do everything we can to get

the best deal for the entire series. To do that, we always ask ourselves what’s the return on investment by choosing this path or that path, and we consult the team owners and managers for their perspectives too. We have a lot of smart people in our paddock, so why wouldn’t we value their input? If they’ve contributed to the decision-making process, there are going to be few complaints when it’s done.

YM The main difficulty to finalise the technical regulation about hybrid is the fact that all the manufacturers are not involved with the same kind of hybrid technology. And they don’t all use the same marketing claims for their technology, so it was the best compromise between all the manufacturers to be sure that the technology would make sense for them.

The third point is to be sure that we will have as efficient as possible a cost cap for this technology. We are still working on it, because we have several examples that when hybrid technology was introduced into motorsport in other disciplines, it was increasing the cost quite significantly.

AG Any time you introduce new regulations there will be people that would rather you don’t because it’s going to cost them money. It doesn’t matter what it is, any change of regulation costs money,

and those teams that can’t afford it are always the ones that complain the most.

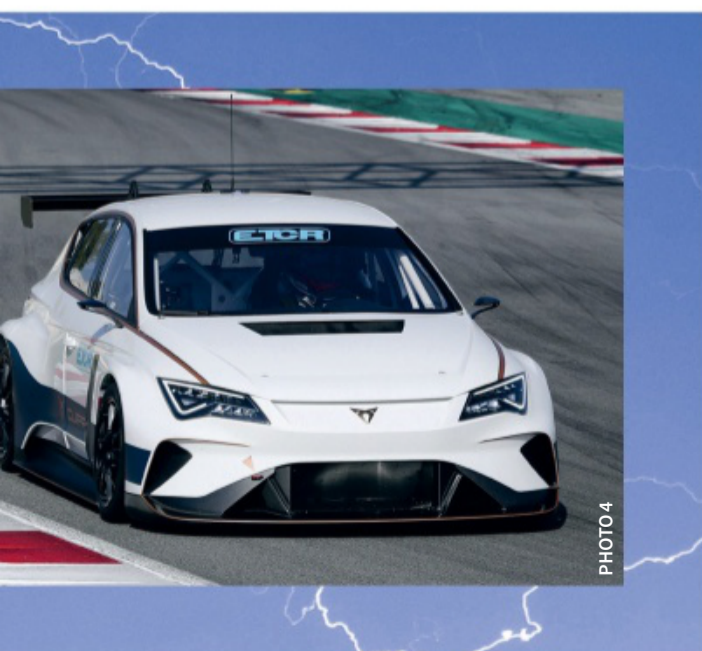
I understand that, but if you took that view then you would never change the regulations and never do anything. The only negative from the teams is purely from the basis of, ‘If I want to stay in then I’ve got to spend more money’. But the teams at the front half of the grid are all saying, ‘We’ve got to do it, fine, let’s get on with it, it’s just a new regulation’.

Will there be any further benefits that we can expect from this?

AG Probably an improvement to the racing, not that we need much! But it puts an extra element into the racing. However good the racing we have now is, it will be better by also adding the hybrid element because you’ve got what you’ve got now and the push to pass and push to defend.

JF I can’t go into specifics, but when we got the RFPs back from potential hybrid suppliers, there were things we learned from – technologies that are coming out and that everyone is not necessarily aware of right now. A couple of years from now, this system could look very different from how it is today. But as long as we continue to be fast, loud and authentic, IndyCar is open to looking at new technologies that create even more relevance, and being the testbed that it was for so many years.

YM Using hybrid technology in motorsport at a high level could help us with [understanding] what is a good behaviour with hybrid cars. There are more and more hybrid cars around, but still it’s not clear for everybody what is a good behaviour, and I think it will be possible to make a good link between mobility and motorsport to give people knowledge on how to react with hybrid technology and high voltage inside the cars. ■





FROM THREE-POINTED STAR TO MULTI-TASKING TSARS

HWA has expanded massively over the past few seasons under the leadership of Uli Fritz. He explains how a DTM titan has become pervasive throughout motorsport

BY MARCUS SIMMONS

It's a racing powerhouse with so many fingers in motorsport pies that you'd think it's in danger of running out of fingers. Based on revenue, it's doubled in size over the past six years. In the past 12 months it's been heavily involved in Formula E, DTM, Formula 2, Formula 3, GT3 and GT4. No wonder German giant HWA has been attracting ever-increasing attention to its base in Affalterbach, 60 miles south-east of Hockenheim – and, crucially, not far from the HQ of Mercedes.

Mercedes DNA runs right through this company, which chipped off from AMG in 1998. AMG was founded in 1967 by two former Mercedes employees, Hans Werner Aufrecht (the 'A') and Erhard Melcher (the 'M'), and based in the village of Grossaspach (the 'G'). AMG, which had moved to Affalterbach in 1976, really rose to prominence as the DTM rapidly gained international recognition in the late 1980s, and it became the factory Mercedes 190 team in 1990. In late 1998, just as the hugely successful AMG Mercedes CLK

GTR programme was finishing, Aufrecht sold his majority shareholding in AMG to Mercedes parent company Daimler, but set up a new company – HWA (his initials) – to look after Merc's racing activities.

A transition phase resulted in Aufrecht being completely bought out of AMG by Daimler, while HWA's racing activities centred upon the DTM, with Aufrecht rightly described as the 'godfather' of the revival of the series for 2000. In 2002, HWA also began tuning two-litre Mercedes engines for use in the German Formula 3 Championship, which grew into the F3 Euro Series in 2003 and, in turn, the FIA F3 European Championship in 2012. Through these successive periods of F3, it always supported the DTM, so HWA was renowned as a very German-centric company.

Then, in late 2013, an ambitious marketing man named Ulrich 'Uli' Fritz transferred from AMG to HWA – just as the Mercedes fortunes in the DTM were taking a downturn. Within a year he was installed as CEO.

"I have to say I have always been a motorsport enthusiast," says Fritz. "I was working in AMG and responsible for event marketing, and part of this was branding and sponsoring, so I was involved in the motorsport activity, which was mainly DTM."

At AMG, Fritz became the architect of the launch of the SLS AMG GT3 customer racing programme in 2010, with HWA – as the partner company for Mercedes/AMG racing activities – responsible for the design, build, development and aftersales care. As GT3 racing has exploded over the past decade, this has become a significant part of HWA's activities, augmented by the addition of the production-based Mercedes-AMG GT4 project in 2017.

