

F1 How Sauber nearly became Mercedes

AUTOSPORT

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16 MARCH 2023

WORLD ENDURANCE SPECIAL

FERRARI VS PORSCHE IS GO!

**...but Toyota and Cadillac top
testing as new golden era begins**



PLUS

Button heads to NASCAR

Top 10 pre-war grand prix drivers

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2023 FIA WEC / FOCUSPACKMEDIA - MARIUS HECKER

The start of something big has finally arrived at Sebring

It's not often that we get to do a non-Formula 1 cover at this stage of the season, but this week seemed a bit special. At last, the new era of sportscar racing is here as Ferrari, Porsche, Toyota *et al* prepare to go head-to-head for the first time, in the World Endurance Championship season-opener at Sebring this weekend.

In this special WEC issue, Gary Watkins reports on the Prologue test (page 4), explains how we got to this point (p16), and takes a look at each of the seven teams that will fight it out in the top Hypercar class (p24). We also explain some of the key differences – and similarities – between the LMH and LMDh categories (p22), while pointing out that there should still be some high-quality battling further down the grid in LMP2 and GTE Am (p32).

There are bound to be arguments about Balance of Performance over the months and years to come, but for now we're happy to simply enjoy the fact that some of the sport's biggest names are back in endurance racing as we prepare to celebrate 100 years of Le Mans.

Sauber graduated to F1 from the world of sportscars three decades ago and almost did so as the Mercedes team. Adam Cooper talks to some of the key figures and explains how Sauber was able to make such a fine start to life in F1 in 1993 (p34).

Thank you to those who chased us for our top 10 pre-war grand prix drivers list – the wait will be over when you turn to p40!



Kevin Turner

Kevin Turner
Chief Editor

kevin.turner@autosport.com

**NEXT WEEK
23 MARCH**

Saudi & Sebring sensations

We report from the WEC and IMSA enduros, plus F1 in Saudi Arabia



Cover image

2023 FIA WEC / FocusPackMedia – Marius Hecker

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FREE WITH THIS ISSUE



ENGINEERING SUPPLEMENT

What are the strengths and weaknesses of hydrogen in motorsport? We take a look at the latest developments, and recall when Dallara invaded British F3 in our latest free supplement.

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PIT + PADDOCK



Test-topper Toyota stays wary of Cadillac and Porsche pace

WORLD ENDURANCE CHAMPIONSHIP

Toyota pretty much dominated the World Endurance Championship Prologue at Sebring last weekend. It was 1-2 in three of the four sessions at the test that led into race week for tomorrow's (Friday) season-opener and ended up a couple of tenths clear of its nearest rival. But question marks remained ahead of the start of free practice on Wednesday – at least in the mind of the Japanese manufacturer.

Jose Maria Lopez finished the Prologue with the quickest time, a 1m48.208s set aboard the #7 Toyota GR010 HYBRID during the opening session on Saturday morning, just 0.008s ahead of Brendon Hartley's best in the #8 sister car from Sunday afternoon. Both Toyota's Le Mans Hypercars were in the low 1m48s during each period of track running, but what confused Toyota was that neither Cadillac

nor Porsche were anywhere near the pace set by their respective LMDh cars during an official IMSA SportsCar Championship test at Sebring back in February.

Cadillac was second quickest manufacturer at the Prologue courtesy of a 1m48.429s with which Earl Bamber topped the times in the Saturday afternoon session aboard the Chip Ganassi Racing-run V-Series.R. Michael Christensen took fourth in the combined times in the fastest of the Porsche 963 LMDhs on 1m48.957s.

Those times compared with the 1m47.053s with which Renger van der Zande ended up second at the IMSA test in the V-Series.R fielded by Ganassi in North America this year, and the 1m47.359s from Mathieu Jaminet that put Porsche third.

"Looking at the lap times of these days [at the Prologue], the conclusion would be quite obvious that we have an edge," said Toyota Gazoo Racing Europe technical director

Pascal Vasselon. "But [it is different] if you look at them with the perspective of the IMSA test when some of our competitors were doing 1m47s. This is a question mark we have and a question that we are not on top of – this is what prevents us making any clear conclusions about this test."

Vasselon insisted that small differences in the Balance of Performance between the WEC and IMSA could not explain the gap between the times achieved by the LMDhs at the two tests. At the IMSA test, both the V-Series.R and the 963 were running at the full 520kW (697bhp) power allowed under the rules and the lowest minimum weight of 1030kg. That compared with the respective 513kW and 517kW currently allowed to the Cadillac and the Porsche and weights of 1038kg and 1048kg in the WEC.

"A difference of three or four kilowatts is only one or two tenths, so maybe conditions were colder or there was more rubber," said

The two concepts: pacesetter LMH Toyota leads LMDh Penske Porsche at Sebring



Nielsen-driven Ferrari moved up to sixth in the late stages

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motorsport
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HYPERCAR TIMES

POS	DRIVER	TEAM	TIME
1	Jose Maria Lopez	Toyota	1m48.208s
2	Brendon Hartley	Toyota	1m48.216s
3	Earl Bamber	Cadillac	1m48.429s
4	Michael Christensen	Porsche	1m48.957s
5	Kevin Estre	Porsche	1m49.285s
6	Nicklas Nielsen	Ferrari	1m49.300s
7	Nico Muller	Peugeot	1m49.302s
8	Mikkel Jensen	Peugeot	1m49.568s
9	Antonio Giovinazzi	Ferrari	1m49.573s
10	Tom Dillmann	Vanwall (right)	1m50.038s
11	Ryan Briscoe	Glickenhaus	1m51.173s



JEP
MOTORSPORT
IMAGES

Vasselon, who suggested that Toyota could potentially get closer in what he called “qualifying mode” but not in a race scenario.

Cadillac was happy with its two days on what was really the debut of the definitive squad that will run its WEC team this year: the crew was bolstered by members of the Ganassi IndyCar squad when Bamber, Alex Lynn and Richard Westbrook raced the car at the Daytona 24 Hours in January.

Porsche was in a similar boat. The WEC arm of the Porsche Penske Motorsport squad came together for the first time during a three-day test for its cars at the Algarve circuit at the back end of February. Kevin Estre backed up Christensen's pace to take fifth in the overall times.

Ferrari jumped to sixth ahead of Peugeot in the last half-hour, Nicklas Nielsen shaving a tenth off team-mate Antonio Fuoco's previous best for the 499P LMH. By that time, however, the sister car was sitting

in its temporary garage and its drivers had left the track. James Calado crashed it on his out-lap on Sunday morning at the fast and bumpy Turn 1 left-hander. The right-front corner and the nose were damaged in the contact with the barriers, but Ferrari sportscar race and testing manager Giuliano Salvi insisted that further damage was confined to “small details”. The Ferrari AF Corse team opted not to rush a repair to get the car out for the final session, partly because it was concerned about putting too much mileage on the car ahead of race week.

Peugeot was running at Sebring for the first time with its 9X8 LMH. The car picked up performance over the test, gaining a big chunk between Saturday and Sunday. The French manufacturer's best time, set by Nico Muller early on the second day, represented a gain of nearly 1.5s.

Vanwall boss Colin Kolles said his team's job over the Prologue was “to learn Sebring

and learn the tyres”. The team had never previously run at the Florida venue and its Gibson-powered Vandervell 680 LMH was on the latest specification of Michelin tyre for only the third time. Tom Dillmann set the best time for the car to outpace the other garagiste entry from Glickenhaus by over a second. Sports car returnee Jacques Villeneuve struggled, however, and ended up six seconds off his team-mate's pace, although he completed only 29 laps.

Glickenhaus concentrated on learning about the new tyres on the first run in anger for its Pipo-engined 007 LMH since last July. Ryan Briscoe set the fastest time in the car, although Romain Dumas was on track and going for a quick lap when the Prologue was brought to a premature halt 10 or so minutes early by a red flag.

GARY WATKINS

➔ P16 WEC PREVIEW



Button to make NASCAR debut

NASCAR

Jenson Button will make his stock car debut in the NASCAR Cup Series next week at Austin, the first of a three-race programme for the 2009 Formula 1 world champion.

Button, who is also part of the driver line-up for NASCAR's Garage 56 entry for the inaugural Chicago Street Race on 2 July, before he competes on 13 August at the Indianapolis Motor Speedway road course.

Rick Ware Racing will run the car with support from Stewart-Haas Racing. Sponsor Mobil 1 has facilitated the deal, after Button raised the idea with its global motorsport manager Mark Humphries in the F1 paddock towards the end of last year.

"I see new guys coming in [to NASCAR] and they don't find it easy," said Button. "Obviously, racing a Cup car is very different than what I'm used to. It's a lot heavier with a lot less power and, basically, no downforce. There's lots of stuff to learn in a very short space of time. But that's part of the challenge, and that's why I'm excited about it. The cars look a handful on road courses but the racing is amazing."

At Austin, Button will renew his rivalry with former F1 sparring partner and fellow world champion Kimi Raikkonen, who will race a Chevrolet Camaro for Trackhouse Racing. Raikkonen made his Cup debut at Watkins Glen last year, running as high as eighth during a pitstop cycle before crashing out and injuring his wrist.

"It was great to see Kimi race, and to hear he's coming back at the same race



as me, so I'm going to be head-to-head with him again," said Button.

Button tested the Garage 56 car, which is a modified NASCAR Camaro ZL1, at CoTA last week and admitted "it did help, even though it's a different car".

"A Cup car has a lot less downforce and is a lot heavier, but the Garage 56 car has given me an idea of what it will be like, which is really useful," he added. "I know in my first race I'm not expected to be qualifying right at the front and I'm not expected to be fighting for a victory."

CHARLES BRADLEY

Ferrari loses another of its technical chiefs



FORMULA 1

Ferrari's Formula 1 technical department is even thinner on the ground following the surprise departure of head of vehicle concept David Sanchez after a decade-long stint at Maranello.

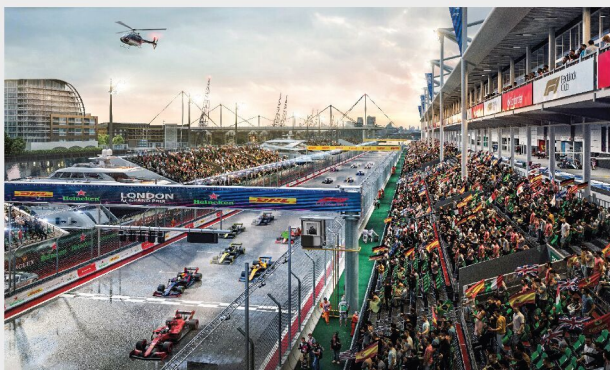
The team remains without a chief technical officer following the exit of former principal Mattia Binotto, who occupied both roles. Under the new leadership

of Fred Vasseur, Ferrari has now lost Sanchez, who was effectively in charge of the current and 2022 car, straight after the Bahrain Grand Prix. The team will likely have to promote from within to fill the holes given the lengthy period of gardening leave senior figures elsewhere will need to serve.

Sanchez joined Ferrari from McLaren in October 2012 as principal aerodynamicist, then

replaced Dirk de Beer as chief aerodynamicist in 2016. The Frenchman was later tasked with leading the entire aero department in 2019 before his promotion to head of vehicle concept. Under Binotto he was credited with playing an influential role in the team's return to form in 2017 as he and Simone Resta turned the SF70H into a race winner.

JONATHAN NOBLE & ROBERTO CHINCHERO



DAVID LINDEN/GETTY IMAGES

Docklands plan for London GP

FORMULA 1

A multi-story pitlane at the ExCeL exhibition centre and grandstands bobbing on the Thames make up the more curious details of the latest proposal to stage a London Grand Prix for Formula 1.

This version does away with the fantasy of ripping up speedbumps to race in the city centre past Buckingham Palace, as pitched in the early 2010s. The bid instead forms part of a wider redevelopment plan for the Docklands riverfront.

Conceived by the LDN Collective – a group of built environment experts – and consultancy firm DAR, they want to make heavy use of floating modules on the river to form cycling and running tracks, but then disassemble them to

reveal an FIA-grade track surface and seating for 95,000 spectators.

The suggested 3.64-mile route would feature 22 corners at an average speed of 127mph to create an estimated lap time of 1m42s. With heavy braking zones, they reckon overtaking will be plentiful in this UK equivalent of the Montreal circuit. With protective clauses built into Silverstone's 2019 contract extension with F1, the British GP would continue as normal.

This proposal also has the pitlane running along the first-floor servicing and loading deck of the ExCeL, host to Formula E's London E-Prix (below). This elevated platform would increase viewing opportunities and, according to the renders, enables a grandstand to be sandwiched by the main straight and pitlane. But Autosport understands that no one from the bid has actually sent the plans to F1...

Max Farrell, CEO of the LDN Collective, said: "We know that Formula 1 is interested in hosting a grand prix here and we have designed a track that meets all of their requirements. We have discussed the proposals with [Greater London Authority], who are developing a water strategy and planning framework with Newham Council, which we hope to align with."

MATT KEW



FERRARIO/MOTORSPORT IMAGES

PAGENAUD IN BELATED RETURN TO LE MANS

LE MANS 24 HOURS

Simon Pagenaud will end an 11-year exile from the Le Mans 24 Hours this year on a weekend off from his IndyCar duties with Meyer Shank Racing. The Frenchman has joined the Cool Racing LMP2 squad for his first assault on the the French endurance since missing out on victory with Peugeot by a scant 13.9 seconds in 2011.

The 38-year-old has never made any secret of his desire to return to Le Mans, these days the centrepiece round of the World Endurance Championship. Now the winner of the past two Daytona 24 Hours with the Shank Acrua team is finally going back thanks to Nicolas Lapierre's Cool team.

Pagenaud will drive an ORECA-Gibson 07 together with teenagers Vlad Lomko – who is moving into sportscars from Euroformula Open – and Reshad de Gurus. He is taking the seat filled by Toyota driver Jose Maria Lopez in the European Le Mans Series this year.

"I'm back to Le Mans!" said Pagenaud. "I'm so delighted that the stars have finally aligned for this to happen."

GARY WATKINS



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Illegal Meyer Shank escapes exclusion on technicality

DAYTONA 24 HOURS

The Daytona 24 Hours-winning Meyer Shank Racing Acura has been penalised for a technical infraction. But the team has kept the victory scored by Tom Blomqvist, Colin Braun, Helio Castroneves and Simon Pagenaud in the opening round of the IMSA SportsCar Championship at the end of January and instead lost points and prize money.

MSR was found to have manipulated tyre-pressure data on its Acura ARX-06 LMDh. Minimum pressures have been mandated in IMSA since the start of 2022, a rule change made in the name of safety. There is time to be made by running lower than the minimum, although it creates the risk of blowouts such as the one that cost the Chip Ganassi Racing Cadillac DPi-V.R in the closing stages at Daytona in 2021.

The manipulation of the data being sent from the car to IMSA officials multiple times per lap was reported by Honda Performance Development, which masterminds the Acura GTP class programme. The penalties announced last week followed "a thorough investigation of all cars in class", according to IMSA.

The car was not excluded because the results for the race were already official. IMSA issues an unofficial result first, then a provisional one

prior to the official results after scrutineering. Had the infringement been picked up in the post-race checks, it appears that the Shank Acura would have lost the Daytona win.

The NASCAR-style punishment for Shank includes the loss of 200 of the 350 points it scored for the victory and all points scored in the IMSA Endurance Cup made up of the four long-distance races. Acura, however, retains its manufacturer points. The team has also had to return its prize money and has been fined \$50,000.

Team boss Mike Shank has been placed on probation by IMSA until the end of June, while car engineer Ryan McCarthy has been banned from the series. But the team keeps the trophies and the drivers the Rolex watches that come with victory.

MSR issued a statement after the announcement of IMSA's decision.

"We want to apologise to everyone at Acura, HPD, and all of our partners," it read. "We have dealt with this issue internally and the team member that was responsible is no longer with the organisation. We do not want this error to overshadow the tremendous effort that our team, drivers and all of our partners have put forth to develop this new LMDh car. We consider this matter closed and are fully focused on resetting and coming back for the Sebring 12 Hours [this Saturday]."

GARY WATKINS

Gotz closes on Glickenhause

LE MANS 24 HOURS

Former DTM champion Maximilian Gotz is looking increasingly likely to make his Le Mans 24 Hours debut with the Glickenhause squad in June. The Mercedes driver has been talking to the American World Endurance Championship entrant for several months and has been with the team at Sebring as a guest since last weekend's Prologue test.

The deal, should it happen, would likely involve Gotz joining the team for one of the next two WEC races to drive alongside Romain Dumas and Olivier Pla in place of Ryan Briscoe. He would then stay in the #708 Glickenhause-Pipo 007 for Le Mans, with the Australian moving over to the team's additional entry for Le Mans alongside Franck Mailleux.

"I've been interested in doing Le Mans for a long time and I've been talking to Jim [Glickenhause, team boss] for a while," said Gotz, whose programme with Merc this year will be centred on the Nurburgring 24 Hours and the GT World Challenge Europe Endurance Cup after his departure from the DTM. "I know Jim from the Nurburgring and I'm a big fan of his, so I picked up the phone and gave him a call.

"It will be nice to drive a prototype for the first time, but I don't think it is going to be so different from an old Class 1 DTM car except for having a little bit more power."

Gotz, who won the 2021 DTM title for Mercedes, stressed that he has the full agreement of the marque to race for Glickenhause in non-clashing events. He played down the possibility of backing from the BWT water treatment company, which supported his winning DTM season.

Glickenhause stressed that no deal had been done yet, but explained that Gotz was sitting in on meetings at Sebring as he got to know the team.

GARY WATKINS





Ducati dominates another test

MOTOGP

Ducati ended MotoGP pre-season testing for 2023 in fine form, as reigning world champion Francesco Bagnaia topped last weekend's running at the Algarve circuit with an unofficial lap record. Of the five days of official testing, Ducati riders have topped all of them – a serious statement of intent from the reigning world champions.

Bagnaia (above) felt during the test that “at the moment, Ducati and Aprilia are unbeatable”. Ducati hasn't revolutionised its challenger from 2022, but has seemingly made gains in all the right places. Aprilia stole the headlines for its Formula 1-style aero concept in Portugal, but has generally looked good throughout testing with a bike the riders feel has improved in all areas.

Aprilia's Aleix Espargaro did have his test cut short by a fibrosis issue in his right arm, which was causing him to lose feeling while riding, and was contemplating surgery as Autosport went to press.

Fabio Quartararo cast a dire outlook for Yamaha on the penultimate day of the test when he felt it wasn't ready for the opening round. But “a massive step” on the final day led to him gaining 1.3s to end up third fastest, as his team adapted 2022 set-up ideas to the 2023 bike.

Both KTM and Honda struggled throughout testing. The Japanese marque looked in particular trouble, with eight-time world champion Marc Marquez declaring that he is not in a position to fight for podiums with the 2023 bike. After a busy testing period, Marquez says Honda has come away with a machine that is able to fight for between fifth and 10th in the opening round next week in Portugal.

Gresini Ducati sophomore Fabio Di Giannantonio didn't test on the second day due to a concussion.

LEWIS DUNCAN

TOP 10 TIMES		
POS	RIDER (BIKE)	TIME
1	Francesco Bagnaia (Ducati)	1m37.968s
2	Johann Zarco (Pramac Ducati)	1m38.264s
3	Fabio Quartararo (Yamaha)	1m38.302s
4	Luca Marini (VR46 Ducati)	1m38.310s
5	Marco Bezzecchi (VR46 Ducati)	1m38.351s
6	Enea Bastianini (Ducati)	1m38.373s
7	Alex Marquez (Gresini Ducati)	1m38.402s
8	Jorge Martin (Pramac Ducati)	1m38.434s
9	Brad Binder (KTM)	1m38.480s
10	Alex Espargaro (Aprilia)	1m38.569s

GAMBLE JOINS McLAREN'S FACTORY SQUAD

GT3

British racer Tom Gamble has been added to McLaren's factory GT driver pool ahead of the 2023 season as he reaches the ranks of GT racing professionals.

Gamble, the 2018 McLaren Autosport BRDC Award winner, joins incumbents Rob Bell and Marvin Kirchhofer on McLaren's factory roster, with Joe Osborne and Euan Hankey understood to no longer be works contracted.

Since switching to sportscars in 2019, Gamble has won the European Le Mans Series LMP3 crown in 2020 with United Autosports, won two ELMS races outright across 2021–22 in United's LMP2 squad, and contested the World Endurance Championship aboard a Gulf Racing Porsche in 2021.

He made his debut aboard a McLaren 720S GT3 in the Asian Le Mans Series at Dubai Autodrome in February following a last-minute call-up from Garage 59, but a full-time programme for Gamble in 2023 has yet to be announced.

McLaren Automotive director of motorsport Ian Morgan said: “Tom has proven to be a formidable sportscar and GT racer and will fit in well with Rob and Marvin in our factory driver line-up.”

JAMES NEWBOLD



McLAREN

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IN THE HEADLINES

BEN SULAYEM JR LOSES LIFE

The son of FIA president Mohammed Ben Sulayem lost his life in a road accident last week in Dubai. Saif Ben Sulayem competed in the Formula 4 UAE series of 2016-17 but did not pursue a career internationally.

PADDON WINS IN PORTUGAL

Hayden Paddon won last weekend's Fafe Rally, the opening round of the European Rally Championship, after final-stage heartbreak for Mikko Heikkilä. Finn Heikkilä's Skoda was leading by 2.8 seconds, only for a puncture to drop him to eighth and hand victory to Hyundai pilot Paddon by 10.7s from Mads Ostberg (Citroën). Hyundai's Craig Breen overcame a damaged tyre and power-steering problems to rise to sixth.

GILKES IN F1 ACADEMY...

GB4 race winner and ex-W Series driver Megan Gilkes has completed the Rodin Carlin line-up for the all-female F1 Academy series for F4 cars. The Canadian joins Abbi Pulling and Jessica Edgar at the squad.

...AND BROTHER AT DRIVEX

Gilkes's brother, GB3 race winner Nick Gilkes, is one of the early signings for the new Spanish-run Eurocup-3 series. He will line up with Drivex. Another recruit is Thai former British F4 race winner Tسانapol Inthraphuvasak at Campos Racing.

EUROFORMULA SETBACK

Drivex's move to Eurocup-3 has come as something of a blow to Euroformula Open, in which the team had been a stalwart. Motopark, which has risen to dominance in EFO in recent seasons, has recruited ex-Red Bull junior Noel Leon and American GB3 race winner Bryce Aron for 2023.

IT'S A FRIKADELLI FERRARI

What's this? Nurburgring specialist Frikadelli Racing Team has switched from its long-time home at Porsche to run a Ferrari 296 GT3 in this year's 24 Hours. Earl Bamber and Felipe Fernandez-Laser will be joined in the car by team newcomers Nicky Catsburg and David Pittard.



Sprint Cup attracts record 40-car grid for 2023 season

GT WORLD CHALLENGE EUROPE

The GT World Challenge Europe Sprint Cup has attracted a record entry for the 2023 season. A 40-car field, with 13 in the Pro class and representation from eight manufacturers, has been assembled for the five-weekend championship that kicks off at Brands Hatch on 14 May.

The announcement last week of the bumper field for this season is significant because the Sprint Cup has always struggled for entries in comparison to the more prestigious Endurance Cup segment of the GTWCE, which has been at or near capacity for multiple seasons. It represents a massive increase on the 25 cars that registered for the full series last year, although the field was bolstered through the season by race-by-race entries.

Series boss Stephane Ratel said: "I am delighted to present our 2023 entry lists, which are highlighted by an exceptional Sprint Cup grid. That we have 40 cars committed to the series for the first time ever is something very special."

The Belgian WRT squad is back with a four-car entry – three in the Pro class and one in the Gold Cup – as it bids for a fourth title in a row, although now with BMW after its departure from the Audi fold. It had already confirmed its plans before the

Stephane Ratel Organisation went public with the entry list, with its two factory BMW M4 GT3s shared by reigning champions Dries Vanthoor and Charles Weerts, and marque returnee Maxime Martin with bike legend Valentino Rossi.

There are a total of five BMWs on the Sprint Cup entry, Walkenhorst Motorsport fielding a solo entry in the Silver Cup.

Audi has the biggest representation on the grid with 11 R8 LMS GT3 EVO IIs. Sainteloc, Tresor/Attempto and series debutant Comtoy Racing all field Pro cars.

There is only one Pro class Mercedes-AMG GT3, which is entered by Auto Sport Promotion, winner of the overall GTWCE title combining the sprints and the enduros last year with Raffaele Marciello. It's the same for Lamborghini, with Vincenzo Sospiri Racing entering one of its trio of Huracan GT3 EVO2s in the top category.

McLaren has three Pro cars in the field: two 720S GT3 Evos entered by JP Motorsport and one by Garage 59. The other manufacturers on the grid are Ferrari, Honda and Porsche.

A capacity field of 56 was announced for the GTWCE Endurance Cup at the same time as details of the Sprint Cup, while a total of 29 entries are registered for the full 10-event championship.

GARY WATKINS

F1 SAUDI ARABIAN GRAND PRIX PREVIEW



Jeddah

Length 3.836 miles

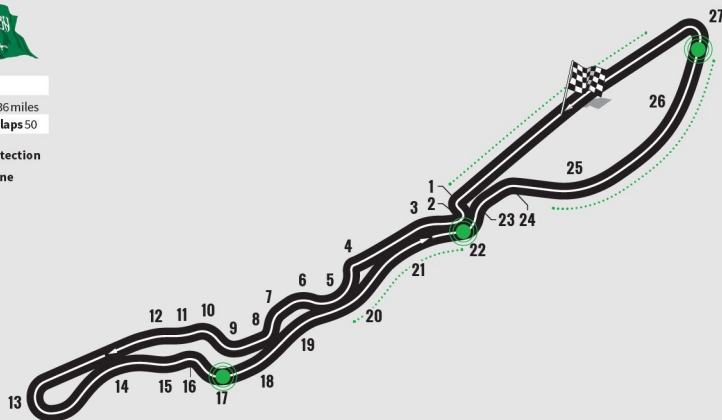
Number of laps 50



DRS detection



DRS zone



UK START TIMES

Friday 17 March

FP1 1330 FP2 1700

Saturday 18 March

FP3 1330

QUALIFYING 1700

Sunday 19 March

RACE 1700

CATCH THE RACE LIVE

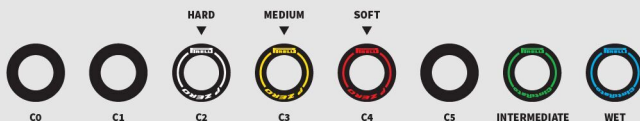
SKY SPORTS F1

BBC RADIO 5 LIVE

TV Highlights

CHANNEL 4 2215

TYRE ALLOCATION



CHAMPIONSHIP POSITIONS

Drivers

1	Verstappen	25
2	Perez	18
3	Alonso	15
4	Sainz	12
5	Hamilton	10

Constructors

1	Red Bull	43
2	Aston Martin	23
3	Mercedes	16
4	Ferrari	12
5	Alfa Romeo	4



JEDDAH STATS

Previous winners

2022	Max Verstappen	Red Bull
2021	Lewis Hamilton	Mercedes



2022 POLE POSITION

Sergio Perez
1m28.200s

POLE LAP RECORD

Lewis Hamilton
1m27.511s (2021)

RACE LAP RECORD

Lewis Hamilton
1m30.734s (2021)

Jeddah laps led

Max Verstappen	37
Charles Leclerc	30
Lewis Hamilton	18
Sergio Perez	14
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Why this F1 saga won't go away

Any hopes that the troublesome issue of driver expression will just quieten down may be in vain as long as the rules over helmet liveries remain ill-defined

ALEX KALINAUCKAS

"It might sound like a broken record, but it's a fight that I'm going to keep on having." Lewis Hamilton there, speaking at the 2023 Formula 1 season-opening Bahrain Grand Prix. The Mercedes driver was discussing the new clampdown on where exactly the racing drivers can express their personal feelings on much more important, non-racing matters.

A day later, Hamilton revealed a tweaked helmet livery, which he would wear in the race where he finished a frustrated fifth, his new fluorescent yellow topped with a rainbow flag. Once again, Hamilton was expressing his solidarity with the global LGBTQ+ community.

You might be wondering why this ground is being covered again. Well, for a start, there's Hamilton's point – that the required meaningful change on discrimination won't happen just by something being said a few times. But this topic also reflects the issues of our highly charged, very polarised age. And, given events at the United Kingdom's most famous media organisation this week concerning BBC sports presenter and ex-footballer Gary Lineker, it's been thrown into fresh light. And that development in turn highlights a continuing problem with the new rules restricting racing driver expression in FIA-sanctioned championships.

In the Lineker Twitter saga, his criticism of the UK government's new asylum policy exposed the problem of rules regarding impartiality introduced in 2020 only vaguely applying to BBC

"Qatar is where the rainbow 'One Love' armband was effectively banned by FIFA"

staff not working at its news and current affairs divisions. The BBC is now set to review these guidelines in a climbdown after suspending Lineker and igniting a debate that infuriated all sides.

It was a high-profile storm and one that could and should have been prevented. And, despite the clarification issued by the FIA last month regarding the new rules on racing driver expression, there remains the possibility of a row igniting specifically because the rules on helmet liveries are not well defined. As written, they suggest that any driver wanting to make a display with their liveries must obtain permission to do so. But it is understood that this did not happen in Hamilton's case in Bahrain and everything was fine.

In fact, helmet liveries are not expressly defined in the governing body's Guidance on the Principle of Neutrality regarding the updated Article 12.2.1.n of its International Sporting Code,

released on 17 February. That was before the FIA spoke directly with the drivers and apparently allayed most of the competitors' concerns expressed across the 2022-23 off-season. The clampdown actually only impacts a much more limited scope of when drivers can freely express themselves than had been feared.

The FIA has no problem with the rainbow flag being shown, and it is understood would only get involved in such a display if it were raised by another F1 stakeholder, for example a race promoter. That didn't happen in Bahrain, but the concern is that it could elsewhere.

F1 is now getting ready for the third Jeddah GP in the state of Saudi Arabia, a country where LGBTQ+ people are even more severely suppressed than elsewhere in the Middle East. In winning the first of these events back in 2021, Hamilton wore a full rainbow livery helmet. Based on that, we can cautiously hope that he would be allowed to do so again. Indeed, F1's focus now is on the 2023 event going off without a hitch given the nearby Houthi missile attack during FP1 last year. It clearly wants anyone attending to feel safe.

That it must is, of course, alarming. And it is tied to the realisation that global sport and politics are intrinsically linked, no matter how profusely a regime trying to bury unpalatable practices while showing off a shiny sporting event may claim otherwise.

In codifying what drivers can and cannot do during F1 on-track or equivalent moments, the FIA maintains that it is trying to protect them from potentially igniting problems in countries the championship visits. The governing body is adamant that it does not dictate F1's calendar – that responsibility for these problematic situations lies with the F1 organisation given it does the deals.

F1 is known to be frustrated with the various rule sagas that have hit the championship in recent seasons. And there remains potential for another if all sides can't ensure that the helmet livery grey area is better defined. The same fear would exist should an authoritarian regime come to power in the West. But, given it returns to the F1 calendar this year, what about the Qatar question?

It's worth remembering that Hamilton's full 2021 rainbow helmet made its bow in the inaugural Qatar GP and so you could apply the same logic of it hopefully being allowed again. But Qatar is where the rainbow 'One Love' armband aimed at protesting all forms of discrimination was effectively banned, disgracefully, by FIFA on the eve of the football World Cup last November.

If such a step can happen once it can surely happen again. And that's the real fear in the case of the rainbow helmet livery. That while some F1 stakeholders are hoping that the furor over driver expression will quieten down, leaving the helmet livery rules as a grey area means a bigger problem later is a real possibility. It could blow up into a Lineker-like optics storm, or perhaps even put people's safety at risk. And that's an uncomfortable position always worth highlighting. *AK*



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Giving the wrong impression

What should have been a weekend of back-patting over the successful debut of Supercars' Gen3 machines was overshadowed by off-track controversy

ANDREW VAN LEEUWEN

The Newcastle 500 should have gone down as a great success for Supercars. The Aussie category last weekend pulled off something that just weeks ago seemed impossible. Its teams delivered 25 reliable, beautiful, and actually quite fast Gen3 cars for the first round of the new season. The racing was good. The weather was great. People flocked through the gates...

But instead, off-track controversy took over with two major storylines. The first was the two Triple Eight Chevrolet Camaros being disqualified after a historic 1-2 in the first race. The cars were found to be carrying a dry ice radiator on the driver's side of the cockpit to cool air to a helmet fan. The system itself was perfectly legal. But all cooling systems must be mounted to the passenger side of the car.

Triple Eight argued that Supercars head of motorsport Adrian Burgess had verbally approved the system, including its location. Burgess denied that was the case. In the absence of hard proof, Motorsport Australia stewards were left with no choice but to disqualify the cars. The cooling rules sit in Division C of the Operations Manual. That's the technical rules. And with technical breaches there can be no tolerance.

Sunday's race was a genuine thriller as Shane van Gisbergen ran down Chaz Mostert to take a win he'd be able to keep. But he didn't get much of a chance to enjoy it. When the post-race media commitments started, van Gisbergen began reeling out the same line over and over: "All our talking was done on track. Thank you."

After some needling in the press conference, he added context to his actions: "I said a lot of stuff yesterday, tried to open up a bit more and then maybe it bit me in the arse," he said. "I just said the truth about the cars I guess, tried to be honest. And it goes down the wrong way. So I'll focus on my driving."

Van Gisbergen's protest was nothing to do with Saturday's disqualification. He had already twice been publicly critical about Gen3, firstly regarding heat protection, and secondly the raceability of the cars. He had clearly been told not to do it again.

If the inference of censorship wasn't clear enough, David Reynolds put it beyond doubt. He too had felt the wrath of senior officials several weeks back after publicly questioning the parity of the two models from Chevrolet and Ford. "They don't want us to say anything negative," he said in defence of van Gisbergen.

Moments later, the clip of van Gisbergen refusing to engage with the press was shown on the Fox Sports broadcast. But only his refusal to answer questions. What was missing was the highly critical context of his explanation. That sent broadcast hosts Mark Skaife, Garth Tander and Jess Yates into a frenzy of criticism levelled at van Gisbergen for not representing the sport the way a champion should. All told through the hugely manipulated lens of this being

a hissy fit after he was disqualified.

As a five-time series champion and a Supercars board member, the voice that carried the most weight was clearly Skaife's. "When you're the champion, you have an ambassador's role in this sport and although you might not want to make any more comment, you actually have a duty as a custodian of the sport to say what you need to say about the results and what has gone on today," said Skaife. "Now whether he agrees, obviously he won't be liking disqualification from yesterday. He has come into today angry

"Leaving out context for a TV segment isn't on. And neither is the sheer act of censorship"

about how it is, but there is a duty of care, there is something about being the champion driver and the ambassador in the sport.

"He has a duty under that scenario as one of the highest paid, the benchmark operator... There is no one in this industry that in any way, shape or form would ever contend on his driving talent and his ability. He is extraordinary, maybe one of the best drivers ever. I'd call him Jim Richards-like, he is unbelievable. But you do off the track have a duty and that's not right."

Now here's the issue. Earlier in the weekend, Skaife had voluntarily spoken on the broadcast about how he had instigated a text message disagreement with Reynolds over the parity remarks as that saga played out. Now here he was telling van Gisbergen to speak up more.

Van Gisbergen doesn't like the media; it's not his domain. He doesn't give the broadcast team much and perhaps that played a role in the willingness to rush his media conference antics onto the screen before critical thought had gone into why he was refusing to speak and how the segment should be packaged. But whatever van Gisbergen has done in the past, leaving out vital context for a TV segment isn't on. And neither is the sheer act of censorship. Censoring at athletes should be reserved for the most delicate of social and/or political issues, and even then used incredibly sparingly and only when it will stop real damage in society.

Ironically, had there been no censorship, this column would have been about the successful rollout of Gen3 after a fraught build-up over the past few months. That would have been the story; regardless of what van Gisbergen might have said in the press conference.



P47 SUPERCARS REPORT

THE NEW GOLDEN AGE



(FINALLY) STARTS HERE



2023 FIA WEC / FOCUS ON MEDIA - MARCUS HECKER

After more than three years of hype, the new era of sportscar racing dawns at this week's Sebring 1000 Miles. Here's what all the excitement is about...

GARY WATKINS

WEC 2023 SEASON PREVIEW

INTERNAL COMBUSTION ENGINE

FUEL TANK

BATTERY PACK

TORQUE SENSORS

ELECTRIC MOTOR



WEC
FIA WORLD ENDURANCE CHAMPIONSHIP

MIN
1030kg

WEIGHT

MIN
DRAG

AERO

MAX
DOWNFORCE

MAX
520kW

AERO

POWER

Hypcar
drivetrain layout
(above) and
performance
windows (left)

Toyota is joined by
four other major
manufacturers



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T

his is it! The start! It wasn't the Daytona 24 Hours in January any more than it was the Spa 6 Hours nearly two years ago. The much-heralded golden era of sportscar racing finally begins with this week's opening round of the World Endurance Championship at Sebring.

There have been Le Mans Hypercars racing since the opening round of the 2021 WEC, and LMDh machinery came on stream with this year's IMSA SportsCar Championship curtain-raiser in January. But the Sebring 1000 Miles on Friday is the first time that they will race together. Convergence has finally arrived after more than three years of hype.

That golden era, brave new world or whatever you want to call it is founded on the ability of racing cars built to two different cost-effective rulebooks to compete in both the world's most important sportscar series and at the big races associated with them, the Le Mans 24 Hours and Daytona included. It explains why there are five major manufacturers competing in the Hypercar class of the WEC this year – that's Toyota, Ferrari, Porsche, Peugeot and Cadillac – and more to come. And that's not counting the fledgling car makers in the fight, the likes of Glickenhaus, Vanwall and possibly Isotta Fraschini, which for the moment are best described as garagistes.

That's why what some might argue is a support race to the Sebring 12 Hours IMSA round on Saturday is one of the most important moments in the history of endurance racing. The 1000 Miles is at once a landmark moment and a test of the so-called convergence process that has laid the foundations for what is to come.

We should be shouting about it, and not just because Ferrari and Porsche are back at the front of the prototype field after 50 and five years respectively with striking-looking machinery made possible by the new rules. There haven't been this many manufacturers duking it out at the front of the grid for years.

The arrival of BMW, already racing in a class known as GTP in IMSA, Lamborghini and Alpine in 2024 will push the total of OEMs up to eight. It could be nine if Acura, winner at Daytona with its LMDh, expands its programme, most likely under the flag of parent company Honda. That would mean an unprecedented number of car companies represented at the front of the prototype grid.

The present iteration of the WEC peaked at four OEMs in LMP1, and then only for one race: when Nissan's disastrous front-wheel-drive GT-R NISMO LM made a belated debut at Le Mans before being consigned to the dustbin. In the days before the rebirth of the WEC in 2012 you have to go back to Le Mans 2001 to find as many major marques competing for outright victory as this year.

And the WEC has and will have all the right manufacturers. You only have to add up their Le Mans victories to understand that. Porsche has 19, Ferrari nine, Toyota five and Peugeot three, so the total stands at 36. It will increase to 38 next year on the entry of BMW and Alpine, or rather 39 on the likely assumption that the winner of the 2023 running of the event hangs around for 2024. Had Audi pushed on with its LMDh programme announced in November 2020 and canned early last year, that number would have topped 50!

CAN THE FORMULA WORK?

If the original timescale had been adhered to, this magic moment would have been a year in the past. It has largely been forgotten that LMDh was originally announced for 2022 in both WEC and IMSA. The COVID crisis, declared a pandemic just weeks after that day at Daytona 2020 when the category was announced, and the complexities of balancing the two types of prototype ensured that an already optimistic timescale had to be pushed back a year.

It has been a long and winding road to get to the point where we are today. The difficulties of balancing the four-wheel-drive LMH machinery with the rear-drive LMDhs was highlighted by your author from the get-go, Super Touring highlighted by way of example.

All-wheel drive was eventually banned in the booming tin-top formula of the 1990s. It hasn't been outlawed in the Hypercar class. "Mitigated" is the word used by Peugeot Sport technical director



“Car potential is perfectly aligned: the essence of both sets of regulations is to have cars with the same performance”

Olivier Jansonnie to describe the effect of the convergence process on the benefits of the front-traction of the LMHs. That's a pretty accurate take on it. The raising of the speed at which electrical power can be deployed means a front-axle hybrid system is no longer the performance tool that it was in the days of the LMP1 hybrids, or even of year one of LMH in 2021. This was one of the keys to creating a level playing field in Hypercar.

Hypercar is a Balance of Performance class. It became that even before the announcement of LMDh: it was a condition of Aston Martin's entry with the Valkyrie super-sportscar in June 2019, a programme that was axed (though officially only put on hold) straight after the LMDh announcement. The difference between now and then is that the two rulebooks that allow entry into Hypercar are closely aligned. It gives the BoP more than a fighting chance of doing its job.

Both LMH and LMDh rules are focused on controlling performance rather than setting design restrictions. Targets are set for aerodynamics in terms of downforce and drag; each car must fit into a very small window that is the same for both classes. And because they are relatively modest, it has freed up a manufacturer's designer to incorporate styling cues or more from their road cars. The most extreme example is the avant-garde Peugeot 9X8.

Power is strictly controlled, both in terms of total output and the way it is delivered. The maximum is laid down – from this year it stands at 520kW (or 697bhp) at all tracks – and a power curve for each car is laid down in the BoP and policed by driveshaft torque meters that measure performance live on track.

“The car potential is perfectly aligned: the essence of both sets of regulations is to have cars with the same performance,” says Toyota Gazoo Racing Europe technical director Pascal Vasselonn. “We have the same power and the aero window is tiny. That makes life easier in terms of the BoP. The small differences [in the cars' performance] should only need fine tuning.”

There here has been a significant change to the BoP process from the first two seasons of the LMH-only Hypercar class. The BoP has been set for the first four races up to and including Le Mans in June. The move, thrashed out by the rulemakers – the FIA and the Automobile Club de l'Ouest – and the participating manufacturers, has been devised to stop manipulation of the BoP ahead of the race that really matters. >>

"One of the benefits of a fixed BoP is that there is no incentive anymore for sandbagging," says Vasselon. "In past years there were a lot of stories about sandbagging that were bad for everyone. The aim now is to balance the potential of the car and then stay stable."

The BoP could change before Le Mans, but only in terms of the balance between the cars built to the two different rule sets. The rulemakers now talk about the platform BoP and the manufacturer BoP. The former refers to the balance between LMH and LMDh, the latter to the BoP for each car.

The platform BoP could change for round three of the WEC at Spa at the end of April, based on data accrued at Sebring and round two of the series at the Portimao 6 Hours two weeks ahead of the Belgian race. So for example, if the Cadillac LMDh receives a weight break, the Porsche will get it too.

The manufacturer BoP can then be reset after Le Mans for the remainder of the season, while the platform BoP could change after another two races – Monza in July and Fuji in September – for November's season finale in Bahrain.

All the manufacturers are singing from the same songbook when it comes to the BoP. That's perhaps not surprising because the formulation of the latest guidelines has been a highly collaborative process. There's no way of knowing whether anyone will break ranks and start claiming in public that their BoP is unfair, but the organisers are determined to make the BoP a non-subject. There's even a new clause in the 2023 sporting rules for the WEC that expressly bans discussion of the BoP in public.

Manufacturers, teams and drivers "must not seek to influence the establishment of the BoP or comment on the results", reads the relevant clause. Infringements may be penalised by the stewards at any time. What those penalties might be isn't disclosed, though the message is loud and clear.

RETURN OF THE PRIVATEER

The privateer pretty much withered and died during the LMP1 hybrid era. You couldn't buy one of the high-tech rocketships and the contingent of teams running a proprietary chassis – the likes of JRM with HPD back in 2012 – and the garagistes building their own machinery shrunk through the WEC era. Glickenhaus has shown what a small, special builder can do under the new rules in LMH, but LMDh in particular reopens the door for the customer teams that over the years have been so important to sportscar racing even at its highest level.

After Porsche put its hand up in support of LMDh, it made it clear that it wanted to supply customer cars. It has always been a key tenet of its programme. The 963 type number, one on in sequence from the 962, a design sold by the dozen to teams on

"LMDh in particular reopens the door for the customer teams that have been so important to sportscar racing"

both side of the Pond, acknowledges that intent.

The 962, and the 956 predecessor on which it was based, has long been regarded as the epitome of the customer racing car: it offered a competitive entree onto the grid with top-notch service back-up. Yet the 962 customer cars were always at least one step behind the works machines in development. The strict homologation rules in Hypercar mean that is no longer the case.

"The playing field has been levelled," says Jota founder Sam Hignett, whose team is on course to get the first customer 963 on the grid at Spa in late April, two races ahead of Proton Competition with the second of the two cars made available for this year. "The homologation rules mean you are not going to turn up at a race and find that the factory cars are running a new aero kit that you haven't got. It's a privateer-friendly rulebook."

Jota has managed to do something else that was key to the glorious age of the customer 962: land a major sponsor from a well-known brand, car hire giant Hertz. That's encouraging for the WEC.

The other LMDh manufacturers have all suggested that they might make cars for sale, though none has committed as yet. Peugeot has sold a 9X8 for a 2024 WEC campaign to a French entity that owns the rights to the Pescarolo Sport name, though its car will be run from the factory. Glickenhaus will sell you a car, too, and it insists that it's cheaper than a Porsche!

WHAT'S NEW FOR 2023

The dynamic of the races is going to change significantly in 2023 thanks to two key rule changes. The first is the banning of tyre warmers, for so long part of the European sportscar scene but not in the US. The second is the closure of the pits under the Full Course Yellow virtual safety car procedure when an 80km/h (50mph) speed limit is enforced.