"There started to become more and more racing in my daily life, and there was more and more contact with HWA," adds Fritz. "It was more or less a logical step [to join HWA]."

As Mercedes struggled in the DTM, Aufrecht's long-time cohort Gerhard Ungar, who had been with AMG/HWA for

Paffett's DTM title in 2018 ensured Mercedes departed on a high note



COLLINS
motorsport
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HWA was formed in 1998, just as the top GT1 class died

HWA is now a force in single-seaters, with teams in F2 and F3 (below)



TRIENTZ
motorsport
IMAGES

“When I joined, we had a revenue of €55-60million. Now we're twice as big”

leave the company, and I was the only one left!”

Aufrecht, now 83, remains chairman of the supervisory board of HWA. He retains a 40% stake in the company, which was listed on the

Frankfurt Stock Exchange in 2007. One shareholder was current Mercedes F1 team boss Toto Wolff, but Fritz explains that after he “developed into his new role at Mercedes, from then onwards he gave away his shares because it would have been a conflict of interest”. Daimler and AMG have never been shareholders – “HWA is completely independent,” says Fritz.

The expansion has really happened under Fritz, with the GT customer programme he instigated while at AMG, and with the more recent moves into Formula E, F2 and F3 (as a team, rather

than an engine supplier) under the HWA Racelab banner. “When I joined, DTM was the biggest part of the company, and the customer sport was growing but not as big as it is today,” says Fritz. “We had a revenue of €55-60million and now we are twice as big.” Just as well, because Mercedes announced in 2017 that it would quit the DTM at the end of 2018.

“Of course it was a hit for us, but in every challenge there is also a chance,” asserts Fritz. “We just sat together and made out what chances we could generate out of this. Obviously Formula E is one chance we generated, because you get in contact with new technologies and everything, but also deciding we would enter F3 as our own team, and F2 as a partner of Arden at first [before HWA took over completely for 2020]. It's a strategic decision because we want to develop our ▶

26 years, stood down as CEO and technical director in May 2014. Fritz replaced him as CEO, and DTM titles followed with Pascal Wehrlein in 2015 and Gary Paffett in 2018. “That [replacing Ungar] was not really planned,” recalls Fritz. “However, when I came here in 2013 it was clear that it was already a challenge in DTM, that we would not fight for the title. The idea was to join the board of management and to give more freedom to Gerhard to look after the technical side of the company. However, 2014 didn't start well, and based on that it was decided that Gerhard would

HWA boss Fritz has big plans for the company

young drivers, our team and engineers. Additionally, we thought with all the infrastructure we have here at HWA it would be logical to have these programmes in-house, and now we are really happy to have international single-seater teams here at Affalterbach.”

The move to FE came as a customer of Venturi for an exploratory 2018-19 season, before the entry of Mercedes as a works entity for 2019-20, with the team effectively operated by HWA in conjunction with the manufacturer’s F1 HQs in Brackley and Brixworth.

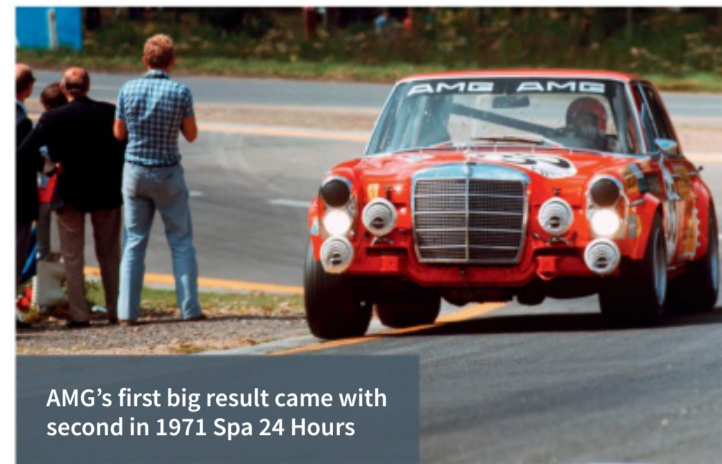
“To be honest, the FE team of today is the championship-winning DTM team of 2018,” says Fritz. Key to this are Martin Marx and Hubert Hugle as director of race operations and head of development respectively. Both are long-term HWA men, Hugle going back to the 1997-98 AMG days on the CLK GTR. HWA also snaffled Franco Chiocchetti away from the Abt Audi team to lead the programme.

“Our idea is to keep people here in the stable and to develop them rather than always have people from outside, but it’s important to mingle them up, to get new influences,” explains Fritz. “I’m not the biggest friend of always giving the best

positions to people from outside, because that often kills the motivation of the guys that are here.”

Adding further to the workload upon Marx and Hugle was the late coming-together of the deal with R-Motorsport parent company AF Racing to design, develop and run a team of Aston Martin Vantages in the DTM in 2019 under a partnership dubbed Vynamic. Paul di Resta and Daniel Juncadella were transferred from HWA’s Mercedes DTM team to lead the Aston line-up, with di Resta keeping his engineer Carlo Vermeulen, data engineer Franz Stauske promoted to run Juncadella’s car, and ex-Force India F1 man Bill Pearson staying as chief race engineer. The relationship broke down at the end of 2019, leading to a split between AF and HWA, but the HWA-built Astons will continue to run in 2020.

“It wasn’t easy because we were quite late on the timeframe of starting car development and testing it in a bit more than 90 days,” says Fritz. “It was a big challenge, and the results don’t show how much effort and passion is in the project. It’s a private initiative, you’re racing against factory efforts from BMW and Audi, so it’s not easy for a private team,



AMG’s first big result came with second in 1971 Spa 24 Hours

especially on the financial side, which directly impacts also the technical side.”

DTM rookie Jake Dennis, formerly a race winner in F3 with HWA-built engines, points out: “Mechanically the car was very good and we never had any failures. It was the engine where the biggest gremlins were.” Dennis adds that HWA’s DTM expertise did help operationally: “We don’t have regrets, it’s just that reliability didn’t work out. And if you’re not competitive the relationship breaks apart.”