The outlawing of tyre warmers has been made on environmental grounds. There's an 'it's the same for everyone' argument, of course, but the ecological benefits have been questioned. The arguments of the doubters suggest that any gain in terms of reduction in emissions by the WEC circus will quickly be wiped out by just a handful of shunts.

It clearly is going to make it tricky for the drivers leaving the pits on cold tyres even if Michelin has developed a new range of rubber fit for purpose, more so probably at Spa in April – remember the snow at the Belgian race in 2019? – or during the night at Le Mans than at Sebring this week. But the issue was brought into focus during the Prologue when James Calado crashed his Ferrari 499P LMH on his out-lap on Sunday morning.

The closing of the pits during an FCY removes the opportunity for a car to dive into the pits under the yellows for potential strategic gain. The thinking is that it will improve the show by not breaking up the racing.

The move will be linked to new guidelines whereby an FCY-only procedure will always be short and sharp, used when there is perhaps an errant corner marker to replace or a bit of debris to be picked up. Prolonged FCYs will become a thing of the past; the safety car will always be employed if a longer neutralisation is required.

There is going to be an even bigger change come Le Mans. The old system whereby the field remained neutralised behind three safety cars is gone. The field will still be brought under control by the trio of course vehicles, but it will subsequently be massed behind a single safety car. Once that process is complete, a wavearound will begin: a car ahead of the leader in its class in the queue will be able to pass the safety car. The field will then be arranged in class order before the restart.

The organisers – the FIA and the ACO – are aware that they've now got a great product and want to enhance the show. You can't doubt their logic at this momentous time in the history of endurance racing. *JP*



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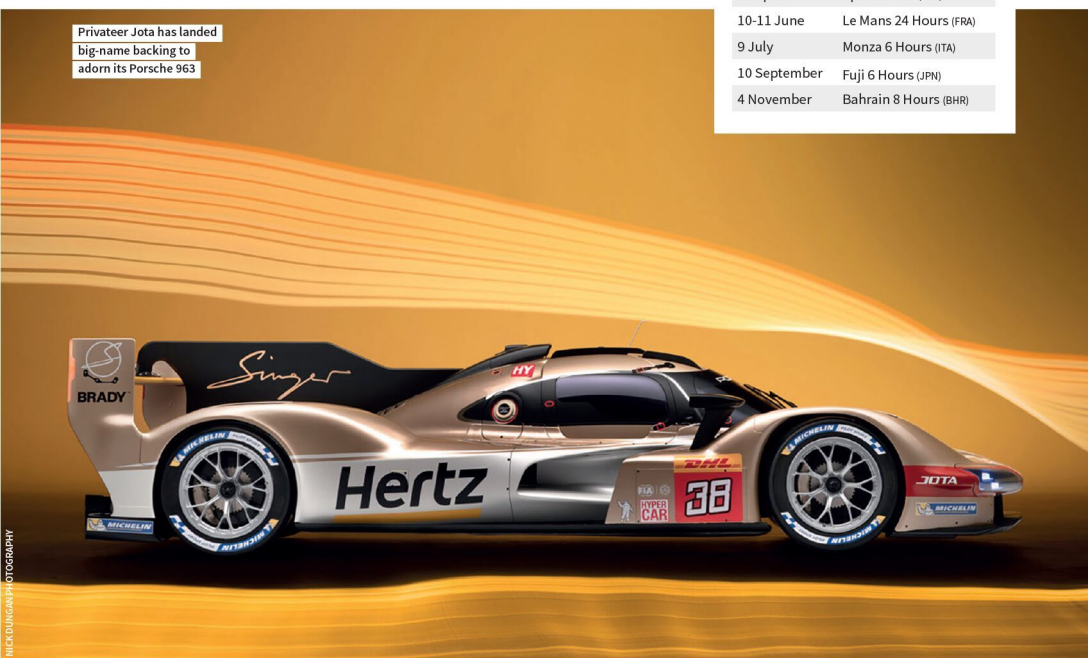
Rules encourage designers to incorporate cues from road cars

Privateer Jota has landed big-name backing to adorn its Porsche 963

WEC CALENDAR

DATE	VENUE
17 March	Sebring 1000 Miles (USA)
16 April	Portimao 6 Hours (PRT)
29 April	Spa 6 Hours (BEL)
10-11 June	Le Mans 24 Hours (FRA)
9 July	Monza 6 Hours (ITA)
10 September	Fuji 6 Hours (JPN)
4 November	Bahrain 8 Hours (BHR)

NICK DUNGAN/PHOTOGRAPHY



SPOT THE DIFFERENCE: LMH vs LMDh

*There are two ways to skin a cat in the new era of the World Endurance Championship.
Beyond the strict aero targets, here's our guide*

GARY WATKINS

WHEELS AND TYRES

LMH allowed for two different options for wheels and tyres when it was opened up to non-hybrid cars. An option for 12.5in rims and 13.5in tyres at the front and 14in/15in at the rear was introduced alongside the same size 13in wheels and 14in tyres all round in the 2018 LMH rulebook. This was the option taken by Toyota and Peugeot for its all-drive hybrids. Toyota subsequently went to the narrower fronts and wider rears for 2022 because the weight distribution of the GR010 HYBRID had been compromised by a reduction in the minimum weight from 1100kg as part of the convergence process in mid-2020. Peugeot stuck with the same size wheels and tyres all round because it is a key component of its wingless concept. All LMDhs run the narrower fronts and wider rears, and all LMHs homologated from this year – the Ferrari included – have to do likewise.



FERRARI



INTERNAL COMBUSTION ENGINE

All the major engine choices – turbo or non-turbo, number of cylinders and the like – are free in both LMH and LMDh but there are rules governing the weight, which is set at 180kg, and the centre of gravity. The maximum power allowed from the drivetrain, incorporating the hybrid element of the manufacturer cars, is now 520kW (697bhp), a change on the 500kW for Le Mans and 520kW for the other races previously allowed in LMH.

HYBRID SYSTEM

The original LMH rules released in December 2018 called for a front hybrid system on all cars. Now the rules allow non-hybrids, but if a car does run a hybrid system it has to be on the front. Maximum power from the front motor generator unit (MGU) is 200kW (268bhp). Every LMDh has an off-the-shelf rear hybrid system developed by Bosch (MGU), Williams Advanced Engineering (battery) and Xtrac (gearbox), with maximum power of 50kW (67bhp).

SAFETY

The giant tail fin of the previous generation of LMP1 cars is no longer mandated, but manufacturers still have to prove the stability of their machinery at various angles of yaw during the homologation process. All the cars now run a fin of some size – Peugeot the smallest – while the original Glickenhaus 007 did not run one at all in 2021. There are new cockpit safety rules for the latest generation of prototypes; the seating position is more upright to reduce the risk of spinal injuries.

CHASSIS

LMH manufacturers are free to develop their own chassis, whereas an LMDh manufacturer must take the so-called spine of one of the four next-generation LMP2 chassis built by Dallara, Multimatic, ORECA and Ligier as the basis of its car. The internal combustion element of the powertrain and the bodywork are the manufacturer's responsibility, but a front upright, for example, would be interchangeable between the Cadillac V-Series.R and the BMW M Hybrid V8, which are both developed in conjunction with Dallara. Minimum weight is set at 1030kg for two-wheel-drive cars and 1040kg for four-wheel-drive machinery.



TOYOTA



JEP/SPORT IMAGES

Toyota is returning to the WEC for its 11th straight campaign with a clear target in front of it – and one on its back as well. It has swept to five consecutive Le Mans victories and four championship drivers' and manufacturers' doubles in the absence of any proper factory opposition, so continuing that run will go a long way to legitimising those successes. And as the incumbent king of the WEC with a proven car and an established driver line-up, the odds look good for it to be able to do just that.

An all-new LMH was on the drawing board as Toyota cast an eye on the arrival of Ferrari, Porsche

"In its 11th straight campaign, Toyota has a clear target in front of it – and one on its back"

et al for this year, but it opted instead to evolve the GR010 HYBRID that came on stream in 2021. There is no change in the driver line-up after reserve Nyck de Vries landed a Formula 1 seat at AlphaTauri. Sebastien Buemi, Brendon Hartley and Ryo Hirakawa defend their title in the #8 Toyota Gazoo Racing entry, while Kamui Kobayashi, Mike Conway and Jose Maria Lopez – who back in the middle of last season had looked certain to be replaced by de Vries – stay together for a fifth campaign in #7.

The improvements to the GR010, powered by a 3.5-litre twin-turbo V6 within the strict criteria laid down in the LMH rules, are less extreme than for last season and have been focused on driveability, serviceability and reliability, as well as bringing the weight down close to the 1040kg minimum for four-wheel-drive machinery.

Toyota GR010 HYBRID

#7

Mike Conway
Kamui Kobayashi
Jose Maria Lopez

#8

Sebastien Buemi
Brendon Hartley
Ryo Hirakawa

Essentially, Toyota wanted to create a more raceable machine.

"We have not been working on pure aero efficiency, rather aero consistency, trying to help driveability," says Toyota Gazoo Racing Europe technical director Pascal Vasselton. "We have worked to have as consistent a car as possible."

That will be key in a championship where the performance of the cars is levelled up under a Balance of Performance formula. The same logic applies to revisions to the brake cooling for the new season.

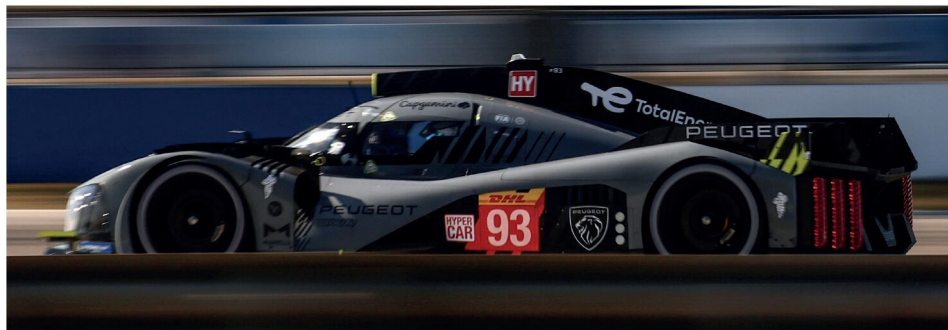
"Within a balanced category, one of the items related to racecraft is serviceability of the car," explains Vasselton. "We have been at times struggling to adjust the brake cooling. We have gone to a different cooling duct arrangement, so we can add or remove blanking very easily."

Development on the reliability of the GR010 includes what the team believes is a successful attempt to overcome the ECU glitch that has cropped up on multiple occasions over the past two years. That included last year's Le Mans, when the multiple resets for #7 in hour 16 took it out of contention in the fierce battle with the winning sister car.

It all adds up to a package that has to make Toyota the favourite going into the season, Buemi admitting that "it's a bit difficult to deny that". But the Swiss insists the team is "staying humble and not underestimating anyone" with the arrival of some real opposition for the first time since 2017.



PEUGEOT



JEP/MOTORSPORT IMAGES

Peugeot enters a first full season in the WEC with its avant-garde 9X8 LMH unchanged in concept from last year. So that means no sign of a conventional rear wing! There has, however, been an intensive winter development programme, spanning 6000 miles and three endurance tests, after a troublesome exploratory campaign by the sportscar racing returnee in the three post-Le Mans WEC races in 2022.

The results of that development will be entrusted to the same line-up that raced for the Peugeot TotalEnergies team in last year's Bahrain season finale.

"There has been an intensive winter test programme, spanning 6000 miles"

Nico Muller, who took the place filled by reserve driver James Rossiter for Monza and Fuji after Kevin Magnussen's pre-season return to F1, shares the #94 entry with Loic Duval and Gustavo Menezes, while Paul di Resta, Jean-Eric Vergne and Mikkel Jensen are teamed in #93.

The French manufacturer's comeback to front-line endurance racing was announced way back in November 2019 for an entry at the start of the 2022-23 season, which, had the WEC's winter format not been blown out of the water by COVID, would have meant a debut at the back end of last summer. So the Monza debut in July for the 9X8 certainly didn't represent a delay for the striking hybrid contender powered by a 2.6-litre twin-turbo V6.

Peugeot made two full-season entries last year but chose six months of testing over racing in

Peugeot 9X8

#93

Mikkel Jensen
Paul di Resta
Jean-Eric Vergne

#94

Loic Duval
Gustavo Menezes
Nico Muller

the first half of the series, in the knowledge that the specification of the car would be largely fixed once it was homologated. It wasn't entirely convincing on its arrival: Peugeot failed to get a car to the end of a single one of the six-hour races without delays, and showed flashes of pace rather than consistently doing so.

However disappointing the results were last year, it was a valuable experience for an in-house team that is largely new as it geared up for its bid to add to its tally of Le Mans victories in the middle of its first full campaign with the 9X8. Peugeot's successes with the 908 LMP1 turbodiesels, including the last of its three victories at the French endurance in 2009, are now ancient history.

Olivier Jansonné, technical director on the 9X8 programme, gives Peugeot "seven out of 10 or maybe eight for the way we developed the team". It would have to be "a lot lower" when it came to reliability, he admits.

In terms of performance he insists that the 9X8 "showed some good stuff", particularly in Bahrain when #93 qualified on the front row and set the fastest race lap. He suggests that it is difficult to judge the car's long-run pace given its poor reliability in the eight-hour finale.

The measures to address the weaknesses have been undertaken right across the car, "a bit of aero and mechanical design, as well as work on the powertrain", says Jansonné. "If everything has gone to plan we should be where we wanted to be last year."



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FERRARI



JEP/MOTORSPORT IMAGES

The significance of Ferrari's factory return to the top-flight of sportscar racing cannot be understated. The presence of the most famous motor racing marque at the front of the WEC grid provides the cream on an already luscious cake.

It is coming back 50 years on from its last such campaign, and doing so in the centenary year for Le Mans. The significance was not lost on Ferrari and its sportscar racing boss Antonello Coletta: "All the numbers have come in a magic moment. We understood that the occasion was great."

The result of the decision

"All the numbers have come in a magic moment. We understood that the occasion was great"

to return announced in February 2021 is the 499P hybrid Le Mans Hypercar, a machine that will race in a livery that tips its hat to the marque's last Le Mans contender, the 312 PB three-litre Group 6 car of 1973.

Developed in-house at Ferrari's Attività Sportive GT department, the car is powered by a three-litre twin-turbo V6 that has its roots in the 296 and therefore the new GT3 version of the car. The nomenclature of the new racer is derived from the capacity of a single cylinder just like the very first Ferrari, the 125S of 1947.

Ferrari undertakes its Hypercar campaign with its long-term partner from the GT ranks, AF Corse, and a roster of familiar drivers — Coletta always insisted that he wasn't looking beyond the Ferrari family. Five drivers have graduated from its GT squad

Ferrari 499P

#50

Antonio Fuoco
Miguel Molina
Nicklas Nielsen

#51

James Calado
Antonio Giovinazzi
Alessandro Pier Guidi

and are joined by Formula 1 reserve and former Alfa Romeo driver Antonio Giovinazzi, who has been on the marque's books since 2016. He shares #51 with James Calado and Alessandro Pier Guidi, three-time winners of the WEC GTE Pro title, while Antonio Fuoco races #50 with Miguel Molina and Nicklas Nielsen.

The first 499P was given a shakedown last July and a second car came on stream almost immediately as Ferrari dovetailed endurance testing with performance work in its efforts to close the gap on the established WEC runners. So far the design has notched up 15,000 miles on track, and perhaps crucially has undertaken a pair of two-day tests at Sebring.

A newcomer or returnee it may be, but the pressure is undoubtedly on the Italian marque, as Coletta concedes: "When Ferrari competes in a category, everyone sees Ferrari first and then all the others."

Ferrari has been at pains to stress that it is heading into the season with humility. It also admits that there will be lessons to be learnt racing at the front of the grid rather than down in the pack in GTE Pro.

"There are still maybe a lot of niggles in race situations, so the biggest goal for us as a team is to learn as fast as we can to improve the car all the time," says Calado. "The outright goal is obviously to get wins, to get championships, to get Le Mans, but we don't know when that is going to happen. You can't expect it probably in the first year."

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PORSCHE



JEP/MOTORSPORT IMAGES

Porsche's absence from the prototype ranks looked on course to be brought to an early end the moment the LMDh category was announced. It immediately came out in support of a concept that allowed it to race in both the WEC and IMSA at a price tag a fraction of what it had spent on its 919 Hybrid LMP1 that competed on the world stage in 2014-17. It was almost certainly the first to green-light a programme, though it was beaten to the punch in going public by Volkswagen group sister marque Audi, which subsequently backtracked to focus on Formula 1.

Porsche's own announcement of

"Porsche was almost certainly the first to green-light an LMDh programme"

a car that would subsequently be christened the 963 in homage to the all-conquering 962 Group C contender came in December 2020, followed five months later by the news that it was renewing its alliance with Penske for assaults on both IMSA and WEC under the banner of Porsche Penske Motorsport. That preceded both confirmation of Multimatic Motorsport as the chassis partner and the engine concept, a 4.6-litre twin-turbo that has its roots in the normally aspirated V8 that powered the RS Spyder LMP2s Penske successfully campaigned in North America in the late 2000s.

Porsche announced its drivers for both campaigns in three tranches between December 2021 and last November. Dane Cameron shares #5 with Michael Christensen and Frederic Makowiecki, while #6 is driven by Andre Lotterer, Kevin Estre and Laurens Vanthoor.

Porsche 963

#5
Dane Cameron
Michael Christensen
Frederic Makowiecki

#6
Kevin Estre
Andre Lotterer
Laurens Vanthoor

Jota

#38
Antonio Felix da Costa
Will Stevens
Yifei Ye

Proton

#99
Gianmaria Bruni
TBA
TBA

There will be a third PPM car at Le Mans, in which so far only Felipe Nasr has been listed. The customer cars from Jota and Proton are set to bolster the Porsche attack from Spa and Monza respectively.

Makowiecki had the honour of undertaking the first laps in the car early in January 2022 at Porsche's Weissach test track, after which it embarked on a test programme that from the summer straddled Europe and North America. It had a six-month jump on the other three LMDh manufacturers racing in 2023, but it was forced to do much of the heavy lifting on development of the one-make hybrid system. It wasn't quite the head start that it might appear, even if the new car has racked up 25,000 testing miles.

It looked anything but that on the debut of the 963 at the Daytona IMSA series opener. One car finished down the order after undergoing an early change of the hybrid battery, and the other went out late on with a major gearbox issue. The only consolation was that Porsche was at least as fast as Cadillac, even if the Acuras that finished 1-2 had a clear edge.

There is, however, "definitely confidence" that the problems have been fixed, according to PPM team boss Jonathan Diuguid. There were some "productive conversations" with the suppliers. "The time is short, but our group is working really hard," he says. "We are motivated to come back and address the technical issues and show the potential and pace of our Porsche 963."



CADILLAC



JEP/IMOTORSPORT IMAGES

Cadillac, lest it be forgotten, is another returnee to Le Mans and its environs.

Next to Ferrari

and Porsche it is, of course, easily forgotten, given that its history right at the top of sportscar racing is both sporadic and sketchy. But what it does have is consistent success in North America. And that's what arguably makes its entry into the WEC with its V-Series.R LMDh so intriguing.

The General Motors brand was the marque with the most wins over the six-season life of the outgoing Daytona Prototype international category in 2017-22, and was unbeaten at the Daytona

"Cadillac has consistent success in North America and that's what makes its WEC entry intriguing"

24 Hours over the first four of those years. A programme that started with the 2017 DPi-VR has continued into the new era with another contender developed in conjunction with Dallara and powered by a 5.5-litre normally aspirated V8. An expansion into the WEC means a return to Le Mans for the first time since the underachieving Northstar programme of 2000-02.

Cadillac is a global marque, but the make-up of its campaign this year perhaps indicates its priorities. There's only one V-Series.R racing full-time in the WEC, but there will be three at Le Mans when its two IMSA entries join in. GM understands the reach of the French enduro into North America, witness the long-standing Corvette Racing GT programme.

The full-season WEC entry under the Cadillac Racing banner is run by Chip Ganassi Racing. That's

Cadillac V-Series.R

#2

Earl Bamber

Alex Lynn

Richard Westbrook

the 'real' CGR rather than the Ganassi-branded Multimatic squad that operated the WEC Ford GTs in 2016-19. A base in Germany has been lined up for the team post-Sebring, while the driver line-up has a familiar look: Earl Bamber and Alex Lynn have been retained by the US team; and Richard Westbrook has been brought back three years on from his four-season stint on the Ford programme in IMSA.

Cadillac arrives at Sebring in good shape after a strong debut for its LMDh at Daytona that yielded the final place on the podium. Perhaps just as importantly, it has already completed three times the eight-hour WEC distance around Sebring; the team successfully undertook a 24-hour test at the bumpy Florida venue in October.

What it hasn't done is any testing in Europe. Not a jot. Laura Wontrop Klausner, GM's sportscar programme manager, points out that a need to maximise track time with the LMDh militated against that, despite the car's origins in Italy. "We couldn't sacrifice a car being in a container for extra days or weeks when we had a very aggressive test schedule that we were trying to accomplish in a short period of time," she says.

Instead, Cadillac fielded the WEC car at Daytona alongside the regular IMSA entries from Ganassi and Action Express Racing. That, it insists, was more valuable than testing in Europe. "Every test is useful," says Stephen Mitas, Cadillac Racing's team manager and strategist, "and every race is even more useful."



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GLICKENHAUS



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G

lickenhaus was the saviour of the WEC in the first two seasons of the Hypercar class.

Not only did it put another LMH on the grid alongside the Toyotas, but it kept them honest at times. Witness two pole positions last year and a near-miss at Monza: it would most likely have won but for a brand-new turbocharger grenading itself.

The American entrant proved itself a credible contender at the highest level with its 007 non-hybrid LMH powered by the bespoke Pipo 3.5-litre V8 twin-turbo and developed by Podium Advanced Technologies. There

“We’re the little guys racing against the OEMs, but we’ve done better than anyone expected”

were months of procrastination about whether it would return this year with the team run by Podium but, after declaring its intent to race on into 2023 last December, it has been welcomed back by the series despite missing the last two rounds of 2022. It again runs one full-season car and has another entry for the big one at Le Mans.

You could say it’s business as usual for Glickenhaus Racing. Romain Dumas, Olivier Pla, Ryan Briscoe and Franck Mailleux, stalwarts of the team’s first two WEC campaigns, return to the line-up. Dumas and Pla are pretty much confirmed in #708 for the full season, while the team could try out other drivers at Algarve and Spa as it looks for team-mates for Mailleux at Le Mans. Briscoe is set to move cars to join Mailleux for the centrepiece WEC round, though the team insists that it is taking its campaign race by race.

Glickenhaus-Pipo 007 LMH

#708
Ryan Briscoe
Romain Dumas
Olivier Pla

The car is largely unchanged, too. There has been no winter test programme: neither of the two cars has run since the last race outing for the team at Monza last July, save for a brief outing with the owner of the #709 car at the wheel. That meant its first experience of the new generation of Michelin tyres came at last weekend’s Prologue.

Glickenhaus hasn’t been idle since its last WEC appearance, however. It has worked on getting the most out of what it has, and in particular the rear-axle brake-by-wire system introduced early last season.

“We have been concentrating on optimising the package we have,” says Glickenhaus chief engineer Stefano Rapisarda. “We want to give the drivers more confidence in the electronic systems. We have worked a lot on the software side.”

Glickenhaus also hasn’t ruled out employing some of its jokers as the season progresses, but that kind of development programme will depend on either sponsorship or a funded driver providing the necessary financial resources. That said, Hypercar is a BoP formula, which team founder Jim Glickenhaus believes will give his LMH a chance even in the face of a much deeper pool of opposition.

“If we get a fair BoP, and I have been assured we will, there’s no reason we can’t be competitive,” he says. “We know we’re the little guys racing against big OEMs, but we’ve done better than anyone expected. I’d like to think we can continue to punch above our weight.”



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VANWALL



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The German squad that formerly raced as ByKolles is back in the WEC after a two-season hiatus and now flies the flag of a marque that has been absent from the track for much, much longer. It has brought the name of the Vanwall team, winner of nine world championship grands prix in 1957–58, back to international motorsport with an all-new LMH. That move has not been without controversy, however; a dispute over the rights to the name with a British entity remains ongoing.

The non-hybrid Vanwall Vandervell 680 – the name refers to the founder of the original team,

“Kolles insists Villeneuve is highly motivated, physically up to the job and will be on the pace”

Tony Vandervell, and the horsepower output originally laid down in the rules for Le Mans – has been designed, developed and mostly built in-house, just like its long-serving predecessor. It has retained the 4.5-litre Gibson V8 engine that powered the final iteration of the CLM P1/01, and like the Clickenhaus is a non-hybrid.

Team boss Colin Kolles insists the P1/01 was all about learning, calling it an “investment to reach the point at which we are today”. He describes the build quality of the latest creation “Formula 1 standard”, and insists it is a major step forward on a car that never did much more than make up the numbers on the WEC grid.

Kolles is bullish that his team can compete with the big boys this time. “We’re not scared of anyone,” he insists. “We are here to win.”

Vanwall has been running its car since last March; remember its

Vanwall Vandervell 680

#4

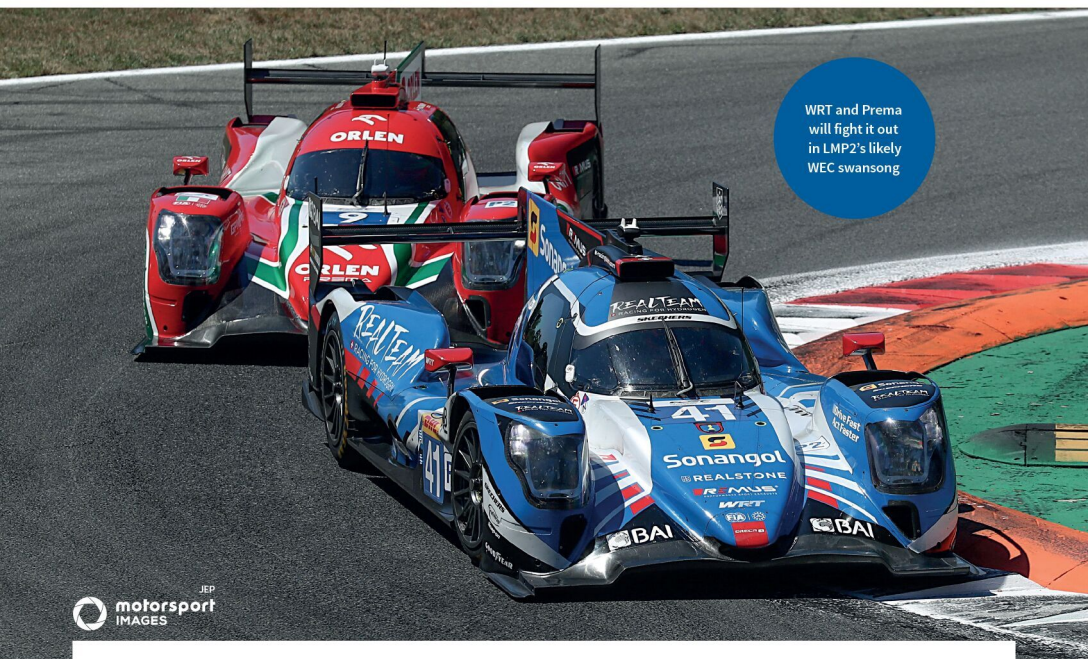
Tom Dillmann
Esteban Guerrieri
Jacques Villeneuve

entry for last year’s WEC was turned down, but it got on with the job of developing the car to back up Kolles’s proclamations that it would try again for 2023. It has completed a significant test programme around Europe, though not at the same level of a manufacturer operation, with Tom Dillmann and Esteban Guerrieri undertaking the majority of the driving. The team regular and the WTCR race winner have moved over from development roles into race seats alongside the team’s star signing over the winter: none other than 1997 F1 world champion Jacques Villeneuve.

A common acquaintance informed Kolles of Villeneuve’s sportscar ambitions, a try-out in the Vanwall LMH was hastily arranged at Barcelona last November and a deal quickly followed. The team owner insists that a 51-year-old whose brief flirtation with top-level sportscar racing at Peugeot came to an end 15 years ago is highly motivated, physically up to the job and will be on the pace.

Villeneuve is also a driver whose last full season of racing was in the NASCAR Euro series back in 2019, so he’s short of mileage. A single day in the car on his try-out at Barcelona was the only test he managed to fit in before the team was forced to switch focus and make sure the Vandervell 680 was homologated, which involved putting the car in the Sauber wind tunnel as demanded by the regulations. That explained the focus on him during last weekend’s Prologue test at Sebring. *✍*





BOWING OUT BEFORE TIME'S UP

LMP2 is fighting fit, but this looks set to be its final year as the WEC's secondary prototype class. The GTE Am field is also up to scratch

GARY WATKINS

This is a swansong year for the supporting classes in the World Endurance Championship – probably. LMP2 is set to disappear as the Hypercar field grows. It's not confirmed, but it's probably inevitable simply because there won't be room for them as the entry in the top category grows towards 20 cars or even beyond. What we do know, however, is that this is the last year of the GTE rule set.

WEC promoter and Le Mans 24 Hours organiser Automobile Club de l'Ouest isn't turning its back on P2. It will remain an important building block in what it likes to call the pyramid of endurance and will continue as the premier class in both the European and Asian Le Mans Series. Together with the IMSA SportsCar Championship, they will provide a significant component of the Le Mans grid going forward. The ACO has vowed to reserve a minimum of 15 entries in P2 at the 24 Hours from 2024.

The paradox is that LMP2 is set to be axed from the WEC at a time when it is in rude health. The entry, which is all-ORECA

for the second consecutive season, stands at 11 cars, down four on last year. But it is packed full of quality and there is no Pro-Am sub-class for line-ups with a Bronze driver this year. The teams on the grid have five P2 WEC titles between them, not to mention eight class wins at Le Mans.

That tally is partially down to a one-season return to the class by the Signatech-run Alpine team, a three-time LMP2 Le Mans winner, while it awaits the Renault brand's new LMDh. The winner of two races overall last year with its grandfathered LMP1 fields a pair of ORECA-Gibson 07s. Team regulars Matthieu Vaxiviere and Andre Negao lead the two crews, while Briton Olli Caldwell shares with the latter after jumping off the single-seater ladder.

Reigning champion Jota is down to one car for the full season, although its P2 attack is bolstered for the opening two rounds by a second ORECA in the livery of its Hypercar sponsor, Hertz. That means its hopes of retaining the title rest on the shoulders of Pietro Fittipaldi, Oliver Rasmussen and David Heinemeier Hansson.



Green is gone: Jota fields car in Hertz colours ahead of LMDh graduation



Signatech-run Alpine returns to LMP2 class as it topped in 2018-19

United Autosports, champion in 2019-20, returns with two cars and the kind of line-up you'd expect. Bringing reigning IMSA champion Tom Blomqvist back to the WEC to share with Oliver Jarvis and Josh Pierson is a bit of a coup. Euroformula Open frontrunner Freddie Lubin makes the switch to sportscars to share with Filipe Albuquerque and Phil Hanson.

Robert Kubica and Louis Deletraz have been reunited with the WRT squad with which they won the 2021 ELMS title. In the sister car, Robin Frijns and Ferdinand Habsburg, WEC champions in 2021, have been paired together again with Sean Gelael.

Prema expands to two cars in its sophomore season of sportscar racing. Lamborghini factory drivers Mirko Bortolotti and Andrea Caldarelli lead the line-ups in preparation for 2024, when Premia will be a key component of the Iron Lynx team running the



TF Sport Aston is back, but champ Ben Keating switches to this Corvette

forthcoming Lamborghini LMDh. Vector Sport, established for a WEC campaign in 2022, is back, as is the Polish Inter Europol team.

Revisions to the FIA system of driver categorisation this year haven't really changed much. Young up-and-comers forging careers in sportscars such as Pierson and Rui Andrade, who is back at WRT alongside Kubica and Deletraz, remain Silver. But there is, as ever, an obvious outlier. David Beckmann fills the Silver driver berth in the extra Jota car for the first two races, despite being Porsche's Formula E test and reserve driver and a race winner in GP3 and Formula 3.

What effect will be felt from another reduction in performance in LMP2 – the fourth in three seasons – remains to be seen. Power from the one-make Gibson V8 has been reduced by another 10kW (or 13bhp) in the name of what the Americans like to call 'class separation'. The FIA and the ACO needed a bit more wriggle room now that they have to equate seven different cars in Hypercar under the Balance of Performance.

GTE Am continues for one final time after its sister GTE Pro category was wound up last season as the WEC transitions into a new era based around GT3 for next year. The 14-car field is dominated by established teams, with one left-field addition.

The Corvette Racing factory Chevrolet Corvette squad moves into GTE Am after a first full WEC campaign last season around its regular Le Mans campaign. The deal for the team to race on this year has been put together by reigning class champion with the TF Sport Aston Martin team Ben Keating, a Texan car dealer who sells a lot of 'Vettes. But it makes sense for the Pratt & Miller-run team to learn the lie of the land in customer racing ahead of the arrival of

“What effect will be felt from another reduction in LMP2 performance remains to be seen”


its new Chevrolet Zo6 GT3.R next year. Keating shares the car with Nicky Catsburg, a member of the Corvette Racing endurance squad for the past three seasons, and sometime BRDC British Formula 3 Championship driver Nico Varrone from Argentina.

The Iron Lynx squad moves over from Ferrari to Porsche. Its link-up with Lamborghini means it couldn't continue with what team boss Andrea Piccini calls “the other Italian marque”. It fields two Porsche 911 RSRs, one under the Iron Dames banner for the all-female line-up of Rahel Frey, Michelle Gattling and Sarah Bovy.

The first woman to be signed as a Ferrari factory driver, Lilou Wadoux, has been placed in a 488 GTE Evo run under the Richard Mille banner by AF Corse. Otherwise, GTE Am looks pretty familiar, with class stalwarts AF, Proton, Project 1, Kessel and TF all represented. ✂



Ferrari pioneer Lilou Wadoux lines up for Richard Mille in GTE



Lehto scored fine fifth on Sauber's F1 debut in 1993 South African GP

SAUBER'S START IN F1

BMW? CHECK. AUDI? ON THE WAY. MERCEDES? NOT QUITE...

Sauber has a habit of forging strong ties with German car giants. Except its first in F1 with Mercedes three decades ago could – and should – have been so much more

ADAM COOPER

PHOTOGRAPHY



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Thirty years ago this week, the Sauber team made its grand prix debut in South Africa and announced its arrival with a stunning fifth place for JJ Lehto. No new team had made the top six on its debut since Wolf won in Argentina in 1977.

The Formula 1 world was surprised by the form of the newcomer, whose sleek black car carried only a few logos, including one that proclaimed 'Concept by Mercedes-Benz'.

The fact that the Swiss squad's first F1 car was designated C12 was a good clue as to why it had come out of the blocks so strongly. Peter Sauber had been manufacturing racing cars for over two decades, and had won the world sportscar championship with works Mercedes support in 1989 and 1990. With a well-equipped factory in Hinwil and a ready-made race team that was capable of running three cars at Le Mans, the move to GP racing for 1993 wasn't really such a stretch. A few years later Sauber would

become the works BMW team, and in 2026 it will morph into Audi. But it should have started as the first full Mercedes F1 entry since 1955, as that curious 'concept by' hinted.

At the end of 1989 Mercedes had made its longer-term intentions clear by naming F3 stars Michael Schumacher, Karl Wendlinger and Heinz-Harald Frentzen as its sportscar junior team, with a view to training them up for F1. Harvey Postlethwaite was hired to spearhead the project as technical director, and later he recruited his former Tyrrell colleague Mike Gascoyne as head of aero.

"I went over to Switzerland and agreed terms," Gascoyne recalls.

"THE TEAM WAS CAPABLE OF RUNNING THREE CARS AT LE MANS. THE MOVE TO F1 WASN'T REALLY SUCH A STRETCH"



"This was summer 1991, and I remember going to the Magny-Cours Group C race, when they had the flat-12, a horrendous engine! It took eight hours to change.

"There was a massive fight. The Mercedes guys wanted to use that engine in F1 and Harvey didn't want to. It was never going to work; it was so wide and flat you could never fit it in an F1 car with a normal Coke-bottle shape. It was a terrible thing. It was Harvey who pushed them to go with Ilmor, who were supplying Tyrrell at the time.

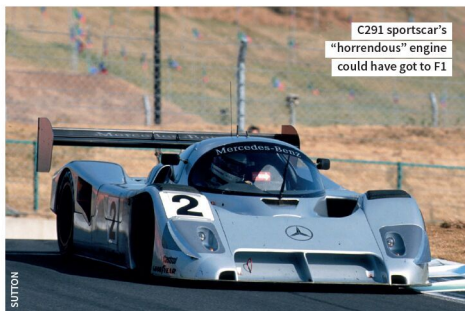
"My job was to basically set up their aero department. They tested in a wind tunnel at Emmen, a Swiss aircraft factory. The model was just made of foam and filler, it was incredibly rough, although they were winning in sportscars at the time.

"I had the opportunity to start a whole department from scratch. We had to update the tunnel, and going to carbon-fibre models was a huge step up for them.

"I remember we did a mock-up for the chassis of the C12, and Schumacher had a seat fitting in it. But it wasn't going to be a works Mercedes – if it had been, he would have been in it. By the end of 1991 it was clear something was up. And that's when Harvey suddenly announced he was going to Ferrari."

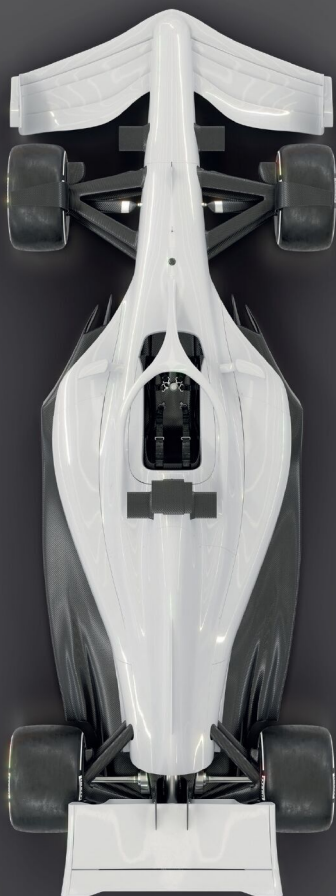
Mercedes dropped a bombshell by announcing that it would not enter F1 as a works team after all. A shell-shocked Peter Sauber was so far down the road with his F1 project that he didn't want to give up. He squeezed a "silver handshake" out of Mercedes in the form of finance that would allow him to continue independently and enter F1 in 1993.

"It was already in 1991 that Peter decided to go into F1 alone, without Mercedes," says Beat Zehnder, chief mechanic in the sportscar days and still with the team as sporting director. "Actually it wasn't without Mercedes, because without them, we couldn't have done it. We had an offer for being a car tuner for Mercedes, like AMG, road car tuning. >>



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Sauber was competitive in debut season but fell back as 1993 progressed

“IT WAS ONE OF THE NICEST CARS I DESIGNED, AND IT WAS ALSO QUICK BECAUSE OF ALL THAT AERO WORK”

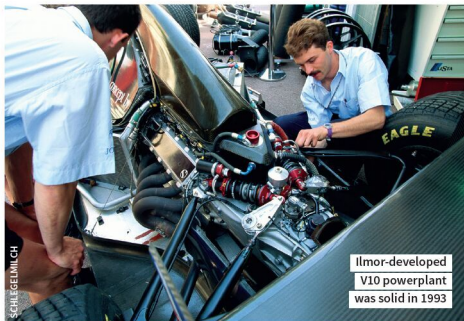
“After Mercedes withdrew from sportscars the support was mainly on the financial side, and not on the technical side anymore. When it was clear that Mercedes was not fully behind the project, Harvey left.”

Postlethwaite was soon replaced by McLaren and Ferrari veteran Steve Nichols, who worked through 1992 alongside Gascoyne and chief designer Leo Ress.

Zehnder stresses that the team was well-prepared for the move to F1. “We didn’t have any knowledge about an open-wheeler,” he says. “On the other hand, the organisation in Group C was already at a very high level. We had sequential shifting, we had quite big budgets, and we’d done carbon-fibre chassis.”

“We did the whole car on our own – except obviously the engine, which came from Mercedes, and the gearbox. But everything else we did, so there wasn’t a lot of change needed from Group C into F1. And 1992 was a year of preparation, which was very good, because we had time.”

“We had a huge amount of wind-tunnel time to develop the car,” adds Gascoyne. “We had months and months in the tunnel because we weren’t racing, and we came up with the C12.



ZEHNDER/MCH

Ilmor-developed V10 powerplant was solid in 1993



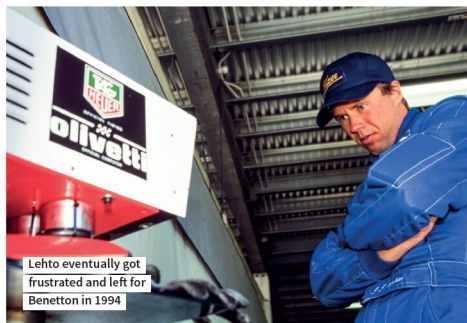
"Aerodynamically I had learned quite a bit at McLaren, and the few months at Tyrrell had taught me even more. We were able to do a huge amount of wind-tunnel testing for that time, and everything from scratch. Actually it was a very nice-looking car, one of the nicest I've ever designed, and also it was pretty quick – because we'd done all that aero work."

Meanwhile technical director Nichols struggled to adapt to Switzerland and the way the team operated. He would leave before the new season got under way. "Mr Sauber was strange," says the American. "I was trying to tell him you need to do this, this and this, and you want to improve and want to be better. I said we have to change the way we work to be more efficient, just do everything a little bit better. And you need to benefit from my experience. And they said you have to adapt to us, and you have to do it our way."

But Peter Sauber wasn't entirely stuck in the past – in a pioneering move he named Carmen Ziegler as team manager at a time when few women had a direct involvement in any F1 garage.

By 1993 Schumacher was long established as Benetton's new superstar. But Wendlinger returned to the Sauber camp after learning the F1 ropes with March, while JJ Lehto moved across from Scuderia Italia. "It was a good combination, and at the time for sure right," says Zehnder. "Except for Monaco, where they crashed into each other! Karl was a no-brainer, because he was already driving for us.

"A year before the obvious choice would have been Frentzen, but he left the organisation to go to F3000, and then Japan. He left >>



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because he was promised [by Camel] to be the next F1 driver from Germany, but this didn't happen."

The C12 showed promise in testing, although there was a late scare when its gearbox had to be substantially reworked. Then on the car's debut at Kyalami Sauber stunned the regulars as Lehto qualified sixth and Wendlinger 10th.

"The first car was very good," says Zehnder. "Obviously it helped that we had a year's time to prepare ourselves. We had to get adapted to the engine, which was an Ilmor. It was not the best, but it was a very good engine.

"I remember we had some major issues with the carbon oil tank, which delaminated. And we were working day and night in Kyalami to solve the problem. We had to go to a hospital to organise a vacuum pump to fix it!"

In a race of high attrition, Lehto finished fifth in the season opener despite problems of his own. "We could have finished on the podium with JJ, but we had an ECU change that took about one and a half minutes in the pits," Zehnder recalls. "We had some issue with humidity in the electronics. Without that change it would have been possible to be on the podium."

There was another wasted opportunity second time out in Brazil, where the black cars shared the fourth row. "At Interlagos Karl had a very good position in the race, and then we had to stop because there was something wrong with the air filter of the engine – it was eating the air filter," says Zehnder.

The momentum continued at Donington Park, where Wendlinger

"JJ LEHTO DID ONE FLYING LAP, GOT OUT OF IT AND SAID, 'THE CAR IS QUICK, I'M GOING TO WIN THIS RACE'"

and Lehto qualified fifth and seventh. And warm-up for the race looked promising. "JJ was second fastest in the warm-up, he did one flying lap, got out of it and said, 'The car is quick, I'm going to win this race,'" says Gascoyne. "Then his ignition switch failed on the grid and he had to get in the spare, which was set up for Wendlinger."

"Back then we had a T-car: one weekend it was for JJ, and one weekend it was for Karl," says Zehnder. "At Donington it was set up for Karl. JJ had a problem with the electronics on the grid, so he jumped into Karl's T-car, and the driver installation wasn't right for him, because Karl was very tall.

"JJ almost couldn't reach the pedals. I think he came in after a few laps saying it was impossible for him to drive. And Karl had a massive first lap. He followed Ayrton Senna, who was out of position, and even now this opening lap of Ayrton is one of the best I've ever seen. And Karl followed him until he was crashed out by Michael Andretti..."

"The race that we thought we were going to win, we were soon going home!" adds Gascoyne, who also points out that things with the drivers did not remain entirely harmonious. "Later JJ got very frustrated because Wendlinger was the favoured son, and then



Huge Donington Park potential was ruined by Andretti clash





he decided he was going to Benetton to drive with Michael. He was distracted and fell out of favour."

That run of early races was to be a high, at least in terms of grid positions. As the season progressed the team slipped back as others developed their cars more, much to Gascoyne's disappointment (see right). Rivals with active suspension – which Sauber did not have – remained out of reach.

Lehto earned a high of a fourth place at Imola, a result matched by Wendlinger at Monza. The Austrian also logged a few fifth and sixth places, and come the end of the season Sauber sat in seventh in the constructors' championship, equal on points with sixth-placed Lotus.