For last year’s F2 partnership with Arden, HWA employed all four race engineers (Mathieu Meyronne from Prema, Nicolas Morel from Carlin, and ex-Toro Rosso F1/Prema/Hitech F3 man John McGill, as well as taking over the contract of Arden incumbent Jose Fontestad). Arden’s Kenny Kirwan stayed on board as team manager, with the mechanics and other staff also Arden people. The late Anthoine Hubert, as reigning GP3 champion, was signed as lead driver. “It allowed us to have a driver like Anthoine,” says Kirwan, “and it did allow us to attract engineers that wouldn’t have been on our radar. We had some access to pitstop expertise from the DTM. It hasn’t been massive, but it’s been a steady stream of resource.”

Now that HWA has taken over the

“[HWA] allowed us to attract engineers that wouldn’t have been on our radar”



Kirwan (left) says HWA input was vital to attracting Hubert and top engineers to F2





F2 team completely from Arden, Kirwan is moving to Germany along with three of the four engineers (minus McGill), with many of the other places in the team filled with redeployed staff from the DTM Aston project. F2 veteran Artem Markelov (a Kirwan contact) and Giuliano Alesi (the Ferrari junior sourced by HWA) will drive in 2020.

Thomas Strick, who engineered Paffett to the 2005 DTM crown and led HWA's side of the customer Mercedes GT project from 2010, is sporting manager across F2 and the FIA F3 team. For the junior single-seater effort, HWA recruited ex-ART GP3 man Christophe Boittin and former Motopark Euro F3 grafters Didier Dumont and Diego Fernandez as engineers. Thomas Grosse, who previously headed the F3 engine-building programme, is team manager. Jake Hughes (also ex-ART) led the driving strength and looks set to stay on in 2020, potentially joined by Ferrari protege Enzo Fittipaldi and Red Bull-backed Jack Doohan. An interesting combination of F1-connected talent, especially as Hughes works for the Mercedes F1 and FE teams as a simulator driver.

"It's enormous," laughs Hughes of the HWA base. "I've been to a few F1 teams and it's not dissimilar. I've been there quite

a few times and I still get lost! On the first day, I walked in the door and realised what a responsibility I had to perform for them."

"We have a lot of respect for ART, Prema, Hitech," says Fritz of the F3 venture. "They are in the sport for years and are the benchmark teams. We at HWA don't just go there to be part of it – the aspiration is clearly to win. But on the other side you have to be a little bit humble, and take one step after the other. We treated 2019 as a learning year, competitive from race to race, but we also had a lot of bad luck. We also want to be part of F2 because we believe that you need to offer the complete package to be attractive on the market."

In old-school F3, engine supply has dropped off a bit (from 12 cars in the swansong FIA F3 European Championship round in 2018 to six in the 2019 Euroformula Open finale, plus a small presence in Japanese F3). Both series introduce the new Dallara 320 this season. "Euroformula is developing pretty well at the moment, I have to say," enthuses Fritz. "It's good to see that, and it's a good approach for our business."

But the far bigger customer effort is in GTs, including a new-model Mercedes-AMG GT3 for 2020. "We are providing parts for the teams, we also have

subsidiaries in Australia, the US and Asia to make sure our customers are served with the necessary technical support, and with parts on site, because this programme has grown so much," points out Fritz. It's a source of great pride to Fritz, from his initial role in the project: "In 2010, I would say GT3 was a lot of gentleman drivers and amateur sport, but this has completely changed. Now it's a highly competitive level, and we have GT4 which is maybe stepping into the place of what was GT3 a few years ago. The great benefit for the customers is that they get good service, and they don't have to work on development of the car because they get handed a perfect product."

And then there's the almost-unquantifiable Extreme E – electric competition in the world's remotest areas – which HWA will enter. "Formula E was something completely new but somehow in the end still logical – formula cars on a race track," says Fritz. "But Extreme E is something you cannot put into a basket. It's a new invention for motorsport – maybe not even motorsport, it's a lifestyle event and combined with the aspect of sustainability, that makes it really interesting. We're proud to be part of that."

Will HWA and its over-300 employees be part of anything else? "We are always open, but we have enough on the table and now we want to consolidate that and make them successful," says Fritz. "We had a learning year in F2 and F3, and in FE, and now we want to harvest the fruit. You need to stay focused in motor racing otherwise you will not be successful." ■



THE MIND BEHIND TOYOTA'S WORLD RALLY DOMINATOR

A little white lie to Christian Loriaux gave Tom Fowler a leg-up into rally engineering, and he's made good on the opportunity at Toyota – via a stop-off in nuclear energy

BY DAVID EVANS



When the cars left for Monte Carlo. Seriously, it was that close.”

That's right, only when the cars were shipped out for the season opener in January 2017 did Toyota Gazoo Racing's technical director Tom Fowler genuinely believe the manufacturer's first works assault on the World Rally Championship since 1999 would be ready to take the start ramp.

Motorsport is full of stories of tight turnarounds and close calls, but this

one was about as close as they get. Work began in earnest on the Toyota Yaris WRC in April 2016. That's nine months to build a World Rally Car from scratch.

“Actually, we built two,” says Worcestershire-born Fowler, quietly correcting the follow-up question.

“The problem was we had absolutely nothing to base the car on,” he adds. “Don't forget, we were coming in at the start of a whole new regulation cycle, there were no 2017 cars around. Basically, we built a

car really quickly, got some wheels on it and started testing as soon as we could. While we were testing that first car, we started working on the real one, taking the evolutions from the first.

“If you look back at pictures from the early tests, you can see the car bears very, very little resemblance to what came in Monte the following January.”

The problem for Fowler and four-time World Rally champion Tommi Makinen's team at Puuppola in Finland

was that they weren't just building a car.

“A factory, parts department, test team, everything!” says Fowler. “I'd worked on tight deadlines for rally cars before – some of the build times at M-Sport were close. But the difference was that when we started work on the car for M-Sport, you'd put in a request for parts and those parts would be delivered. And mechanics would come to work.

“At Toyota we didn't have a system for ordering parts. We had to make one. And then we had to employ the people to use the parts. In those early days, there was no such thing as ‘that's not my job’. Everything was everybody's job. There was no light at the end of the tunnel, just another train coming at us. The timeframe was scary.”

Fowler, 37, is much more relaxed today. It's Christmas holiday time and he's even managed to snag a day off.

Let's rewind a few years. And then a few more, when Fowler's focus on competition was based on just two wheels. Through his teens, he was a keen competition rider in both road and mountain bike races. And his fascination was multifaceted.