It didn't quite match the fifth position earned by Jordan in its rookie year in 1991, but no start-up team – as opposed to a renamed one – has bettered that in the past 30 years.

"Ever since we've been the best newcomer," says Zehnder, who has not missed a race since and now plays a key management role as sporting director. "Haas did a good job, but not quite the same. The main memory is more from the part that I was responsible for, like organisation and logistics. The whole of our race team going to Kyalami was 28, with three cars.

"Back then a driver turned up with a group of girls; these days a driver has his manager, his mental trainer, his physio and his lawyer! I can't say it was much more fun, but it was different. The difficulty in 1993 was to develop the car for the following year, and this was also a time when we had a huge amount of in-season tests, so we had to increase the number of people."

By the end of the year that total didn't include Gascoyne, who had accepted an offer to rejoin Postlethwaite at Tyrrell. "On 2 October, I went and handed in my notice in Hinwil," he recalls. "Mr Sauber wasn't there, but the financial director was. He said, 'Oh well it was the first of the month yesterday, you may as well leave then, and we don't have to worry about paying you!' So I officially left the day before I handed my notice in, and I went and got on a flight to England and went into work at Tyrrell."

One tantalising question remains – what would have happened if the original plans had come to fruition, and Schumacher and Wendlinger had raced a Silver Arrows-liveried Mercedes C12 in 1993, with full technical support and proper financial backing?

In fact, encouraged by Sauber's debut season, Mercedes and Ilmor strengthened their ties in 1994. The following year, the Stuttgart marque threw its weight behind McLaren – and Sauber went its own way with Ford power from 1995. Schumacher and Mercedes would finally be reunited... in 2010. *W*

GASCOYNE ON 1993-SPEC SAUBER



Mike Gascoyne insists that the Sauber C12 had more potential than it was able to show in 1993 because the team didn't keep up in the development race, despite the pace of bringing new parts to the track being much slower than it is now.

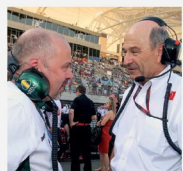
"The first thing I said was, 'We are going to be making 50 to 60 undertrays a year, because we'll wear them out,'" says Gascoyne. "And Mr Sauber said, 'On the sports car we used to glue the undertray to the chassis and never change it all year.' He couldn't get his mind around it.

"We designed the car, we had done winter testing with it, and it was pretty quick. I then came up with a load of modifications for the first race, and Mr Sauber couldn't get his mind around that either, and just said, 'It's going to cost money, and you're just changing it for the sake of it, you're just trying to make it look as though you're the clever one.'"

"I kept telling him, 'It's pretty quick now, but halfway through the season you'll be nowhere.' And if you look at the results, halfway through they got swamped; they didn't understand the rate of development.

"I was pushing to get things on it, and they

"PETER SAID, 'IT'S GOING TO COST MONEY AND YOU'RE JUST CHANGING IT FOR THE SAKE OF IT, TO LOOK CLEVER'"



wouldn't do it. It was when we used to have the really long endplates with titanium skids on that dragged on the ground, and we had turning vanes behind the front wheels, which were worth a huge amount of downforce, and they wouldn't let me put them on for the first race.

McLaren had similar things, and I was saying, 'That should have been us!'

"I ended up going to races because the race engineers didn't know how to set up a car aerodynamically.

"Although Peter didn't like me at the time, later we used to talk quite a lot and, as my German got better, he was more comfortable with that. He even asked me at one time to come back."

TOP 10 PRE-WAR GRAND PRIX DRIVERS

Following last week's cars list, we select the best aces of the 1906-39 GP period

KEVIN TURNER

PHOTOGRAPHY  **motorsport**
IMAGES



One of Benoist's
1927 Delage successes
came at Brooklands

10

ROBERT BENOIST 1895-1944

Many drivers could have taken the 10th slot, not least Pietro Bordino, whose relatively modest list of successes did not do justice to his speed. Similarly, Guy Moll's impressive abilities would almost certainly have got him onto the list had it not been for his untimely death at the 1934 Coppa Acerbo.

Benoist had a longer impact and would have been 1927 world champion had there been such a title, given his domination of that season.

Benoist, a First World War pilot, started competing after hostilities ended and showed promise with Salmson. He joined Delage and became one of its key drivers in a strong squad,

finishing third in the 1924 French GP behind team-mate Albert Divo. Benoist and Divo teamed up to win the following year's French GP, notable for the death of Antonio Ascari (another candidate for this list), but Benoist really starred in 1927.

Armed with the exquisite Delage Type 15, Benoist won four of the five races that counted for the manufacturers' world championship and didn't start the other – the Indianapolis 500. He regularly outpaced the opposition on his way to victory, in the wet and dry, in the French, Spanish, Italian and RAC ('British') GPs.

WF Bradley described him as "undoubtedly

the most brilliant French driver in the 'between-two-wars' period" in the book *Great Racing Drivers* edited by David Hodges, but Delage's financial troubles left Benoist briefly without a drive before joining Bugatti.

Benoist competed sporadically over the next few years and GP success was limited, but he did win his last race, the 1937 Le Mans 24 Hours with Jean-Pierre Wimille, for Bugatti.

Benoist also ran Bugatti's racing department before becoming a secret agent to help the French Resistance during the Second World War. He was executed by the Nazis in 1944.



Fagioli was a fast but feisty member of the Merc squad

9

LUIGI FAGIOLI 1898-1952

Surely one of the most tempestuous characters in GP history, Fagioli was also fast. He joined Maserati in 1930 and became a force over the next couple of years. In 1931 he was second to Louis Chiron in the Monaco GP and then won the Monza GP against top opposition from Alfa Romeo and Bugatti.

Pickings were slim in 1932 as Alfa Romeo dominated, but Fagioli was now an established top-liner. When rival Tazio Nuvolari walked out of the Ferrari-run Alfa Romeo team during the 1933 season to join Maserati, Fagioli went the other way. That meant he got his hands on the Tipo B and Fagioli duly won the Italian GP and Coppa Acerbo. He became champion of Italy that season, no mean feat given the number of quality countrymen up against him.

Mercedes returned to GP racing in 1934 but faced a problem. Rudolf Caracciola's future

was unknown as he continued to recover from his 1933 Monaco crash, while the promising Manfred von Brauchitsch was unproven. Fagioli was the established winner that Mercedes boss Alfred Neubauer needed and joined the Silver Arrows, but it would not be a smooth ride.

Almost immediately the fiery Italian clashed with Neubauer. After Fagioli was ordered to allow German von Brauchitsch to win the 1934 Eifelrennen, Fagioli simply abandoned his car.

A charge from the back to second proved Fagioli's combative side at the French GP, but his W25 suffered brake problems and retired. Fagioli finished second to Hans Stuck's Auto Union in the German GP, a race in which Caracciola proved that his recovery was going well and that he would soon be a candidate to become team leader again.

Fagioli finally won a race for Mercedes in the

Coppa Acerbo, then added the Italian and Spanish GPs, the former thanks to taking over Caracciola's car when his own failed and the latter after ignoring another team order!

Fagioli began 1935 with a brilliantly dominant performance in the Monaco GP and also won at Avus, but the momentum within the team was moving away from him. With Caracciola back on form, Fagioli had a shouting match with Neubauer in the Belgian GP and again abandoned his car.

Caracciola took the European title and Fagioli was always going to be up against it in 1936 but, amazingly, stayed at the team. Mercedes withdrew before the end of a disappointing campaign and Fagioli's outings were limited. There were no wins and Fagioli joined Auto Union for 1937. It was not a successful move.

Fagioli allegedly attacked Caracciola with a hammer and a knife following the Tripoli GP, and the subsequent races demonstrated that he was past his best. Bernd Rosemeyer remained the star of the team and Fagioli was no longer a top-line threat, although he was part of the dominant Alfa Romeo F1 team in 1950.

8

FELICE NAZZARO 1881-1940

Nazzaro was one of motorsport's first top drivers and makes it onto this list ahead of some of his early rivals because of the longevity of his career. He was second in the first French GP in 1906, and was still fighting for victories one world war and a decade and a half later.

Nazzaro started competing before the inaugural French GP and became known as a refined driver with mechanical sympathy and an eye for preparation. Such strengths were important in the days of long events, rough roads and fragile machinery.

A long-time Fiat employee, Nazzaro's breakout season was 1907 with the 16.3-litre 130hp model. The Italian won three of the year's big races – the French GP and

Kaiserpreis, plus the Targa Florio that featured a strong entry – at a time when similar machines could be used for a variety of events. "Never before had one man won three great races in a single year," wrote WF Bradley in *Great Racing Drivers*.

Nazzaro remained a front-line contender, battling for the lead before engine failure in the 1908 French GP and finishing third in that year's American GP. After leaving Fiat to set up his own marque, which enjoyed limited success that included a second Targa Florio victory in 1913, Nazzaro returned to Fiat for 1922.

GP regulations for 1922 stipulated a two-litre maximum engine capacity, a world away from the leviathans of Nazzaro's early days, and he had been largely out of racing for several years. But with the Fiat 804, Nazzaro won the French GP



and was second in the Italian race, beaten by rapid team-mate Pietro Bordino.

Nazzaro nearly won the 1923 Italian GP, only losing out to team-mate Carlo Salamano late on when his Fiat failed him. He retired from the following year's French GP and stayed with Fiat after its withdrawal from the sport as head of experimental road work.

7

HERMANN LANG 1909-87

Lang famously stepped over from being a Mercedes mechanic to one of its GP drivers and quickly became one of the world's aces. As a successful motorcycle racer, Lang was given his chance in a Mercedes W25 test, with no previous experience of four-wheeled competition. He impressed enough to become the junior driver while still being Luigi Fagioli's mechanic.

Perhaps unsurprisingly given his inexperience, it took Lang some time to develop over the handful

of outings he got across 1935-36, but started to progress when he got a full-time position in 1937.

Impressive on fast circuits, Lang won the Tripoli GP and the Avusrennen, the latter at an average speed of over 162mph. He also took three podiums in the European championship in the mighty W125 to finish third in the standings behind team-mates Rudolf Caracciola and Manfred von Brauchitsch.

After winning the Tripoli GP and Coppa Ciano in 1938, the cool-headed Lang was the benchmark driver of 1939. He won the Belgian, Swiss and Pau GPs, as well as the Eifelrennen at the Nurburgring. His victory ahead of Caracciola at Bremgarten was particularly noteworthy as it came in the rain, conditions in which he had previously been weak.

Controversy over the scoring system means Lang was not confirmed as 1939 European champion, but there can be little doubt that he was the standout driver of the season. Of all the drivers on this list, Lang's standing is probably hit the most by losing his best years to the Second World War.



Lang, seen here in 1938, became a master of the W154



6

LOUIS CHIRON 1899-1979

Chiron began competing in the mid-1920s with Bugatti machinery. He did well enough to find a position on the factory team and was arguably the driver of 1928, winning the San Sebastian, Spanish and Italian GPs.

He should have won his home race, the second Monaco GP, in 1930. Chiron and team-mate Rene Dreyfus broke the lap record as they battled, with Chiron seeming set to win only for a throttle problem to hamper him on the final lap and leave him second.

Chiron got his win in the principality the following year, taking over when team-mate Achille Varzi suffered a puncture and beating Maserati's Luigi Fagioli. He then starred on his way to victory in the well-supported French GP, sharing a Type 51 with Varzi in a race that took more than 10 hours.

Poor luck and the strength of Alfa Romeo prevented much success in 1932. Chiron decided to form a new team with Rudolf Caracciola, the duo buying a pair of Alfas, but the partnership was short-lived thanks to the German's serious crash during practice for the Monaco GP.

More bad luck followed at home – shades of Charles Leclerc perhaps! – the following year. Now driving an Alfa Romeo P3, Chiron led almost throughout... but was denied on the final tour when his steering broke and he toured home second. Just three months later, however, came one of Chiron's most famous victories.

Mercedes and Auto Union arrived for the 1934

French GP at Montlhéry. They were fast but fragile and Chiron was inspired. He stormed into the lead from the off (perhaps a little too soon, but there was no penalty), and only briefly lost the lead to Hans Stuck's Auto Union before its engine failed. All the German machines hit trouble trying to chase the flying Chiron, who led an Alfa 1-2-3.

There would be little further success, but impressive races followed. Chiron was third in the 1935 Eifelrennen in a P3, beaten only by Caracciola's Mercedes and Auto Union *wunderkind* Bernd Rosemeyer, and ahead of Fagioli's W25. "After the race he was congratulated on his drive by several members of the German teams," said David Venables in *First Among Champions: The Alfa Romeo Grand Prix Cars*.

Chiron joined Mercedes for 1936 but his timing was poor thanks to the awkward W25K. Although there were flashes of pace, Chiron suffered with poor reliability, picked up few good results and soon went into semi-retirement.

"He has been one of the world's leading drivers for over eight years, and his polished style will always be remembered," wrote George Monkhouse following Chiron's decision in 1936.

Chiron returned after the Second World War, winning the 1947 French GP and finishing second at Monaco the following year. He even started 15 world championship races, taking a podium in the 1950 Monaco GP (where else?), before retiring and becoming the general manager of the Monte Carlo Rally and Monaco GP.



Celebrating his 1931 French GP victory with Bugatti team-mate Varzi

5

GEORGES BOILLOT 1884-1916

Boillot was the biggest star of the pre-First World War era and became a hero of France when he won his home GP for Peugeot in 1912. That success for his relatively small L76 over the Fiat giants sounded the death knell for the big-engined monsters and the start of a more sophisticated approach to car design.

An able mechanic who could also assist in design work, Boillot drove with precision. Arguably only David Bruce-Brown, killed in a crash in October 1912, could hope to match him for speed.

Despite delays caused by ignition problems and a burst radiator hose, Boillot charged to victory in the 1913 French GP, leading Jules Goux in a Peugeot 1-2. He also won two lesser events that year, but it is for his biggest defeat that Boillot is perhaps best remembered.

The 1914 French GP remains one of the epic sporting events, 13 teams being represented in the 37-car field. Peugeot was the home favourite, but Mercedes returned to GP racing with a well-prepared, five-car entry for the seven-hour contest.

The race developed into a battle between Mercedes and Boillot. The German team had the

advantage of Continental tyres that were more durable than the French car's Dunlops and better handling, while Peugeot had brakes on all four wheels (instead of the usual two) – and Boillot.

Max Sailer's Mercedes led early on, pursued by Boillot, until his engine broke. Boillot moved to the front and, despite his extra pitstops, led going into the closing stages, with three relentless Mercedes still chasing. "The man was driving as one inspired, driving with every part of himself, with superb skill," wrote racer and renowned motoring journalist Sammy Davis. "His artistry was superb, his driving magnificent to watch."

Flinging the car around in contrast to the steady Mercedes, Boillot only lost pace in the closing miles as his Peugeot's engine finally cried enough, leaving Mercedes to score a 1-2-3 and team-mate Goux to come home fourth, nearly 10 minutes behind victor Christian Lautenschlager.

It would be Boillot's last GP. The war began later that month and Boillot, who became an aero ace, would die when his plane was shot down in May 1916.



4

ACHILLE VARZI 1904-48

One of several ex-motorcycle racers on this list, Varzi was a smooth driver. He provided a contrast to the more flamboyant Tazio Nuvolari, though they socialised together and Varzi joined Nuvolari's new team for 1928. Their fierce on-track car rivalry now began, with Nuvolari tending to have the upper hand over Varzi, who then decided to buy an ageing Alfa Romeo P2.

Varzi scored some successes with the Alfa, including the Monza GP, and became Italian champion. That got him a seat on the works Alfa team alongside Nuvolari, who beat him in an epic Mille Miglia contest in April 1930. Varzi struck back by winning the Targa Florio despite a small fire in his P2, which had been upgraded by the factory.

Spotting the rise of new firm Maserati, Varzi left Alfa and bought a 26M. He immediately won the Coppa Acerbo, then added the Monza and Spanish GPs to again become Italian champion.

He nevertheless changed steeds once more, joining Bugatti. The French firm was past its most successful period, but Varzi still racked up some victories. He won the 1931 French GP, co-driving with Louis Chiron, then battled Nuvolari's Alfa in the Belgian GP before the Type 51 broke.

Nuvolari's time had arrived, but Varzi remained at Bugatti and scored one of his greatest victories in the 1933 Monaco GP. Varzi led from pole before being joined by Nuvolari's Alfa 8C Monza, up from fourth... "For three and a half hours over 100 laps

the two Italians fought a duel which can seldom, if ever, have been equalled," wrote Chris Nixon in *Racing the Silver Arrows: Mercedes-Benz versus Auto Union 1934-39*. "Going up the hill to the Casino on the last lap, Varzi held the Bugatti in third [gear] and, engine screaming, passed Nuvolari. Tazio, too, took his revs sky-high, but the effort was too much for the Alfa's engine and an oil pipe broke."

Bugatti's star was waning, however, and Varzi joined the Ferrari-run Alfa Romeo team for 1934, just as the German GP steamroller arrived. Victories were again scarce, though Varzi narrowly won the 1934 Tripoli GP from team-mate and rising star Guy Moll, plus the Targa Florio. He picked up enough good results to take his third Italian crown.

Varzi joined Auto Union for 1935 and was soon on the pace, starting in Tripoli and winning the Coppa Acerbo. He continued into 1936, but during the season was introduced to morphine by girlfriend Ilse Engel. Varzi survived a huge crash at Tunis, but drug addiction soon took hold and his form dropped rapidly – sometimes he even failed to show up.

Not initially part of the Auto Union team for 1937, Varzi briefly found his way back in, but his health and mental state made it clear that his best days were behind him. Varzi did recover from his addiction during the war and made a successful return to racing in 1946 with Alfa Romeo, only to die in a crash during practice for the 1948 Swiss GP.



3

BERND ROSEMEYER 1909-38

"Has there ever been a motor racing phenomenon to match Rosemeyer?" asked Chris Nixon in *Racing the Silver Arrows*. "Most assuredly there has not."

A talented risk-taker, former motorcycle rider Rosemeyer burst onto the scene in 1935, took the European championship – equivalent to the post-war world championship – the following year, then completed just one more season before being killed at the age of 28.

The former DKW rider impressed in an Auto Union test at the end of 1934 and joined as the junior team member the following year. He made his car racing debut at Avus, one of the fastest circuits in the world, in a GP car. He retired following a tyre failure, but Rosemeyer grabbed everyone's attention by almost beating Rudolf Caracciola in the 1935 Eifelrennen.

His fearless approach led to many incidents, but his speed was obvious and he took his first win in September's Masaryk GP ahead of Tazio Nuvolari's Alfa Romeo, albeit in the absence of the crack Mercedes team.

Auto Union's Type C proved too much for the tricky Mercedes W25K in 1936. Rosemeyer's season

started badly with a shunt in the wet Monaco GP and a couple of fires, but victory in the non-championship but important Eifelrennen got his campaign going. And it was an epic success.

Caracciola led early on in the wet until being overtaken by Nuvolari's Alfa and then Rosemeyer before retiring with mechanical issues. As fog descended, Rosemeyer overcame Nuvolari to win. Rosemeyer's pace in the fog that made parts of the fearsome Nurburgring virtually invisible got even Nuvolari's attention. "Rosemeyer must have been able to smell his way through the mist," reckoned *Motor Sport*.

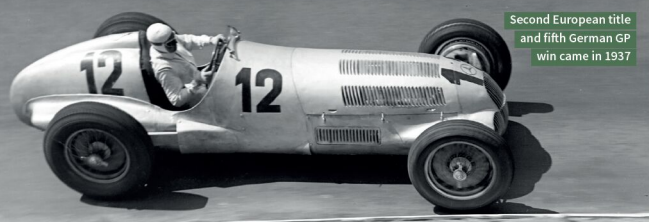
Rosemeyer, incredible on the original Nurburgring, added German GP victory there and won the Swiss GP at Bremgarten and Monza's Italian GP to comfortably take the European crown. He also won the important Coppa Acerbo.

The W125 stole the initiative back for Mercedes in 1937, but still there were highlights as Rosemeyer led the Auto Union charge. He again won the Eifelrennen and Coppa Acerbo, plus the Vanderbilt Cup and the Donington GP at season's end, though Caracciola regained the European crown.



"In that hellish tempo we imposed on each other everything was mercilessly hard," wrote Caracciola in his autobiography *A Racing Driver's World*. "We did not give a second to each other. It was his wild, stormy youth against the experience of an opponent 10 years older. He wanted to push me off my throne, whereas I wanted to sit there a while longer."

A crosswind while Rosemeyer was conducting a record attempt pitched his Auto Union into a fatal crash in January 1938, cutting short a career that could have taken him to the top of this list. Even so, Rosemeyer had won nearly a third of his races in GP machinery and ensured his name is remembered among the greats.



Second European title
and fifth German GP
win came in 1937

2

RUDOLF CARACCIOLA 1901-59

Not perhaps as rapid as Tazio Nuvolari or Bernd Rosemeyer, Caracciola may have been the most complete driver of the period. Rarely exuberant, the German racked up more major wins than any other and scored his three European crowns after suffering a crash that nearly ended his career.

While working as a salesman, Caracciola bugged his Mercedes paymasters for drives and shot to prominence when he won the 1926 German GP at Avus in appalling conditions. His prowess in such weather would soon make him the first ace to be known as a *'regenmeister'*; and Caracciola's victory aboard the W25K in the 1936 Monaco GP, in which he beat second-placed Achille Varzi by almost two minutes, is one of the great wet-weather drives.

After significant successes in the monstrous SSK/SSKL sports cars, Caracciola was forced to race Alfa Romeos in 1932 following Mercedes' withdrawal.

He held his own against Nuvolari and only finished second in the Monaco GP because he backed off to allow the Italian to run in his ailing car, a move designed to attract favour from the works team. That worked and Caracciola won the German GP – ahead of Nuvolari – for the factory.

He formed a new team, Scuderia CC, with friend Louis Chiron to run a pair of Alfa Monzas in 1933, but an accident in Monaco practice put 'Rudi' out for many months and left him with a permanent limp.

He returned with Mercedes in 1934 but there was still doubt over his ability to handle GP machinery. Friend and team boss Alfred Neubauer gave Caracciola time, and there were signs of improvement during the season.

In 1935, Caracciola and the W25 were the combination to beat. He cleverly won in Tripoli when all the cars voraciously ate their rubber. In

a race of multiple pitstops, Caracciola allowed Nuvolari's Bimotore Alfa through to battle Varzi's Auto Union, then swept through to win when both pitted with destroyed tyres.

The major issues of the 750kg maximum weight formula were tyres and brakes as power outputs rose, playing to Caracciola's measured approach. As well as the non-championship Eifelrennen, Caracciola won that year's French, Belgian, Swiss and Spanish GPs to take the European crown.