Latvala scored a podium on the Yaris's debut on the 2017 Monte

SUTTON
motorsport
IMAGES



Tanak dominated last year en route to the drivers' title, scoring six wins

MCKLEIN

MCKLEIN



Toyota's test mule clocks up the miles in 2016

“Everything was everybody’s job. There was no light at the end of the tunnel, just another train coming at us”

“I really enjoyed the competition,” he says, “and obviously I enjoyed riding. But as well as that, I enjoyed the chance to work on the bike and try to make a difference from the mechanical side. I would take the bike to pieces in the garage at home, look at all the parts and try to make it more efficient with better performance. And I’d try to take away some of the parts to make it lighter.”

“It didn’t always work – I was sat at the side of the road a few times wondering why I’d done that! But cycling was what I wanted to do. I was pretty good and I came close to earning a living from it. In the end, I didn’t make it as a pro and it was time to decide what I was going to do.”

An automotive engineering course at Oxford Brookes called and, four years

later, delivered him back to the streets qualified and ready to take on the world. But what at?

“My family had never really had any interest in motorsport,” he says. “We came from Malvern, which was pretty close to Cheltenham. That was the time when Rally GB was around those parts. I went out spectating with a few mates and loved rallying. When I left university, rallying was the way I wanted to go. I applied to loads of places, including M-Sport and Prodrive and smaller teams.”

“I got a job, basically working on rebuilding 10-year-old national rally cars in a shed. I say job... I didn’t actually get paid, but it was great experience.”

Not long later came the call that would change his life. M-Sport had a job going

if he fancied it. Parts sales wasn’t exactly his forte, but this was the team he’d watched time and again on the telly. Yes, he fancied it. And you never know, he might actually get to meet M-Sport’s technical director Christian Loriaux...

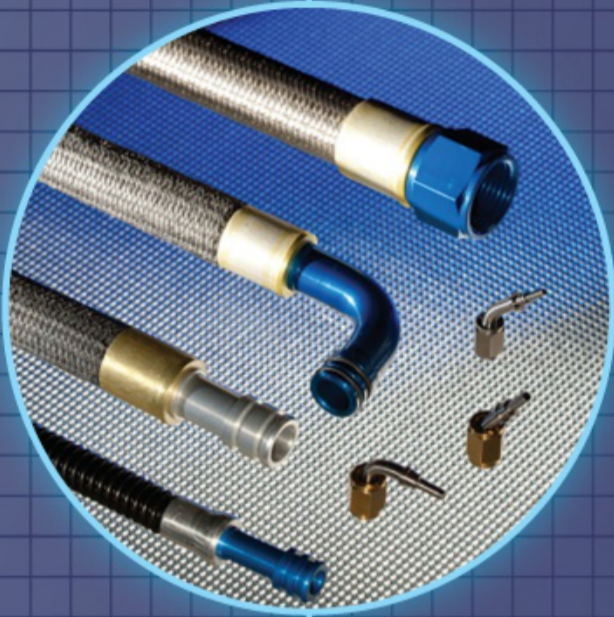
“My dad always told me never to pass up an opportunity,” he says. “That was good advice. The interview went well and they asked if I’d like to meet Christian. I’d seen him on TV and was genuinely excited at the prospect.”

“I waited outside his office for several hours watching him running in and out, basically being Christian. I spoke to him for a while and he told me the design and engineering office was really busy and needed somebody to help out. He made a call and I wasn’t in sales anymore.”

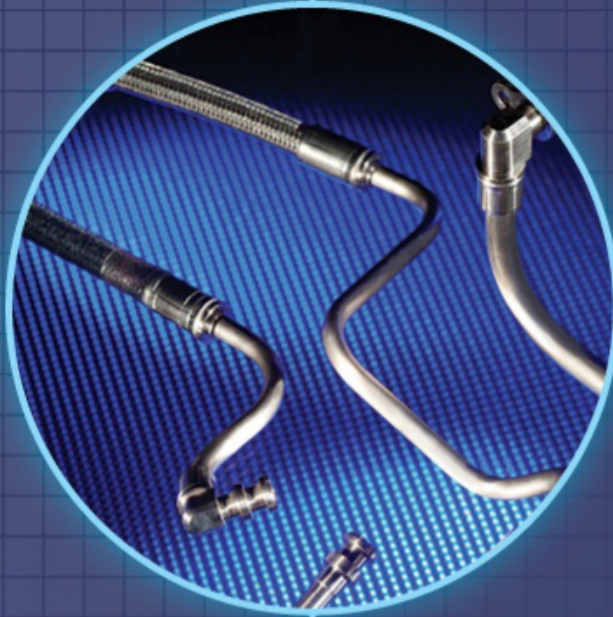
This was 2005, when M-Sport was working on the development of the Ford Fiesta Sport Trophy car. Promotion came quickly. It was also the time when Loriaux was designing the all-new Focus RS WRC 06, which revolutionised the sport with its grip-finding soft suspension solution.

“Christian asked me if I knew anything about electrical installation,” he says. “I didn’t, but I remembered Dad’s advice ▶

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“My stress levels went through the roof and I thought I’d bitten off more than I could chew”



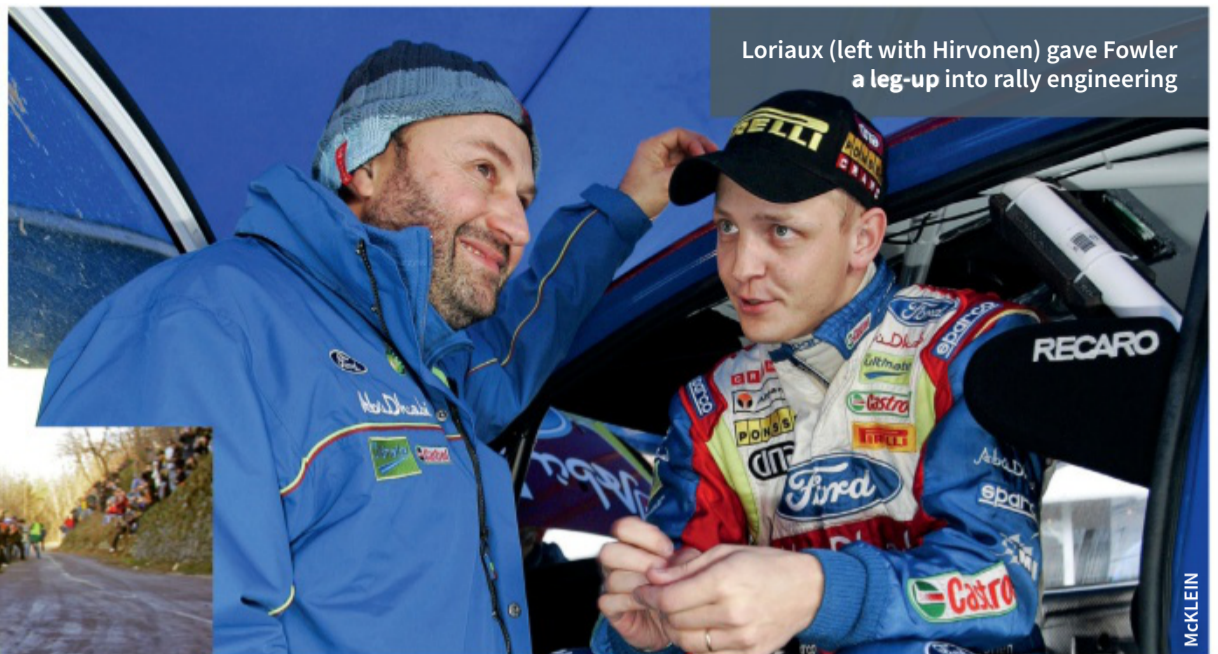
Hirvonen wasn't impressed with the set-up in testing for the 2007 Monte

and said I did. With that, I was handed a laptop and a bag of M-Sport kit and sent testing with the 2006 car. I was seriously living the dream. I was working all night to make up for my lack of experience, but just loving working with the test team.

“Later in 2006, I heard there was an opening as Mikko Hirvonen’s rally engineer. Rally engineering was something completely different. You had to think on your feet and come up with solutions immediately. Trying to learn this job on the hoof was much more stressful – I couldn’t go back to my hotel room, research the problem and deliver the answer the next morning. They wanted to know now.”

Monte Carlo 2007 was Fowler’s first time alongside the Finn. It wasn’t the best of starts.

“Mikko wanted to test some tyre comparisons at shakedown,” says Fowler, “but I made a bit of a miscalculation with the laptop and sent him out in a car that was quite rear-wheel-drivey... He came back in pretty pissed off. My stress levels



Loriaux (left with Hirvonen) gave Fowler a leg-up into rally engineering

went through the roof and I genuinely thought I’d bitten off more than I could chew then.

Fortunately, Mikko

was a fantastic guy to work with, never one to make a drama out of anything. We got on really well and enjoyed a few wins.”

That partnership came as close as possible to delivering the ultimate reward when Hirvonen came within a single point of beating Sebastien Loeb to the 2009 world title. Two years on and Hirvonen jumped ship to Citroen, leaving Fowler to oversee Petter Solberg’s single 2012 season aboard a factory Fiesta.

“We talked about those days recently,” says Fowler. “It was only now that Mikko told me he thought the team was crazy giving me the job of his rally engineer at the time!”

The end of Ford’s commitment to WRC in 2012 brought changes at M-Sport and Fowler felt the time had come for a change.

“I saw a job advertised at Sellafield [Cumbria’s nuclear fuel reprocessing plant] as a system engineer,” he says. “That sounded a bit different, so I applied. When I got it, I didn’t feel I could turn it down, so off I went.”

Going from a finely tuned team chasing world championship glory every other week to a place with a vast management structure overseeing thousands of employees wasn’t for Fowler.

“I learned a lot,” he says. “I signed lots of pieces of paper that say I can’t tell you much more than that. It was interesting, but everything happened so slowly and there just wasn’t the same ambition to be better that I’d lived with at M-Sport.”

Then came the call from Finland. Did he fancy building Toyota a World Rally Car? Of course he did.

“It was a hugely daunting prospect, even without the insane timeframe,” he says. “But we got on with it. When you’re building a new car for the WRC, you tend to focus more on the gravel car – that’s the one you will use more, so it takes priority.”

“We got to June 2016 and we’d done nothing about the Tarmac car we’d be needing for the first round in Monte Carlo. It was in the following months that I genuinely wondered if we could make it happen.”

But they did. Jari-Matti Latvala put the Yaris on the podium first time out, and then won round two in Sweden.

“Words can’t describe that feeling,” Fowler says. “When you see a car you’ve built from scratch going down the same piece of road faster than anybody else’s car – cars built by teams with years of experience with much more preparation time than we’d had, that was the satisfaction for me.”

Since scoring two victories in that first year (Esapekka Lappi won in Finland), the Yaris has got quicker and quicker, winning the 2018 manufacturers’ title and adding last year’s drivers’ crown with Ott Tanak. And with an all-new driver line-up at Toyota this year led by Sebastien Ogier, Fowler’s WRC journey is far from over.

“We have a huge challenge coming this year,” he says. “I spent much of my career trying to stop a Frenchman called Sebastien winning. Now I’ve got to help a Frenchman called Sebastien win his title back!” ■



Fowler (left) had the pleasure of seeing Latvala win in the Yaris second time out

THE ALL-STAR ENGINEERING TEAM WHOSE INDYCAR VISION WAS REJECTED

When IndyCar's ICONIC committee selected Dallara as its approved chassis constructor from 2012, it overlooked a project that promised to make a radical overhaul in safety and race car manufacturing. This is the 'what if?' story of BAT Engineering

BY JAMES NEWBOLD

Imagine for a moment that former British prime ministers John Major and Tony Blair had put their past differences behind them and joined forces to contest December's UK general election with their own political party. It's a fanciful analogy, but rewind to 2010 and it's not entirely dissimilar to the backstory of BAT Engineering, one of five companies that pitched for the five-year exclusive contract to build IndyCar chassis from 2012.

So-named after the initials of Bruce Ashmore, Alan Mertens and Tim Wardrop, engineering rivals during the halcyon days of the 1980s and 1990s at Lola, March and Galmer, BAT's avant-garde concept for IndyCar's future was overlooked in favour of incumbent chassis supplier Dallara, and the name quietly disappeared as the three

partners went their separate ways.