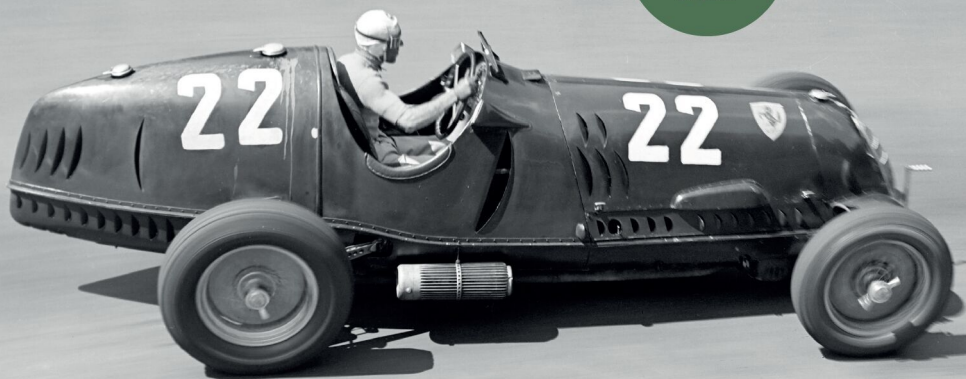
Aside from his Monaco masterclass and a win in Tunis, Caracciola suffered a poor 1936 as Mercedes fell behind, but bounced back to win the 1937 title in the legendary 650bhp W125. He won the German, Swiss and Italian GPs – three of the five qualifying rounds – as well as the important Masaryk GP.

With power and speeds climbing, GP cars were limited to three-litre supercharged engines for 1938. Caracciola took his third European title but Hermann Lang was becoming an increasing threat and wrestled the initiative away in 1939. Caracciola still won the German GP for a still unbeaten sixth time in 1939. Five of those came at the Nurburgring, underlining his mastery of the world's finest circuit.

Mercedes driver Richard Seaman picked out Caracciola, Rosemeyer and Nuvolari as being in "a class of their own" in *Motor Racing*, shortly before his death at the 1939 Belgian GP: "Both Rosemeyer and Nuvolari had an absolutely uncanny control over their cars, and could indulge in the most extraordinary 'carobatics' to extract themselves from any difficult situations while cornering.

"Caracciola, however, is in my opinion the most technically perfect driver in the world. It is very rare that one sees his car cornering in anything but a perfectly controlled slide."

Nuvolari, here in a 12C-36, often performed miracles for Alfa Romeo in the 1930s



1

TAZIO NUVOLARI 1892-1953

Yet another former motorcycle racer – and a successful one – Nuvolari was listed alongside Stirling Moss as the greatest racing drivers Enzo Ferrari had seen. He was widely regarded as the era's benchmark.

Nuvolari dabbled in cars before buying a pair of Bugattis to race alongside Achille Varzi. He won the 1928 Tripoli GP, but it was when he joined Alfa Romeo that Nuvolari's career really took off.

Already a winner of the Mille Miglia and Targa Florio epics, Nuvolari was the star of 1932, initially in Alfa's 8C Monza and then in its pacesetter P3. He won the Monaco, Italian and French GPs, as well as the Coppa Acerbo, and took the European crown.

Nuvolari was often the man to beat in 1933, but frustration with Alfa reliability meant he jumped ship to Maserati during the season. He immediately started winning, prompting Alfa to release its otherwise mothballed Tipo Bs to Ferrari, who had a volatile relationship with the man from Mantua.

Varzi moved to Auto Union for 1935 and part of his contract forbade Nuvolari joining the team. But Ferrari wanted him. "He knew that Nuvolari offered him the chance of beating the Germans and putting Alfa Romeo back on top," wrote David Venables in *First Among Champions*. "Even if the cars were not as good, Nuvolari's impossible, incredible skill could bring the chance of victory."

With the arrival of the German wondercars, Nuvolari was thrown into the underdog role. Now back with Ferrari-run Alfas, he enhanced

his reputation by being a thorn in the side of the Silver Arrows, taking his most famous victory in the wet 1935 German GP driving a Tipo B.

Ranged against nine German machines, Nuvolari's Alfa ran sixth in the early stages. He then put on a fantastic charge, moving up to second before overtaking Rudolf Caracciola's leading Mercedes. A terrible refuelling stop seemed to have put Nuvolari out of contention, but he soon overcame Luigi Fagioli, Bernd Rosemeyer, Caracciola and Hans Stuck. He set off after leader Manfred von Brauchitsch and was handed his legendary victory when the unfortunate German suffered a tyre failure.

Crashes were not infrequent and Nuvolari, a driver prepared to compete while injured, was rarely one to look after the machinery. But it was that relentless striving that also allowed Nuvolari to pull off near-miracles. He again beat the German teams at the 1936 Hungarian GP and finally got his chance in silver when he joined Auto Union.

Nuvolari mastered the mid-engined Auto Unions and led the team following the death of Rosemeyer. Mercedes tended to have the edge across 1938-39,



but Nuvolari won the Italian and Donington GPs in 1938 and the following year's Yugoslavian GP. The latter success, perhaps fittingly, made him the last GP winner of the period – in fact, the race in Belgrade took place two days *after* the outbreak of war.

Outside of GP racing, Nuvolari also won on his only Le Mans outing in 1933 and almost pulled off another miracle in the 1947 Mille Miglia at the age of 54, only losing out in his tiny 1100cc Cisitalia when his engine started to cut out.

"Although completely lacking in arrogance, he knew he was the greatest driver in the world; not necessarily the most successful, but the greatest," wrote John Eason Gibson in *Great Racing Drivers*. "It was he who proved that the vaunted and single-minded discipline of the German teams could be beaten."



Acciona Sainz car leads the way by the shore

LOPEZ
motorsport
IMAGES

Sainz and Veloce names are lit up in Neom

**EXTREME E
NEOM (SAU)
11-12 MARCH
ROUND 1/5**

A revamped format delivered two first-time Extreme E winners as Acciona Sainz XE and Veloce Racing starred at the Desert X-Prix season opener in Saudi Arabia.

The all-electric off-road series began its third season on Neom's sandy shoreline with a new look designed to prioritise racing. The single-car qualifying time trials of the previous two years were ditched in favour of two pairs of four-lap, five-car qualifying heats. The fastest five crews progressed to the Grand Final to compete for the top honours, while the slowest quintet filled the grid for the Redemption Race. The move achieved its desired goal of providing more drama, all played out on a bumpy and technical 2.1-mile dune-filled course.

Rosberg X Racing pair Johan Kristoffersson and Mikaela Ahlin-Kottulinsky emerged victorious on the road in Saturday's four-lap Grand Final only to lose the win moments after the chequered flag. Ahlin-Kottulinsky was guilty of speeding during a slow zone caused by Chip Ganassi Racing's RJ Anderson, who rolled at Waypoint 17. The Swede was issued a 136s penalty, handing a breakthrough win to Veloce Racing's Kevin Hansen and inaugural XE champion Molly Taylor – the 2016 Aussie rally title winner had closed in on Ahlin-Kottulinsky before losing time on the final lap.

"It was a bit of a miscommunication – I thought it [the slow zone] was Waypoint 18 and not 17, so when I got there it was flashing yellow and it was too late," admitted Ahlin-Kottulinsky.

The Acciona Sainz XE entry driven by two-time DTM champion Mattias Ekström (standing in for injured two-time World

Rally champ and team owner Carlos Sainz) and Laia Sanz was promoted to second, while RXR dropped to third. Last year's champion team X44, featuring new signing Fraser McConnell and 2022 title winner Cristina Gutierrez, also failed to finish.

Saturday's Redemption Race had been a dramatic affair won by McLaren duo Tanner Foust and Emma Gilmour, who beat Carl Cox Motorsport pair Timo Scheider and Christine Giampaoli Zonca. The race was red-flagged after Timmy Hansen (Andretti) and Nasser Al-Attiyah (Abt Cupra) rolled in separate incidents on the opening lap. The JBXe car driven by former Formula 1 driver Heikki Kovalainen and Hedda Hosas failed to finish due to a technical problem.

Sunday's Grand Final was dominated by Ekström and Sanz. The Sainz team had sneaked into the Grand Final – it ended qualifying tied for fifth with X44, but superior pace in the Continental Traction Challenge zone over the Lewis Hamilton-owned squad proved decisive. Ekström made no mistakes at the start to quickly power into a six-second lead before handing over to Sanz, who brought home a comfortable win.

Taylor secured second to leave Veloce tied for the championship lead with Sainz XE, while RXR took third. Al-Attiyah and Klara Andersson finished fourth to provide some joy for the Abt Cupra team, which had worked until 4am preparing a spare car after the damage sustained on Saturday.

X44 won the Redemption Race after an entertaining fight for victory with Carl Cox Motorsport came to an end when Giampaoli Zonca rolled while trying to hunt down Gutierrez to reclaim the lead lost at Turn 6.

TOM HOWARD



Timmy Hansen walks off after rolling it

Dry ice and fans make for uncool start

AUSTRALIAN SUPERCARS
NEWCASTLE (AUS)
11-12 MARCH
ROUND 1/12

The Gen3 Supercars era got off to an explosive start, with the new low-downforce Ford Mustangs and Chevrolet Camaros put to a brutal test across two 250km races on the bumpy street circuit.

Saturday's race was initially a historic result for the powerhouse Triple Eight squad, which played a pivotal role in the development of the new car. Shane van Gisbergen led home Broc Feeney in a T8 Chevrolet 1-2, the pair easily cruising away from third-placed Cam Waters in his Tickford Ford.

But Triple Eight found its cars subject to a post-race protest from Tickford Racing and Walkinshaw Andretti United after TV cameras spotted dry ice being poured through the driver's side door during stops. It turned out that T8 had fitted an additional helmet fan cooling



device, which was legal in itself, but illegally positioned on the wrong side of the car. T8 argued that the system had verbal approval from series head of motorsport Adrian Burgess, but he disagreed and the stewards chucked the cars out of the race.

That promoted Waters to the win ahead of Walkinshaw Ford driver Chaz Mostert and Brodie Kostecki in his Erebus Camaro.

Mostert and Waters were both back in contention for victory on Sunday, the pair doing battle out front mid-race until Waters clipped the wall at Turn 9 in pursuit of Mostert and bent a steering arm. That left

Mostert to lead the way until the final stint, when van Gisbergen roared into contention on an overcut strategy. Given the Kiwi's better tyre condition Mostert soon became a sitting duck, van Gisbergen using a forceful move to run Mostert wide as he grabbed a lead he would hold until the finish.

Mostert came home second to grab an early championship lead, while David Reynolds, who had struggled badly with cabin temperatures in the Saturday race, was third in his Grove Ford.

ANDREW VAN LEEUWEN

Byron walks in beauty at finish

NASCAR CUP
PHOENIX (USA)
12 MARCH
ROUND 4/36

Hendrick Motorsports Chevrolet teammates William Byron and Kyle Larson battled for the lead late in the race for the second straight week, with Byron again coming away with the victory.

Despite Byron and Larson dominating the first half of the race, Kevin Harvick was leading and in position to win when a late-race caution for a spin by Harrison

Burton sent everyone to the pits. The first six cars off pitroad, including leader Larson and Byron, took only two new tyres.

Shortly after the restart with three laps remaining, another wreck sent the race into a two-lap overtime. On the ensuing restart, Byron went to the outside of Larson and, with a shove from Tyler Reddick, powered into the lead with one lap to go. Byron then held off Ryan Blaney by 0.330 seconds.

"I owe the last couple of weeks to him," Byron said of his crew chief Rudy Fugle. "He's done a really good job strategy-wise and execution-wise and we've done a good job to put ourselves in those positions on the front row with a shot at the end."

Reddick ended up third from Larson, who led the most laps (201 of 317), and Harvick.

On the final lap, Denny Hamlin appeared to go up the track and into Ross Chastain as both hit the wall. Both were running in the top 10 at the time. Hamlin was credited with a 23rd-place finish and Chastain 24th, the last two cars on the lead lap. The two drivers had several on-track run-ins last season, and Chastain got into Hamlin again in this year's pre-season Clash exhibition at the Los Angeles Memorial Coliseum.

JIM UTTER



WEEKEND WINNERS

EXTREME E

NEOM (SAU)

- Race 1** Kevin Hansen/Molly Taylor
 Velocce Racing
Race 2 Mattias Ekstrom/Laia Sanz
 Acciona Sainz XE Team

AUSTRALIAN SUPERCARS

NEWCASTLE (AUS)

- Race 1** Cameron Waters
 Tickford Racing
 (Ford Mustang)
Race 2 Shane van Gisbergen
 Triple Eight Race Engineering
 (Chevrolet Camaro)

NASCAR CUP

PHOENIX (USA)

- William Byron
 Hendrick Motorsports
 (Chevrolet Camaro)



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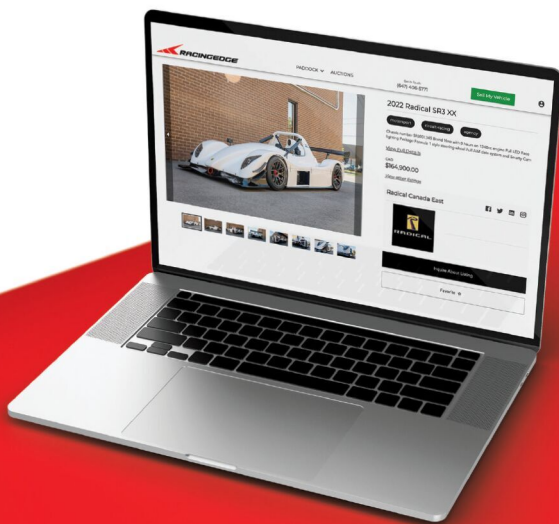


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- Manage compliance with existing regulations by providing support for the Technical Delegate and scrutineers who are on-site at races
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- Attend Single-Seater Commission meetings, help prepare presentations
- Work closely alongside the F1 Technical Team to maintain a good understanding of F1 technical direction, ensure alignment of Single-Seater technical matters with F1, and assist with F1 technical projects as and when required

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- To supervise work being undertaken by Editors and Junior Producers, providing guidance and creative vision, delegating tasks and monitoring performance. Ensure that projects are fully compliant with F1's internal policies and procedures. To keep fully aware of styles and developments in Digital video production and steer the creation of F1's content accordingly.
- To oversee the final content production, ensuring that all the appropriate elements are technically sound and factually accurate.
- To keep fully aware of all developments in Formula 1 and to use this knowledge to ensure that Formula 1's content is contemporary and factual. To occasionally edit content using Adobe Premiere.
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- You will be communicating with clients and suppliers at all levels. As a result, you will also need to demonstrate effective communication skills.
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- In addition to the above, candidates should have an interest in continuous improvement and experience of data analysis and business systems would be beneficial, but not required.
- We also heavily encourage applications to let us know any work experience or examples of developing knowledge or learning beyond academic courses.

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GT3 ace Marciello joins **British GT** grid

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BRITISH GT

Reigning GT World Challenge Europe and ADAC GT Masters champion Raffaele Marciello will make his British GT debut this year alongside John Ferguson in a RAM Racing Mercedes-AMG GT3.

The Swiss-Italian is a former member of the Ferrari Driver Academy and was a Sauber Formula 1 test and reserve driver in 2015. He claimed the FIA Formula 3 European Championship in 2013 and went on to become a GP2 race winner.

After a switch to GT racing in 2017, Marciello became a Mercedes factory driver one year later, going on to win the

2018 Blancpain GT Series Sprint Cup. The 28-year-old also won the Spa 24 Hours last term alongside Daniel Juncadella and Jules Gounon, who will also remain in British GT alongside reigning champion Ian Loggie, this time at 2 Seas Motorsport.

"I'm really happy to be adding the British GT Championship with RAM Racing to my plans for the season," said Marciello. "The British tracks are world-famous and look amazing, so I can't wait to get to drive them and learn some new ones. Plus, I really love racing in the rain, which means the British weather won't even be a problem for me!"

"This year the level in British GT looks to be high with a lot of professional drivers involved so it will be a nice challenge. I'm sure that between myself, John and RAM Racing we will have the tools to do a good job and fight for some nice results. I know we can have a very strong year."

RAM will scale back to a one-car operation this year, after founder Dan Shufflebottom left the team despite winning the GT3 drivers' crown with Loggie and the teams' title in 2022.

Ferguson, meanwhile, continues with the squad's GT3 Mercedes after taking victory alongside Ulysse De Pauw at Snetterton last year, his step up from racing in the GT4 class in 2021.

Elsewhere in British GT3, father-and-son pairing Richard and Sam Neary will again be at the wheel of their Abba Racing Merc.



Marciello is highly regarded in the GT racing world

➔ P64 GT RACING IN THE UK

VAUGHAN BACK ON GT GRID WITH TEAM PARKER

BRITISH GT

Daniel Vaughan, the 2020 British GT4 champion, will return to the series this year at the wheel of a Team Parker Racing Porsche.

Vaughan, who took the GT4 title alongside Jamie Caroline in a TF Sport-run Aston Martin Vantage, will partner this year's youngest driver, Zac Meakin. The 16-year-old has a Ginetta Junior background, but also competed with Team Parker in the Porsche Sprint Challenge Southern Europe this winter.

Now Meakin will drive the team's 718 Cayman GT4 Clubsport RS (below) alongside Vaughan, who has not competed full-time since his 2020 title.

"I'm really excited to be back racing and I can't wait to get going," said Vaughan. "The British GT Championship is really competitive, so it will be nice to be back in the paddock and there are a few new things to keep it interesting."

"I've competed against Team Parker Racing in the Porsche Carrera Cup GB, I know what a capable squad they are, and I really like the way they approach racing. I met Zac the other day — he's a nice kid and it's clear he's got a lot of talent, so we should be a good pairing."

Meanwhile, 2021 Ginetta Junior champion Aston Millar has been announced as a McLaren Academy driver. The 18-year-old finished third last season in the Ginetta GT4 Supercup, and had already been confirmed for British GT4 with DTO Motorsport alongside reigning Ginetta Junior title holder Josh Rowledge.



TEAM PARKER

CREEES TO MAKE GINETTA RETURN IN BRITISH GT

BRITISH GT

British Touring Car Championship racer Michael Crees has switched to British GT for this season after striking a late deal to drive a Raceway Motorsport Ginetta.

Crees, who raced a Power Maxed Vauxhall Astra last year, made his competition debut in Ginettas and won the GT4 Supercup Am class title in 2018. He will now share a GT4-class G56 with 2022 GT Academy runner-up Thomas Holland, who continues with Raceway for his step up to British GT.

"I'm absolutely buzzing to get a deal done with Raceway Motorsport so late in the day as I honestly thought I would be sitting out this year due to some bad luck with sponsors," Crees said. "It will be a massive challenge but one I'm looking forward to as GT racing has always been on my radar."

Meanwhile, stunt driving school Drivetrain has teamed up with ex-KTM X-Bow team Track Focused to run a Mercedes-AMG GT4 for GT Cup class champions Sam Maher-Loughnan and James Wallis in British GT this year.



Thwaites and Forward are set to race Morgan, while Halusas will pilot R8 (inset)

Historic racers to compete in more modern prototypes

MASTERS HISTORIC RACING

Historic racers Jamie Thwaites and Dean Forward will step up to compete in LMP2 cars this season in Masters Endurance Legends, while brothers Lukas and Niklas Halusa are set to race the Audi R8 that finished second at Le Mans in 2000.

Thwaites raced a Chevron B19 last year and also won the Bowler Defender Challenge rally and off-road series. Now he has acquired two LMP2 sports-prototypes, including the Oak Racing Morgan that finished second in LMP2 at Le Mans in 2013. "We bought it from the Ligier factory and it's not been raced since 2016," said Thwaites. "The amount

of corner speed blows your mind!"

Forward will prepare the Morgan and a 2013 ORECA LMP2, and they plan to start their MEL season at Donington Park over Easter. "It's good to try different kinds of cars," said Forward, who has raced Thwaites's McLaren M8F Can-Am car in recent seasons.

Meanwhile, the Halusas' Audi R8 has only been demonstrated in recent years and has since undergone a full rebuild with Peter Chambers Automotive. The brothers will run it at the Le Mans Classic and plan to contest the similar series from Peter Auto and Masters Historic Racing.

PAUL LAWRENCE

Virtuosi expands to three cars for second British F4 season

BRITISH F4

Virtuosi Racing will field an expanded three-car line-up in British Formula 4 this season, its second in the category.

The squad has enjoyed success higher up the single-seater ladder, including winning the F2 teams' title in 2017, before joining British F4 last year when the series introduced a new car.

While former drivers Michael Shin and Edward Pearson managed only two podiums in that maiden campaign, team manager Mark Salmon says the squad is "upbeat" for 2023 and it was "always the plan" to expand for its second F4 season.

It will now run Ginetta Junior podium finisher Aqil Alibhai alongside karting star Douwe Dedecker and rookie Kai Daryanani, whose first racing experience came in the recent UAE F4 series.

"Last year, being our first year in the championship, we didn't want to spread ourselves too thin," added Salmon. "We thought 'now let's invest in some more staff' and we bought another car. We've also invested massively with the cars to gather more data from them."

While Salmon acknowledges that Virtuosi "didn't get the results" last year, he was encouraged by Pearson's late-season qualifying performances –



Virtuosi will build on maiden British F4 season

including a front row at the finale – and wants to continue that momentum.

"Aqil did well in Ginetta Junior so he knows the circuits and was very strong last year," said Salmon. "Douwe has competed at a very high level in karting and has done well. Kai is a rookie and he will be able to learn from the others."

STEPHEN LICKORISH



Jamsport back to Mini JCW action with Fiesta driver Cordell

MINI CHALLENGE

The successful Jamsport Racing team will return to the Mini Challenge this season with Fiesta frontrunner Marlo Cordell.

The squad, which powered Ant Whorton-Eales to the 2018 Mini title, last competed in the series with Bobby Thompson in the final two events of 2021, but team boss Jamie Going has since supported a number of drivers behind the scenes. For Jamsport's return, Cordell will continue to receive coaching from Whorton-Eales.

Going believes the move from Fiestas – in which Cordell debuted in 2021 with Jamsport – is the best option for his driver because it will enable him to benefit from the exposure of racing at British

Touring Car events. "I think he's got what it takes – he's fast, understands all the data, analyses everything really well and he's 100% committed," said Going. Cordell added: "Working alongside Ant again I'm sure will give me the best chances."

While Cordell is so far Jamsport's only Mini signing, with the team also focusing on its flourishing Fiesta Junior operation, Going says the team could potentially run a second car.

Other drivers announced as taking part this year include former EnduroKa racer Baz Ward. He made his Mini Challenge debut last year with Lux Motorsport but will now move to Excelr8 Motorsport, where he will be joined by Lotus, Radical and Fun Cup competitor Steven Lake.

STEPHEN LICKORISH

IN THE HEADLINES

STEWART STEPS UP TO GB3

British Formula 4 race winner Oliver Stewart will step up to GB3 this season with Elite Motorsport. He triumphed in the partially reversed-grid race at Thruxton in F4 with Hitech GP last year and finished 10th in the standings in his first season of single-seater competition.