There was little reason to expect that a company nobody had heard of, created during what Ashmore recalls as "one of those brainstorming things in the pub", would even get a look in given the calibre of the competition. As well as Dallara, it included former Champ Car manufacturers Lola and Swift – the latter having just won the contract to build the new-for-2009 Formula Nippon chassis – and Ben Bowlby's radical DeltaWing, which had the backing of team owner Chip Ganassi. But the BAT project had novel ideas that were given serious consideration by the seven-man 'ICONIC' committee – echoes of which can be seen in the current IR18 aero package – and an alternate history of IndyCar's last eight years, avoiding the damaging aerokit era altogether, is

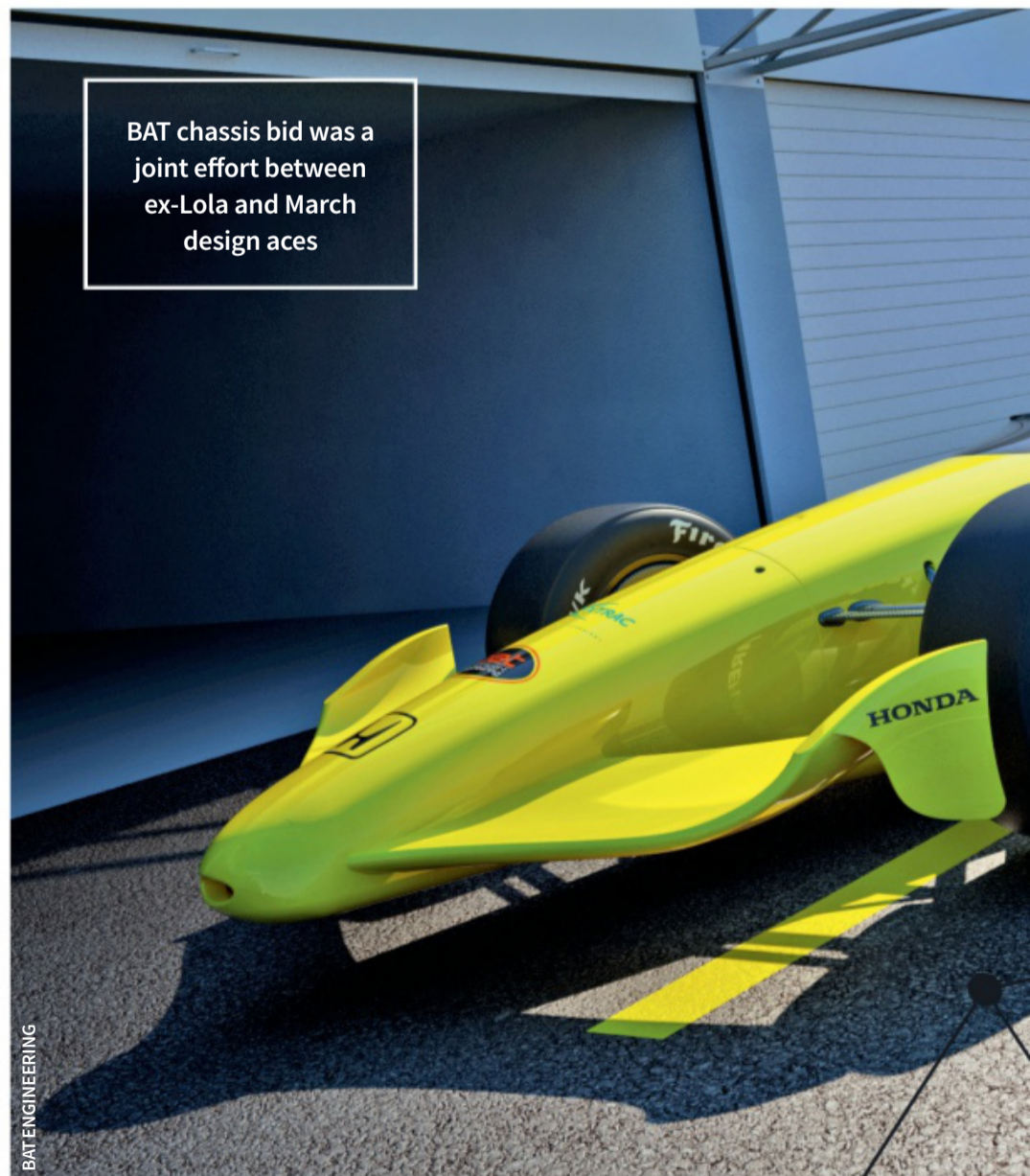
not impossible to imagine.

The credentials of the three Brits behind BAT were impeccable. Mertens's March designs won five straight Indianapolis 500s between 1983 and 1987, and he also designed the Galmer that Al Unser Jr used to beat Scott Goodyear – engineered by Wardrop – in the 1992 race. Mertens had engineered Unser to the 1990 Indycar title in a Galles-Kraco Lola designed by Ashmore, whose cars would go on to win the next three series titles before he joined Reynard in 1993 to head up its North American operations. The marque would sweep every CART title from 1995 to 2001.

They were the design brains – Ashmore focused on aero, Mertens on mechanical – while long-time March man Wardrop, who died in 2012, would serve as the development engineer once the cars were



Ashmore was the architect of Lola and Reynard success in the 1990s



BAT ENGINEERING



BAT aimed to give drivers a more upright seating position than outgoing Dallara



“We were considered to be the three wise old sages of IndyCar racing that would make a perfect team”

and they invited renowned orthopaedic surgeon and IndyCar medical consultant Dr Terry Trammell to have input into the cockpit layout.

“That was the base of the design,” confirms Ashmore. “Alan went away and designed the seat, and I designed the aerodynamics around that.”

Trammell explained that the reclined seating position of a single-seater driver was conducive to compressive stress on the spine in rearward impacts, so the seating position in the BAT was more comparable to NASCAR – with greater visibility intended to reduce accidents – and resulted in a notably bulkier body shape than its competitors.

“What we were trying to do was mostly revolved around ergonomics,” explains Mertens. “We tried to sit the driver up more so if he hit the wall, the loads were more perpendicular to the spinal column as opposed to longitudinally, so it was hoping to get fewer spine injuries.” ▶

up and running. Previously a Formula 1 mechanic with Williams and McLaren, Wardrop engineered Arie Luyendyk to victory in the 1997 Indy 500 and had run the Dutchman one year before when he set still-unbroken records at the Indianapolis Motor Speedway (one lap and four-lap average) in qualifying. He later became the technical director for G-Force’s IRL efforts.