XENTEK JOINS JUNIOR RANKS

Successful Ginetta GT5 Challenge squad Xentek Motorsport plans to contest a full season of Ginetta Junior for the first time this year and has announced Felix Livesey, who competed in last year's Winter Series with the team, as its first signing. "We've been looking to enter Ginetta Junior for the last couple of years, so we're delighted to have got this programme together with Felix to join the grid full-time," said team manager Sarah-Jayne McKenna.

SR10s ENJOY SPANISH WINS

Radical SR10s led the way as the Sports Prototype Cup season began at Barcelona last weekend. Jacek Zielonka's example defeated the similar machine of Chris Preen and Ben Stone in the opening contest after the intervention of pitlane speeding penalties, before the latter pair took the honours in race two. Revolution duo Richard Morris and Milan De Laet retired from the first race – Revolution spoils went to Chris Hoy and Roger Green – but finished runners-up in race two.

HAWKINS TO RACE PRAGA

Aston Martin Formula 1 team driver ambassador Jess Hawkins is one of the first competitors to be confirmed as racing a Praga in the new Britcar Prototype Cup this year. The former W Series and TCR UK racer will share the University of Wolverhampton Racing R1 (below) with team regular and university mentor Shane Kelly. Also on the grid will be the Mittell Cars pairing of Scott Mittell and Charles Hall that finished runners-up in last year's Praga Cup.



Boardley to race Cupra in TCR UK

TCR UK

Ex-British Touring Car Championship racer Carl Boardley will return to regular racing this year in TCR UK with a Cupra Leon Competición. Boardley spent three years in the BTCC, but stepped back from full-time participation in the series after piloting an Infiniti Q50 in 2021. He was due to make a one-off appearance in the car last year, substituting for Rick Parfitt Jr, before himself being ruled out

by illness. Boardley did return for the Brands Hatch finale when he replaced Will Powell in a Team Hard Cupra Leon.

He will now race the TCR version of the Leon run by Malcolm Cleland's Zest Racecar Engineering.

"I'm very happy to be returning to touring car racing and making my debut in TCR UK this year," said Boardley, a four-time National Hot Rod world champion and prolific car builder.

"My racing has to be

enjoyable first and foremost. I have a young family at home and our businesses take up a lot of time so committing to a championship is a big thing. However, make no mistake, we are aiming straight for the pointy end of the grid and will look to hit the ground running."

Boardley becomes the 22nd confirmed driver for 2023 after novice racer Luke Sargeant announced his campaign in an Area Motorsport-run Hyundai i30 N earlier this month.

MARK PAULSON

MG champion Dalgarno swaps to Civic

TYPE R TROPHY

MG Trophy champion Joe Dalgarno is among the drivers joining an expanded Type R Trophy grid for this season.

Dalgarno narrowly claimed the MG spoils last year after a Class B battle with Josh Bromley that went down to the final corner of the season, a tussle that Autosport named the top club racing rivalry of 2022.

Following that success, Dalgarno eyed a move to TCR UK for this year but was unable to attract sufficient sponsorship. Instead, after seeing one of the Type R Trophy cars on display at the Autosport International show at the NEC, Dalgarno opted to move into the 750 Motor Club's Honda series.

"I thought the best thing to do was to try and move to a different championship and prove I can win in something other than an MG and maybe next season try again for TCR," said Dalgarno. "I took my car to the



Dalgarno initially targeted a TCR UK move for this year

Autosport show on the MG Car Club stand and right next door was the 750MC. They had a nice Civic on display and I had a look."

Dalgarno ended up buying a car advertised for sale in the window of the Civic at the NEC, and had a first test in it at the recent 750MC trackday at Donington Park.

"It took some getting used to because I've been in an MG since 2018; getting in this felt a bit different – it's got an electric steering rack compared to the MG, which is all mechanical," he said. "It went

really well and I got some good lap times in.

"The aim is to win it but I think the first couple of rounds might be just getting into it. I think the good thing about the series is, wherever I am on the grid, there will be someone to battle."

Dalgarno is one of over 30 drivers already entered for the Type R Trophy opener at Croft next month. Clio Sport Championship frontrunner Scott Edgar is among the other new drivers signing up.

STEPHEN LICKORISH

Bumper grids for Silverstone BRSCC opener



MX-5 Supercup has almost 50 entries

BRSCC

The British Racing & Sports Car Club has enjoyed huge interest in its season-opening Silverstone event this weekend with entries approaching 350.

As well as the large numbers of guesting Minis (see story, right) and the capacity Clubsport

Trophy entry previously reported in Autosport (23 February), other categories are also well-subscribed.

Over 50 Modified Ford machines are due to take to the track, while there is a similar number for the Mazda MX-5 Supercup. The four-hour C1 Endurance Series race also has over 40 entries, despite the season-

opener's early date.

"It's looking great and the team has worked tirelessly to get the subscriptions to where they are – it sets us off for a good start," said BRSCC chief operating officer Paul McElean, who added that the interest is a sign of club motorsport's general health.

STEPHEN LICKORISH

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Bird given rally ban after faking licence confirmation document

RALLYING

Successful rally driver Frank Bird has been banned from taking part in any rallies for a year after admitting to forging a 'competition licence confirmation' document when attempting to enter an event at Brands Hatch earlier this year.

Bird, who is a GT racing regular and took part in the Asian Le Mans Series in February, has enjoyed plenty of success in circuit-based rallies in the past few years after moving out of single-seaters.

In a recent National Court disciplinary hearing, it was revealed that the 23-year-old was renewing his licences in January but did not apply for them to be granted in a three-hour timescale. With the deadline for entries to the Brands Hatch Winter Stages approaching, he falsified the confirmation document. This was "immediately identified as being false" by

organisers, who alerted Motorsport UK.

In the report of the court hearing, chairman of the panel David Munro said: "To his credit, he had contacted Jamie Champkin, the disciplinary officer of Motorsport UK, and had made full and frank admissions in relation to what he had done. These admissions were accompanied by an unreserved apology.

"The court cannot ignore the fact that dishonest conduct in relation to motorsport generally is a serious matter, but Mr Bird's apologies are noted and accepted by the court, which has also made some further allowances in view of his age."

The 23-year-old Bird therefore had his rally licence suspended for 12 months but was allowed to keep his race licence, although he will need to complete three days of voluntary service in motorsport. He was also fined £1500 and ordered to pay £500 costs.



Bird has starred at circuit rally events in recent years

First rally win for ex-British GT racer

CIRCUIT RALLYING

Former British GT racer Michael Igoe took his maiden rally victory on the Dukeries Rally at Donington Park last weekend, only his fourth event with his Ford Fiesta Rally2.

Circuit Rally Championship points leaders John Griffiths and Emma Morrison led the way on the opening stage in their Fiesta R5, before former champions Mark Kelly/Neil

Colman took a one-second lead on stage two in their Skoda Fabia R5.

Igoe was in third from stage two but, with both Kelly and Griffiths receiving 30-second penalties for chicane incidents on stage three, Igoe was suddenly 21s clear. Griffiths then retired with a rear diff failure, which left Igoe to defend his lead over the final two tests. "I had to ease off as I couldn't afford to get a

penalty too," Igoe admitted.

Kelly took six seconds back on stage five and two on the final run, but Igoe held on. The Hyundai i20 R5 of Ollie O'Donovan/Ashleigh Morris was another chicane penalty victim. Tony Robinson/Mark Witherspoon (Fabia) were therefore up to third, but O'Donovan grabbed the place on the final stage. Robinson was still fourth, despite a spin.

PETER SCHERER

NEW MEASURES TO HELP MINI 7 CLUB'S DRIVERS

MINI 7 RACING CLUB

The Mini 7 Racing Club has introduced clerk-to-driver radios for its season-opening event at Silverstone this weekend aimed at keeping racers better informed on what is expected to be a capacity grid.

All four of the club's Mini categories – headlined by the Miglia and S7en (below) classes – are due to share a grid on the Silverstone Grand Prix circuit, with 60 cars expected to create a "big spectacle". The new radio receivers will allow the club's permanent clerk of the course Luke Caudle to keep all drivers informed about the procedure for any red-flag periods and alert them to the precise location of yellow-flag areas.

"If he can, he would like to keep us racing under yellow flags in certain areas and not put out a safety car, especially on a big circuit like Silverstone GP," explained the club's commercial manager Colin Peacock. "Also, if there's a red flag, we know whether to go to parc ferme or wait on the grid."

The club is also introducing a new driver incident reporting system for this year, which will allow each competitor to complain about rivals to the clerk on two occasions during the season for an alleged offence that has not been flagged by trackside observers and without the driver having to pay a protest fee.

"It's not to replace the existing system, it just means they don't have to pay any deposit and it could take some of the heat out of it," said Peacock, who added that it was also useful at events where observer numbers are low.

STEPHEN LICKORISH





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O'Connell's Shadow is chased by Belgiorno-Nettis's Ferrari, as Skylines also starred (inset)



PETER ELLENBOGEN



PETER ELLENBOGEN

O'Connell's Shadow defeats the F5000s at Phillip Island Classic

PHILLIP ISLAND CLASSIC

Briton Martin O'Connell (Shadow DN8) took four races to eclipse top qualifier Tim Berryman's Lola T332 pace in their five-round Formula 1 vs F5000 contest, but it was the howl of six Cosworth DFV-engined UK-based F1 cars for which spectators will remember last weekend's 34th Phillip Island Classic Festival of Motorsport.

A regular at the Victorian Historic Racing Register's blue-riband event since 2016, Australian Berryman is a tough nut to crack in father Keith's ex-Guy Edwards/Alan Jones/Jon Davison car. Berryman Jr won the first three encounters from Tom Tweedie (Chevon B24/28), before O'Connell broke through to assert himself over Berryman in Sunday's pair.

The sight of them mixing it with returnee Guido Belgiorno-Nettis in his 1500cc Ferrari F156 turbocar, James Hagan

(Hesketh 308/1) and Josh Kean (Benetton turbo) in Friday's opener stirred onlookers. Indefatigable stalwart Hagan topped his visit by winning the six-car 'PI Historic GP' feature from O'Connell.

Pre-'90 Formula Ford attracted 35 entries, from which Jonathan Miles and Andrew Reid (Van Diemen RF89s) and polesitter Nick McBride (Swift DB-1) emerged dominant. Miles aced the first three races, McBride the last two, Sunday's finale for the Larry Perkins Trophy. Reid bagged four seconds while Briton Brian Soule drove Chris Davison's RF88 superbly to lead the chase four times.

Another favourite on the programme was a Group A and C Heritage Touring Car set in which Greg Murphy and Steven Richards – son of the legendary Jim – battled in Nissan Skylines with Chris Stillwell's Ford Sierra Cosworth RS500.

MARCUS PYE

MGB TROPHY FOR AUTOSPORT 3 HOURS CONTEST

AUTOSPORT 3 HOURS

A special trophy will be awarded to the best-placed MGB in this year's revived Autosport 3 Hours race.

Eight MGBs have already entered the 23 April Snetterton contest, and the organising Historic Sports Car Club has decided to create an extra trophy to celebrate the best of the model in the manufacturer's 100th anniversary year.

"We're delighted with how the grid is building for the return of the Autosport 3 Hours," explained HSCC CEO Andy Dee-Crowne. "While we have a fantastic trophy for the overall race winners, we also wanted to celebrate the strong support we are getting from MGB racers and have decided to present a rather nice award to the leading MGB. It's going to be like a race within a race."

Entries are still open for the revived pre-1966 GT race, which was first held in 1957 and counts Jim Clark and Jack Sears among its past winners.



ALAN HART/STYLIS

Bryan Wills 1944-2023

OBITUARY

Few people in south-western motorsport circles did not know of genial Devonian engineer Bryan Wills, who died of cancer last Sunday, aged 78.

Son of a motorcycle shop owner, Wills was an expert

trials rider in his teens. He later joined Tecalemit, where he built and installed fuel-injection systems on a plethora of engines. With intrepid office staffer Freda riding shotgun, part of Wills's remit was to road test and calibrate the product. Speedos were taped over

until his bright sidekick started calculating from the more accurate tach. Tales of 140mph in a TVR may not be apocryphal...

A useful autocrosser in his Ford Anglia, Wills cut his teeth in historic motorsport working on local luminary Martin Morris's Jaguar D-type, ERA R11B 'Humphrey' and Frazer-Nash Le Mans Replica, and devised

solutions for Morris to teach road drivers with disabilities. Wills's Kings Mews Racing workshop in Newton Abbot became a mecca for speed events, racers and a contingent of Lotus owners.

Bryan's expertise, broad smile, laconic manner and good company will be missed way beyond his loyal band of friends. RIP 'Ingegner'.

MARCUS PYE

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WRC2 star
was unstoppable
on the Cumbrian
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Fourmaux overcomes the snow to win BRC opener

MALCOLM WILSON RALLY
BRC
11 MARCH

On-form Frenchmen have been dominating the World Rally Championship for decades, so perhaps it was no surprise that M-Sport Ford factory driver and cross-channel ace Adrien Fourmaux glided to a win at the British Rally Championship opener, last weekend's Malcolm Wilson Rally.

A shock BRC registration by the Doveney Hall squad for the WRC2 frontrunner meant Fourmaux and Alex Coria tackled the curtain raiser in a Ford Fiesta Rally2. On paper their winning margin of 54 seconds over four-time champion Keith Cronin looked like a comfortable one, but in reality it was far from simple.

Out in the stages, event organisers were working flat-out to deliver any sort of rally after heavy snowfall made the Whinlatter stages impassable. A new itinerary was hastily drawn up, offering three runs

through Greystoke and the two Grizedale tests to ensure that 39 of the planned 51 miles were still available for action.

The ice-covered Greystoke opener proved a difficult start for many. But the brave benefited and, in fact, it was James Williams – third in last year's BRC standings – who topped the timesheets to take an early lead in his Fiesta. But Fourmaux was just 0.1 seconds behind and the fight was taken to the southern Lakes tests later that morning.

But Williams punctured, and the next nearest challenger Cronin got stuck behind WRC driver Jourdan Serderidis, who was giving the Rally1 Puma its UK debut, enabling Fourmaux to concentrate on making the most out of the seat time ahead of his next WRC encounter. A storming drive through the first Grizedale stage meant he grabbed the lead, leaving him to enjoy a 'playful' afternoon in the Fiesta and secure his second win on UK soil.

"It has been really good fun; a really nice experience this morning with

some tricky conditions," said a gleeful Fourmaux. "These stages are beautiful and are amazing to drive. Perhaps not so easy with the ice and snow first thing, but these last two passes of Greystoke were just muddy and it was just great fun. Now we are heading off to Mexico, which is where I last drove this car on gravel."

It's unclear how many BRC events Fourmaux will contest, so arguably eyes were on the battle behind. Returning for a tilt at a fifth title was Volkswagen Polo driver Cronin and it was a difficult start to his campaign. Not only did he catch the Puma, but a power steering issue hampered his challenge, and second spot left the Irishman contemplating what could have been.

Reigning BTRDA champion Elliot Payne was quietly going about his business in his Fiesta and, despite electing not to recce, his performance netted him his maiden BRC podium in third.

Outside of the top three, the fight for the remaining points-paying positions raged on between a deflated Williams, BRC returnee Callum Black and Skoda Fabia pilot Garry Pearson. After dropping to sixth with the puncture, Williams fought back in the afternoon to claim fourth, while both Black and Pearson struggled to find confidence in the conditions, finishing fifth and sixth respectively.

In the fight for Junior BRC honours, it was Kyle White and Sean Topping who came out on top, even after suffering a puncture on the opening stage and damaging a shock absorber. White eked out most of his advantage in Grizedale to finish ahead of reigning Academy Trophy champion Kyle McBride.

MATT COTTON

A muddy Cronin was second
as he targets a fifth BRC title



RALLY RESULTS

1 Adrien Fourmaux/Alexandre Coria (Ford Fiesta Rally2); 2 Keith Cronin/Mikie Galvin (VW Polo GTI R5) +53.5s; 3 Elliot Payne/Tom Woodburn (Fiesta Rally2); 4 James Williams/Dai Roberts (Fiesta Rally2); 5 Callum Black/Jack Morton (Fiesta Rally2); 6 Garry Pearson/Hannah McKillop (Skoda Fabia R5). JBRC Kyle White/Sean Topping (Peugeot 208 Rally4).

For full results visit:
britishrallychampionship.co.uk

THREE IS THE MAGIC NUMBER

Despite occupying the same space, the unique appeal of three leading UK GT championships means they continue to grow

STEFAN MACKLEY

The UK is blessed with an abundance of championships and series that cater for a huge variety of machines, perhaps none more so than with GT racing. Three key championships – British GT, GT Cup and the British Endurance Championship – are not only surviving but thriving, despite occupying a similar space in the market.

This year all of them are set to feature strong grids once again, as organisers capitalise on the unique appeal of each which, although not necessarily apparent on the surface, is the foundation of their success.

Created in 1993 by the British Racing Drivers' Club, British GT was known for the first two years of its existence as the National Sports GT Challenge. In 2003, it was acquired by Stephane Ratel's SRO organisation and since then has continued to grow, becoming the leading GT series in the country and attracting manufacturers and professional drivers year after year.

The 2023 campaign could well be British GT's strongest to date thanks to a capacity entry of 36 cars – 18 each in GT3 and GT4 – with one-off entries expected at certain rounds. Not only that, but there are no fewer than eight factory drivers in the GT3 class including Mercedes stars Jules Gounon and Raffaele Marciello, as well as four-time British GT champion Jonny Adam.

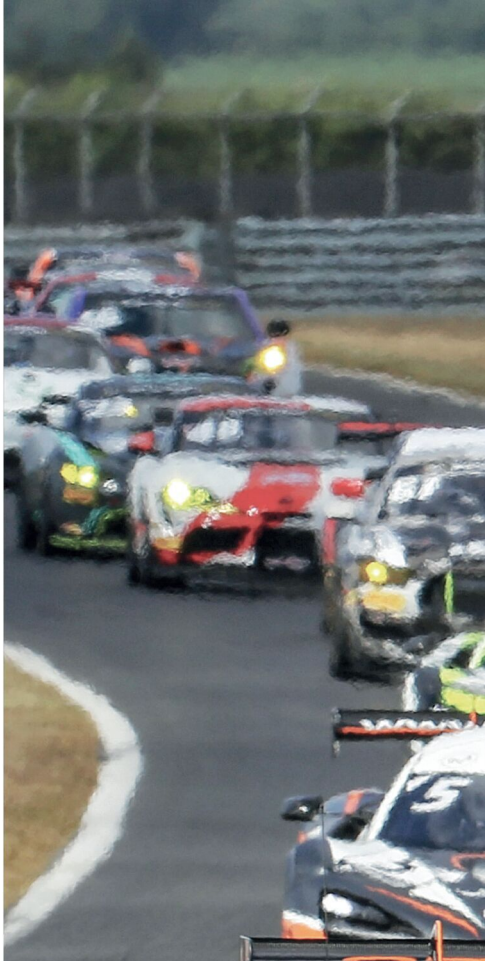
"It highlights that British GT is at that level with the depth of global talent," says championship manager Lauren Granville. "With Gounon, Marciello, and Adam coming back, it really will up the game and to be honest you can bring the best Pros but the Ams boost them as well. The level of the Am drivers is incredible. There are very talented and dedicated Am drivers that put a lot of time and resources into their driving."

The GT3 class in British GT has predominantly moved towards a Pro-Am element in recent years, with the silver-silver division removed starting from the 2021 season. Sandy Mitchell won the GT3 title in 2020 alongside ex-British Touring Car Championship driver Rob Collard as a silver-silver line-up. The Barwell Motorsport and Lamborghini factory driver feels that the decision made by organisers two years ago to remove the sub-class is already reaping rewards, and the championship is now the number one destination in Europe for Pro-Am line-ups.

"Pro-Am racing is a massive part of GT racing, you can see that even in some of the big races that have happened over the winter at the likes of Bathurst and Kyalami," says Mitchell. "There's a lot of Pro-Am cars and maybe not as many Pro cars in some cases and I think, for British GT going that route, it has just made the championship even more competitive."

More focus has been placed on longer races, with a second three-hour race added to the calendar this season at the Algarve International Circuit. The Portuguese track is a new venue on the British GT calendar, with Spa dropped for this season. For Granville it's "constantly a work in progress" to try to adapt the schedule and keep things as fresh as possible, with visits to Oulton Park, Silverstone, Donington Park (twice), Snetterton and Brands Hatch also scheduled for 2023.

Greater live TV coverage, which has included races being >>



Clutton and Tillbrook
made several outings
in the GT Cup in 2022



aired on Sky Sports F1, has also helped to publicise the championship to a broader audience, as did the one-off outing by 2009 Formula 1 world champion Jenson Button at the Silverstone finale in 2020.

One key element of the championship is the application of success penalties, with the top three overall in both GT3 and GT4 handed a penalty to serve in the pits at the following round. The regulation means that it's incredibly difficult for one crew to completely dominate and almost always keeps the title battle alive. It has occasionally caused problems in the past, though, with ongoing appeals from the previous round impacting the awarding of the success penalties. Regardless of any downside, Granville is adamant that it's an integral part of the championship's success.

"It goes down to the wire every year and I think it serves its purpose in that you don't have a runaway championship contender," points out Granville. "There are always four or five crews that mathematically still have a chance [at the finale] so, for me, that's super-exciting to see that. You need to be consistent throughout the year. It's something which makes the championships exciting and I'm in favour of keeping."

Consistency is what helped Ian Loggie secure the GT3 title last season, after scoring points at all but one of the races aboard his RAM Racing-run Mercedes-AMG. The Scot embarked on an extensive racing programme last year, completing more than 80 races, which included outings in the GT Cup.

Created in 2007 by Marc Haynes, the GT Cup championship continues under the leadership of his brother Chris after Marc died in 2016. Like British GT, the GT Cup has also continued to expand in recent years and has placed itself as something of a stepping stone into the SRO championship.

"We all offer something completely different," says championship director Hannah James. "We kind of see ourselves as a feeder series for British GT. They [drivers] kind of learn with me and go up and then come back to me when they've retired."

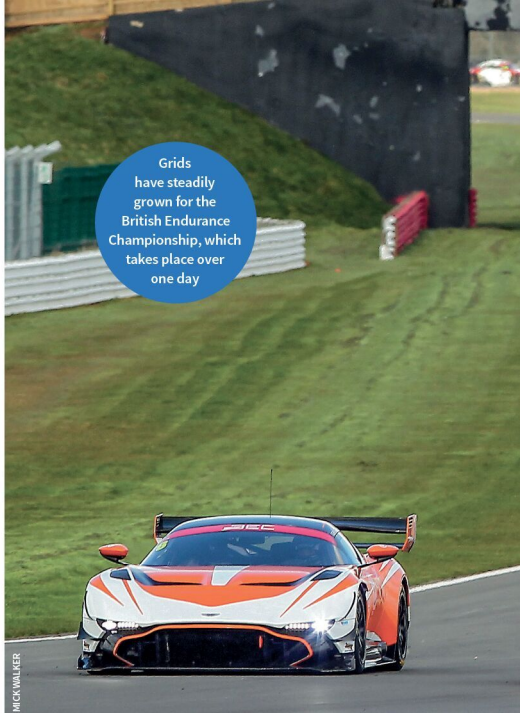
The appeal of GT Cup is the focus on the Am driver and shorter race distances across a weekend. The format consists of a 15-minute practice, two 15-minute qualifying sessions, a 25-minute sprint race and 50-minute pitstop race across both Saturday and Sunday, meaning plenty of track time and racing opportunity.