“I can’t remember exactly who came up with the idea, me or Tim, but we said, ‘Why don’t we design an IndyCar and present it?’” recalls Ashmore, who at Wardrop’s suggestion invited Mertens to join them. “There were some things I wanted to know from the past, like ‘Why was his car always so quick at Long Beach?’ So, I thought, ‘Perhaps I could find out!’ We thought it would be a really cool story.”

Mertens, meanwhile, had developed a

nostalgia for motorsport while working in the commercial nuclear industry, and was only too happy to oblige.

“The only time Bruce and I got to talk to each other was on the plane backwards and forwards to America and we used to trade insults,” Mertens says. “But it was a friendly rivalry and we had a huge amount of respect for each other. I was always friends on and off with Tim. We were considered to be the three wise old sages of IndyCar racing that would make a perfect team if we got together.”

Sure enough, with their heads together, Ashmore and Mertens were well placed to meet IndyCar’s design brief of improving safety. Each had extensive experience of working with legislators and medical officials from IndyCar’s laboured transition to carbonfibre in the 1980s,



Mertens (right) enjoyed great success with Al Unser Jr

Huge crash for Briscoe in 2015 showed dangers of interlocking wheels on ovals



ABBOTT
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Ashmore also wanted the car to be more resistant to impacts, with beefed-up suspension and bodywork flush with the tyres to avoid inter-locking of wheels, wary of seeing cars launched as they had been in frequent shunts in the 2000s.

“I said, ‘Dallara is building an IndyCar which was designed to beat other cars, you’re now designing a car for your own series so the suspension can be a lot stronger,’” he says. “Keep the cars running and you keep the race going, so fans will be a lot happier and drivers and team owners will be too.”

To further appeal to teams, BAT planned to carry over axle and gearbox internals

from their existing cars and to use the same low-drag bodykit on ovals and road courses, designed to generate underfloor downforce and negate the reliance on wings, thereby improving raceability.

Ashmore estimates that they spent “almost a year of solid time” on the design, working around existing projects on evenings, weekends and holidays.

“We didn’t do detail design, but the concept was all there,” he says. “Because it was us versus Lola versus Dallara, the old juices started flowing of designing a better mousetrap than they were.”

BAT’s plan relied on winning support for manufacturing the cars in Indianapolis,

close to the Speedway where most of the teams are based. Instead of investing in their own premises, they would function as a ‘virtual racing car company’ using rented space in established manufacturing and R&D facilities in Indianapolis, including the Auto Research Centre windtunnel Ashmore had overseen while at Reynard. The parts would be delivered to the teams in kits, so there would be no requirement for an assembly plant; BAT would only have to manage the supply chain. It looked straightforward on paper, but that was the least of Ashmore’s worries.

“I knew it would be an uphill battle because nobody really liked me and I don’t think they liked Alan either,” he says. “We were the people in the past that were selling them a new car every year, and IndyCar became a spec series because the car owners didn’t want new cars every year. I knew before we started that we wouldn’t be received that well, even though they didn’t really like Dallara either.”

There was also the small matter of convincing the so-called ICONIC committee, the brainchild of newly installed CEO Randy Bernard, who had arrived from a background in bull-riding in March 2010 to fill the void left by the IRL’s ousted founder Tony George. It featured team representation from Gil de Ferran, then co-owner of De Ferran Dragon,



Seven-man ICONIC board chose Dallara over BAT and others

INDYCAR



BAT design used underbody aero to create downforce

BAT ENGINEERING

TIM WARDROP

The third partner in the BAT bid, Tim Wardrop (below), was an “enigma” according to his long-time colleague and friend Alan Mertens. A laid-back personality who “did stuff in his own time in his own way, but somehow or other would deliver the goods”, Wardrop was, reckons Mertens, “completely different” in character to himself and Bruce Ashmore.

“To a certain extent Bruce and I were very similar, but then Tim couldn’t have been more different,” Mertens says. “He was an incredible character, a whole story unto himself. He always had a good story to tell and some of the funniest stories I’ve ever heard in my life came from Tim. It was a great loss when he died.”

Although Wardrop didn’t have a role in the pitch to the ICONIC board, Ashmore too held him in high esteem.

“I think he would have been really good as the development engineer working with the teams because he had a good gift of the gab, but a very good feel for how a car worked on ovals and giving the driver confidence,” says Ashmore.

“He spoke to IndyCar really well too, and where I would get frustrated, he would calm me down and say, ‘No, it’s all right, they’ve got a job to do.’ He was always very calm, and I think he would have been good between me and Alan as a mediator too. He’s sadly missed.”

and input from IndyCar competition president Brian Barnhart, the 2012 IndyCar project manager Tony Cotman, Texas Motor Speedway president Eddie Gossage, ex-Jaguar F1 boss Tony Purnell, Ford executive Neil Ressler and Speedway Engine Development head Rick Long.

IndyCar’s then-senior technical director Les MacTaggart wasn’t on the ICONIC panel, but had oversight of the pitches. Having worked with both Mertens and Wardrop at March, he knew “there was never any doubt that they could produce a quality car” and agrees that the project’s safety credentials were first-rate.

“They as two individuals probably had more experience than anybody else that was actually doing the proposal,” he says. “They were very aware of the potential problems that we had, particularly on

oval racing, so from that aspect they were easily, I believe, the best qualified.”

Ashmore says he had secured some funding “from some venture capitalist-type people,” with the rest coming from a consortium of Indianapolis-based companies prepared to build parts on spec. But MacTaggart wasn’t convinced by BAT’s funding plans, having been chastened by the IRL’s experience with the abortive Falcon Cars project fronted by ex-Ford Racing boss Michael Kranefuss in 2003.

“The problem really was funding, that was the only stumbling block,” says MacTaggart. “Companies like Dallara have the financial wherewithal to produce the prototypes and produce a good number of production cars. When I asked Bruce about the funding, he said, ‘I’ve got a guy that’s going to help us.’ ▶



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It didn't fill you with confidence."

MacTaggart also believes that outsourcing manufacturing to companies in Indianapolis would have been too expensive when the volume was upscaled, but Ashmore denies that the teams got a better deal from Dallara and instead believes that BAT didn't properly convey how the manufacturing process would work. Dallara's winning solution was a low-cost rolling chassis that manufacturers could develop bodykits for, along with a manufacturing centre based a stone's throw from the Speedway.

"I don't think we spent enough time

"We thought we could do it, we were passionate – but that's why engineers don't make businessmen!"

on the pitch itself," Ashmore says. "Afterwards, it all came clear when we heard that all Dallara had gone in with was a building! They didn't actually present a car design at all.

"I knew [ICONIC] were worried about it, but Dallara was the same way, they weren't going to build 30 cars in one go. They would build one, and then three and so on. With Lola and Reynard, those [IndyCar] projects were started with very little money, just initial tooling and windtunnel testing, and then the deposits start rolling and you build them in batches, so I had that whole plan laid out. This was a real key thing that we didn't emphasise when we came to do the final presentation."

"Our biggest problem was that we didn't have a manufacturing facility, we didn't have a home base which gave it credibility in Indy," suggests Mertens.

When the decision was announced amid much fanfare prior to the Toronto round in June 2010, few were surprised.

Dallara's winning bid was helped by promise of manufacturing plant in Indianapolis



INDYCAR

Indeed, there was much excitement at the idea that several new manufacturers would be joining Honda, with Chevrolet and Lotus quickly signed up. But amid squabbles over the cost of parts – teams had previously been able to build select components themselves – the aerokits were delayed until 2015, by which time the underfunded Lotus effort had already been and gone.

Ashmore's fears were realised as the aerokits – introduced in a flawed effort to help differentiate the cars – proved vulnerable to even the slightest contact, increasing costs for teams and requiring more caution periods to recover debris. They were predictably dropped for the current universal kits in 2018 after a development freeze.

Ashmore reckons the input of a professional salesman – like Reynard's renowned commercial guru Rick Gorne – would have made a big difference, but concedes that budget constraints would have made it impossible.

"Rick would talk a totally different language to the team owners than we did. I think we did need somebody like that,"

he says. "At Reynard North America I saw the process of how it happened, and I knew the mechanics of how it all worked. We thought we could do it, we were passionate about what we were doing, but that's why engineers don't make businessmen!"

Mertens recalls a joint venture with Dallara being suggested, but resentment at its slow erosion of the customer car market meant he "didn't give it enough thought".

"We were cowboys back from the old days," he says. "We gave them the finger almost without thinking it through."

So what would an alternate history with IndyCar using BAT chassis from 2012 have looked like?

"The current IndyCar bodywork looks fairly similar to what we came up with, so they would have got that six or eight years earlier than they did," says Ashmore. "The car itself I think would have raced a lot better because it was stronger and the races where cars dropped out wouldn't have happened."

We'll never know now, but Ashmore is right about one thing: it certainly would have made for a great story. ■



The BAT design employed ideas that would be seen on later IndyCars



Dan Wheldon tests the car that would bear his initials, in 2011

LEVITT motorsport IMAGES

HOW TO BE AN ACE ENGINEER

Iain Watt's career spans IndyCar, NASCAR, IMSA and more

BY JAMES NEWBOLD

Since the unification of Grand-Am and the American Le Mans Series in 2014, no team in the IMSA SportsCar Championship has come close to the success of Action Express. Its record of four titles (2014-16 and 2018), and wins in big-ticket races including the Daytona 24 Hours (2010, 2014, 2018), Sebring 12 Hours (2015, 2019) and Petit Le Mans (2019), owe much to the efforts of its Scottish technical director Iain Watt, whose slight American twang is a testament to 25 years Stateside engineering for Dario Franchitti, Tony Kanaan, Sebastien Bourdais, Felipe Nasr and more.

After his early days racing a five-year-old Van Diemen in Scottish Formula Ford – “I could beat people in old cars who weren't organised, but I didn't stand a chance against people that were well organised and had better equipment” – Watt turned his back on driving and joined Avon as a tyre engineer, then won a scholarship to study vehicle dynamics at Cranfield. A spell at Leyton House to work on its Formula 3000 programme followed, before a return to Cranfield – this time studying aerodynamics – opened a door at Lola, where he was seconded to support customers in CART.

Watt continued to develop his trade at Cal Wells's PPI Motorsports, and after 167 starts – often grappling with underpowered Toyota engines – he engineered Cristiano da Matta to the team's first win at Chicago in 2000, before Wells shifted to NASCAR. But Watt's own taste of stock cars wouldn't come until 2007, following race-winning



Watt (right) chats with Mo Nunn Racing's Tony Kanaan in 2002

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stints with Team Green and Mo Nunn Racing, and a less successful one at Cheever Racing, where he was tasked with redesigning the Fabcar Daytona Prototype project that Eddie Cheever had acquired. Renamed the Coyote, it flew in Christian Fittipaldi's hands, but results were hampered by a succession of co-drivers.

Eventually, Watt gave in to Ray Evernham's persistence and took the plunge in NASCAR, led by a mix of curiosity and a belief that it was moving away “from the good old crew-chief days to some proper engineering”. But compared to Indycar and sportscar teams, he found the pace of change much slower in NASCAR.

Aside from an alien organisational culture, the unwieldy stock cars were far removed from anything he had worked on before, but accepting their limitations and not reinventing the wheel were key for success.

“You can say it's ill-handling or whatever, but someone is still going to win so you've got to work out how to get your combination

of parts, driver and engine to the flag first,” Watt says. “The buttons you push are different from open-wheel or sportscars – you just have to understand where they are.”

When Evernham's team merged with Richard Petty Motorsports and cutbacks were made, Watt found himself looking for a new job. He soon found one at AXR, run by 1983 NASCAR Cup-winning crew chief Gary Nelson, and has remained ever since. The team's mantra is ‘expect to win’ and, whether over 24 hours at Daytona or a 100-minute thrash at Long Beach, it has proven adept at doing just that.

“If you show up at the racetrack beat then you're probably going to get beat,” Watt says.

Watt admits he sometimes reflects on opportunities to work in Formula 1 that he passed up, but has no regrets about his path.

“I wanted to see more of the whole car,” he says. “Now it [F1] is a project management exercise rather than an engineering exercise. When you manage so many people, ideas can be diluted and it's like working in treacle. It's not very dynamic.” ■



AXR made up for 2017 heartbreak with Daytona victory in 2018

TOP TIPS

FOR ENGINEERS FROM IAIN WATT

- You're not going to be a successful engineer without good drivers, but it can still be like the Keystone Cops when you come to make a pitstop so you need a good team too. It's never just one person that makes the difference.
- Engineering a racecar isn't curing cancer, it's not sending a rocket to the moon, so try to keep it simple. Typically there's a reward for making things complex, but often the most obvious solution is also the best one.

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