One driver with a unique point of view is Marcus Clutton, the 2020 Radical Challenge champion who raced in all three GT championships last season. Alongside Morgan Tillbrook, the duo took two outright wins in British GT and went to the Donington Park finale with a shot at the overall GT3 title before finishing third. The Enduro Motorsport McLaren duo also contested several rounds of GT Cup with the purpose of preparing Tillbrook for upcoming British GT events at the same venue, something that Loggie and others have also done.

"It's very much an Am-based championship and I think Hannah would agree that it's a good stepping stone to British GT," says Clutton of the GT Cup. "A lot of Ams go and learn the circuits, learn the GT3 cars, do tyre runs, qualifying, race starts and then they go and do British GT. It's good practice and it's real. It's OK doing qualifying simulations in testing but it's not real. There it's real, and you have to learn quickly."

While many Am drivers use the series as a testing ground and launchpad into British GT, GT Cup still has a loyal driver and team base who are content to remain in the series. A family atmosphere and not needing "110% commitment if you want to do well" like in British GT, according to Clutton, make it an ideal place for Ams to enjoy a weekend of GT racing. A greater spending on various areas by the organisers has also helped ensure that it's a popular destination for many.

Grids have steadily grown for the British Endurance Championship, which takes place over one day



"I don't think you can necessarily put your finger on one thing – we've done lots of things," adds James. "The technical side of things has improved dramatically. With using the data loggers there's now a technical team, rather than just the one person that we used to have. The social media side has increased. There's lots of people who like the livestreaming and the money we've invested in that really helped."

"And we've invested in our new unit, which we've now got for catering and all that side of things. It's a complete package that we offer. We go to our customers and say, 'what do you want?' because, at the end of the day, we're there for them, we're not here for us. We run this as a customer-led championship."

While GT Cup's focus is on shorter race distances, at the other end of the spectrum, the British Endurance Championship seeks to give competitors longer stints behind the wheel. Created as the Britcar Endurance Championship, it was founded in 1997 by Willie Moore and James Tucker with the aim of reintroducing a 24-hour race to the UK.



“ALL THREE CHAMPIONSHIPS HAVE DIFFERENT POINTS OF VIEW ABOUT HOW YOU WANT TO GO GT RACING”

Claire Hedley bought the rights to the championship ahead of the 2016 season and has worked hard to raise falling grid numbers. A slot on the World Endurance Championship support bill at Spa in 2020 was a testament to its growing success but, like many series, it suffered in the wake of the COVID-19 pandemic and the non-championship event took place in Belgium with significantly reduced numbers.

Despite this setback, the series has continued its upward trajectory. It became one of the first national racing contests to embrace esports at the beginning of the COVID-19 lockdown, and continues to do so to this day.

The Brabham BT62 made its racing debut with the series, it was the home of the Praga Prototype Cup in 2021 (and which it will return to running this year), and it has launched the Britcar Trophy for more production-based cars.

Last season the Britcar competition was granted official British championship status by governing body Motorsport UK, becoming the British Endurance Championship. That's a title it will retain until at least the end of the 2024 season, and Hedley is determined to extend the agreement beyond that point. “I definitely think it was the right move to become a British title, it puts us on another level,” she says. “The Britcar name is very respected in the industry but putting it into a British title we've had to up our game tenfold and I'm very happy that we've done that.”

An unusual aspect of BEC is that, although races are between two to three hours, all the action takes place on the Saturday – a key appeal for amateur drivers. “I look at it from an Am point

of view – they get to spend Sunday at home,” says Clutton, who raced in the championship last year with Peter Erceg. “So it works for family or it works for business commitments. They're not knackered at work on Monday when they all go back into the office; they still get that Sunday off.”

Hedley adds: “A lot of my customers have stayed because of the customer service and the way we look after them. That's not to say GT Cup and British GT don't do the same, I just think some are very loyal and I do feel like our one-day meetings make quite a big difference to family gentleman drivers, that are bringing in the Pros as well.”

Hedley's ultimate ambition is to bring a 24-hour GT race back to the UK for the first time since 2018, although the concept has already returned in the virtual world. A six-hour contest for GT4 cars and below is due to be held this year at Donington Park as part of that process. Hedley is also keen to expand on the current structure of British Endurance Championship weekends by including a junior series as part of the roster and creating another GT pathway.

It's another example of how hard work from organisers in all three championships is paying dividends. And at a time when there's arguably too many series and championships that take from each other's entry pool, the leading three GT categories have all struck a fine balance while complementing each other's strengths.

“I think all three championships have different points of view about how you want to approach your GT racing,” argues Clutton. “You've got your super-serious British GT, and if you're not serious there you'll be at the back of the grid.”

“Then you've got your GT Cup which is the middle ground, and I wouldn't say it's any better than BEC really – there's just a difference in their race weekends.”

“I think there's something for everyone, regardless of your approach. There's something out there that covers all options.”

FINISHING STRAIGHT

The turbulent journey to end 15 years of hurt



DOCUMENTARY
MOTOGP
STORIES: THE
RESURRECTION
OF DUCATI

When Francesco Bagnaia took the chequered flag a mere ninth in last November's Valencia Grand Prix, it was enough to end 15 years of hurt for Ducati – the result handing the MotoGP riders' title to the Italian marque for the first time since Casey Stoner in 2007.

While not quite the 21-year wait that Ferrari had to endure between Jody Scheckter's 1979 triumph and the first of Michael Schumacher's five titles with the Scuderia in 2000, the barren years for Ducati were arguably just as tumultuous.

The squad's decline, false dawns with the signings of Valentino Rossi and Jorge Lorenzo, and final redemption are all charted in a new documentary as part of the MotoGP Stories series.

The Resurrection of Ducati begins with the title success of Stoner in 2007, when the Australian incredibly won in his debut season with the Italian outfit and only his second year of MotoGP racing.

The two-time champion – he also won with Honda in 2011 – gives his thoughts on those early years and how he was the only rider able to get any performance out of the Desmosedici GP7, as well as subsequent models, over the following three seasons.

He admits to having the "weight of the whole company on my shoulders", ultimately leading to his decision to leave at the end of 2010.

The most telling admission on this issue is from Claudio Domenicali, Ducati Motor Holding's CEO, when he



Stoner tamed the
Desmosedici GP7

SUTTON

states that they "made some mistakes" with regards to how they treated Stoner and that they were "mainly our responsibility". Although not explained, or mentioned at any other point, this is probably in relation to Stoner's illness and subsequent diagnosis as lactose intolerant, which severely impacted his later years with Ducati.

The treatment of its riders becomes a constant theme throughout, with Rossi and Lorenzo the next to suffer Ducati's mismanagement.

The most notable absence from the documentary is Rossi, save for some press conference interviews from his time at Ducati. Although there is some contemporary interview footage from the Italian's right-hand man, Alessio Salucci, it's not the same as hearing from the nine-time motorcycle world champion.

Lorenzo is surprisingly open about his stint with Ducati, and perhaps the most obvious example of the manufacturer not giving its riders enough time is during his tenure – the Spaniard winning three



GOLD AND COOSE

races but still being shown the door.

Andrea Dovizioso's period at the top of the championship is also covered, although amusingly more focus is given to saying he would have had title success were it not for Marc Marquez.

There's surprisingly little input from Bagnaia, although being employed by Ducati means there likely would be little in the way of constructive criticism.



Bumpy ride: Rossi
crashes out at
Phillip Island in 2011

SUTTON

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Bagnaia bagged the 2022
MotoGP crown at Valencia

Without doubt, the biggest disappointment of the documentary is that it's only 24 minutes in length. While this puts it on a par with other MotoGP Stories, this topic could easily have been covered across double that length – if not longer!

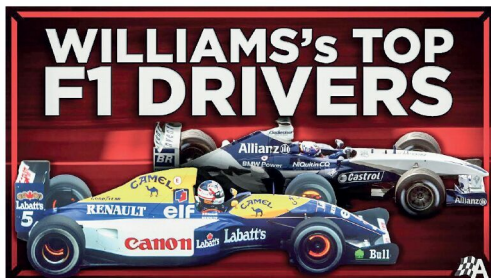
It means that although the major periods are covered, from Stoner's title success, through the Rossi, Lorenzo and Dovizioso eras, and Bagnaia's crowning glory, there's no chance to delve into the detail. No specific races are covered and the fundamental issues with both Ducati and at times its riders feel glossed over. Despite the short length of the documentary, though, one thing that's clear at various points is the loss of trust from Ducati to its riders.

You can't help watching it and feeling a sense of déjà vu as the cycle repeats itself time after time. It makes you wonder how quickly Ducati management will forget Bagnaia's championship success and start pointing the finger if there's a lack of results...

STEFAN MACKLEY



youtube.com/AUTOSPORTdotcom



Top 10 Williams F1 drivers

Despite its slump in recent years, Williams still sits fourth on Formula 1's all-time list of winners, such was its periodic dominance. Not only that, but it's had an amazing roster behind the wheel. Autosport chief editor Kevin Turner looks at the top 10 drivers to race for the historic British squad.

WHAT'S ON

INTERNATIONAL MOTORSPORT

Saudi Arabian GP

Formula 1

Round 2/23

Jeddah, Saudi Arabia

19 March

TV Live

Sky Sports F1, Sun 1655

TV Highlights

Sky Sports F1, Sun 2200,
Channel 4, Sun 2215

Rally Mexico

World Rally Rd 3/13

Guanajuato, Mexico

16-19 March

TV Live

BT Sport 2, Fri 0200,

BT Sport 3, Sat 1600,

BT Sport 2, Sun 1800

TV Highlights

BT Sport 4, Sat 0500,
Sun 0430, Mon 0330,

Red Bull TV, Fri 0400,

Sat 0400, Sun 0400,

ITV4, Tue 2000

Sebring 1000 Miles

World Endurance Rd 1/7

Sebring, America

17 March

TV Live Eurosport 1, Fri 1530

Sebring 12 Hours

IMSA SportsCar Rd 2/11

Sebring, America

18 March

Formula 2

Round 2/14

Jeddah, Saudi Arabia

18-19 March

TV Live Sky Sports F1,

Sat 1505, Sun 1330

NASCAR Cup

Round 5/36

Atlanta, USA

19 March

TV Live Viaplay, Sun 1830

NASCAR Xfinity

Round 5/33

Atlanta, USA

18 March

TV Live Viaplay, Sat 2030

NASCAR Truck Series

Round 3/23

Atlanta, USA

18 March

TV Live Viaplay, Sat 1730

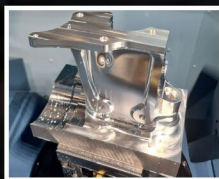
UK MOTORSPORT

Silverstone BRSCC

18-19 March

C1 Endurance, Clubsport
Trophy, Mazda MX-5
(Championship, Clubman,
Supercup), Mini Miglia,
Mini Se7en, Modified Ford





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WHAT COULD HAVE BEEN

WHEN A CAREER-CHANGING MOVE (THANKFULLY) GOES BEGGING

Davidson is happy that Team Green test outing never turned into anything more



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DAVIDSON IN CHAMP CAR

Following the Super Aguri Formula 1 team's 2008 collapse, Takuma Sato headed Stateside and has to date won two Indianapolis 500s, while Anthony Davidson became one of the most sought-after prototype drivers around. But after he'd impressed in a Champ Car test outing with Team Green at Road America in 2002, it's not beyond the realm of possibility that Davidson could have reached similar heights in US open-wheel racing.

Today Davidson has nagging suspicion that he "would have had quite good feel for the ovals" but never pursued a race seat for 2003 as he "was always a bit fearful" of them.

"It was alien to me," says Davidson, who retired from racing in 2021. "As I always said back then, I just liked braking too much! I was quite adamant in that decision, it was just set in stone from the word go.

"LOOKING BACK AT IT NOW, OF COURSE YOU'D SAY, 'I'M ON A GOOD LAP, CAN I DO ONE MORE?'"

I was never interested in doing the ovals."

Honda had organised Davidson's test outing to transfer knowledge of the traction control system it had developed in F1 with BAR tester Davidson at the forefront. But the then-23-year-old had never driven a turbocharged car before and admits to feeling "really apprehensive" heading to Elkhart Lake – "a beast of a circuit to learn".

"I'd heard that these cars were absolute beasts to drive, no power steering and a lot of horsepower," recalls Davidson. But his F1 experience with 600kg, naturally aspirated V10 machines producing over 900bhp meant he was well prepared for what would otherwise "have been quite a daunting prospect".

"I remember putting my foot down for the first time out of the pits on the way down towards Turn 1 thinking, 'Where is this power they'd spoken about?'" he says. "I had this massive moment of relief."

Despite the Lola's extra weight relative to period F1 machines, he enjoyed its "really sweet" handling and lapped within a second of that year's champion Cristiano da Matta (Newman/Haas). Davidson believes he was on course to shave off another two tenths when he was called into the pits.

"Looking back at it now, of course you'd say, 'I'm on a good lap, can I do one more?'" he says. "But I was so obedient and I think that's what



made me such a good test driver."

Conversations never progressed further about doing more – "That's really as far as it went and I think as it ever was going to go" – particularly as Team Green switched to the all-oval IRL for 2003 following Michael Andretti's buy-in. Today Davidson feels he made the right call, despite a good showing in his only Daytona 24 Hours appearance in 2013 when the spotter for his 8 Star Motorsports entry praised his spatial awareness.

"I thought, 'You go around an oval and it's flat out, so how can you see whether I'm doing something right or wrong on a part of the track where you barely have to turn the steering wheel?'" he says. "It would have been fun, but I always had this voice telling me not to do it."

JAMES NEWBOLD

LE MANS
100
YEARS



FROM THE ARCHIVE

Lined up in the Le Mans pitlane ahead of the 1978 24 Hours, the #7 Porsche 936-77 shared by Hurley Haywood, Peter Gregg and Reinhold Joest forms the perfect foreground to frame the

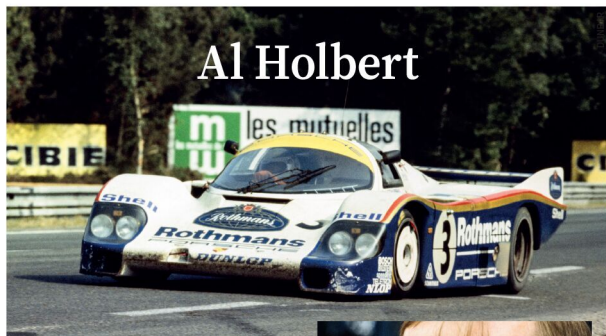
sister works cars (albeit these being new, improved 936-78s) of Jacky Ickx, Henri Pescarolo and Jochen Mass (#5), and Jurgen Barth, Bob Wollek and Ickx (#6), the Belgian switching machines mid-race when the #5 was

hit by a succession of problems that culminated in its retirement. The #6 and #7 finished second and third respectively behind the Renault-Alpine A442B of home heroes Didier Pironi and Jean-Pierre Jaussaud.

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Al Holbert

It feels fitting that one three-time winner of the 24 Hours of Le Mans with Porsche should choose another as his all-time favourite team-mate, although Hurley Haywood and Al Holbert only won it together once, in 1983.

By the time of the fabled race, when Holbert barely made the finish with their 956's engine billowing smoke, Haywood already had a Le Mans victory to his name from 1977. Haywood claimed his third in 1994 after Holbert's death in a 1988 aircraft accident at the age of 41, whereas Holbert scored his trio of Le Mans wins across just four years.

"Porsche has always had a really good way of putting like-minded personalities together," says Haywood. "I believe it made their combinations very secure in their own right. Nobody needed to prove who's faster. The goal was always to win as a team, not set the fastest lap. I really loved working with, and racing against, Al Holbert. He was my perfect team-mate."

Haywood, now 74, first crossed paths with Holbert in the early 1970s in domestic sportscar racing in America. "When I first met Al, he was a real hell-raiser," he says. "He would go out, get drunk, he was crazy all the time. And then he met his wife and became a born-again christian. Driving against



him was always really fun for me, because he never did anything to cause me to make a mistake, he wasn't going to push you into the fence on purpose."

Although they spent most of their time as rivals on the US scene, Haywood loved teaming up with Holbert when he got the chance. "Having him as a co-driver was really great, because he was mechanically on it, he knew how to make a car go faster," he recalls. "He and I had a very similar driving style, so everything worked together — he was a pleasure to be around."

"He never tried to prove that he was the fastest guy on the team. Everything was shared equally, so he wasn't big on ego, the mission was always to get to the line first as a team. We shared that philosophy."

"We just lost Al way too early. I'll always remember winning Le Mans with him."

CHARLES BRADLEY



IN NEXT WEEK'S ISSUE

Saudi Arabian GP

CAN ANYONE STOP A RED BULL RUNAWAY?

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Autosport, ISSN number 0309946X, is published weekly by Autosport Media UK Ltd, The Power House, Isleworth, TW7 6GQ, United Kingdom. Air freight and mailing in the USA by World Container Inc, 150-15, 183rd Street, Jamaica, NY 11433, USA. Periodicals postage paid at Brooklyn, NY 11256. Subscription records maintained at Autosport Media UK Ltd, The Power House, Isleworth, TW7 6GQ. Air Business Ltd is acting as our mailing agent. POSTMASTER: Send address changes to Autosport, Air Business Ltd, c/o World Container Inc, 150-15, 183rd St, Jamaica, NY 11433, USA.

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Tel: +44 (0) 20 243 4000
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& Sons Ltd, 26 Brewery
Road, Wiltshire,
Wolverhampton WV13 3XT.
© 2023 Autosport Media UK Ltd. Autosport is published weekly by Autosport Media UK Ltd, The Power House, Isleworth, London, TW7 6GQ.

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Toyota gave its hydrogen ICE-powered Yaris an outing on the Ypres Rally last year



A LONG WAY TO GO, BUT THE HORSE HAS BOLTED – HYDROGEN IS COMING

Tribalism is par for the course in motorsport. That doesn't just apply to social media keyboard warriors defending the cause of their favourite Formula 1 team, but also to propulsion methods as those with vested interests have lauded their preferred solution as 'the answer'. But reality is often more complicated than a simple one-size-fits-all.

Electric motorsport has truly taken off in recent years, with Extreme E, the World Rallycross Championship, FIA ETCR, and the Swedish Touring Car Championship following the full-EV trail blazed by Formula E. And the number of series that have adopted hybrid elements in their push to heed sustainability requirements is increasing all the while.

Acceptance is growing that companies must keep their options open, and risk being left behind by turning their nose up

at emerging technologies. This explains why hydrogen is now, slowly but surely, inching closer towards the agenda.

In this issue's cover feature (page 10) we explore how efforts to exploit its potential in motorsport are faring, the obstacles facing its widespread introduction, and consider how long the process may take. And on page 18 we take a closer look at the hydrogen machine that Le Mans 24 Hours organiser Automobile Club de l'Ouest has been using as its testbed for a planned H2 class in the world's most famous enduro.

We've grown accustomed to Dallara's status as a powerhouse supplier of single-make racing cars, but 30 years ago it was fresh from the conclusion of a bruising spell in Formula 1 and yet to establish its junior formula dominance. Marcus Simmons recounts how that all changed (p20) with input from the key players in the 1993 British Formula 3 Championship.



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IMAGE
JEP

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NEW TELEMETRY SYSTEM FOR INDYCAR

Teams can access more data to improve performance, medical crews to be better informed

IndyCar has adopted a new telemetry system to help teams improve the performance of their cars and better inform medical response crews in the event of an incident. The provider, EM Motorsport, is well-established in motorsport for supplying circuits with electronic marshalling systems and numerous series with accident data recorders and ear piece accelerometers, which IndyCar has used since 2021. EM's Electronic Marshalling System was well-received by the paddock when IndyCar began using it last season.

IndyCar's new system, which EM Motorsport has called "a first-of-its-kind solution", works with pre-existing electronic marshalling systems with both the telemetry and marshalling systems coming from the same source, managed locally with no data being sent off-site. This should increase reliability with less risk of interference between different operators, and ensure the security of the data being transmitted.

Hundreds of data channels from

an array of onboard sensors will be streamed to teams and to race control with a view to providing more data for the teams to optimise car set-up and monitor any potential reliability issues, while also streamlining information for safety crews.

The telemetry was operated in full for the first time during the pre-season two-day test at The Thermal Club, and was given its race debut at the St Petersburg season opener.

EM Motorsport deputy manager Luca De Angelis said the realisation of its all-in-one system of telemetry and electronic marshalling "has been an ambition of EM Motorsport for many years".

"To achieve this with America's premier single-seater series makes us extremely proud," he added. "The championship is leading by example of how other series can run a more cost-effective and elegant solution. We are greatly looking forward to working alongside IndyCar to expand the capabilities of the combined systems."

DAVID MALSHER-LOPEZ

MOTOGP REVEALS IMPROVED SPEC ECU FROM MAGNETI MARELLI FOR 2023 SEASON

MotoGP will introduce a new ECU for use in 2023 by factory teams that will develop the system ahead of the series' sustainable fuels switch in 2024.

MotoGP has used standardised electronics since 2016 in a bid to make the grid more competitive, with Magneti Marelli supplying both hardware and software.

According to MotoGP, the typical lifespan of an ECU in the series is three to five years, but Magneti Marelli extended this.

As part of its push towards a greener future, MotoGP will introduce part-sustainable fuels across all three classes of the



world championship (MotoGP, Moto2 and Moto3), which will be 40% non-fossil. Then from 2027 it plans to run 100% non-fossil

sustainable fuels. As such 2023 will be used as a data gathering year for Magneti Marelli on the new ECU, which is claimed to

quadruple the computational power of its predecessor, with the factory teams and the satellite squads that will run 2023-spec bikes chosen for the task.

The factories have requested that any 2022-spec machinery on the grid continues to use the previous ECU to keep costs down, since satellite squads would have to bear the cost of leasing the new unit. But despite the grid now running different spec ECUs between the 2022 and 2023 bikes, MotoGP insists that no performance disparity will be created as a result.

LEWIS DUNCAN

Bertolini was entrusted with first run in the Maserati GT2



MASERATI'S GT2 SUCCESSOR TO MC12 BEGINS TRACK TESTING

Maserati has begun track-testing the new GT2 car that it hopes will become the spiritual successor to its all-conquering MC12 GT1 racer.

Simply known as the GT2, the machine based on Maserati's MC20 sports car was shaken down at the Autodromo Varano de' Melegari by Andrea Bertolini, who claimed two Spa 24 Hours victories and four championships across the FIA GT and GT1 World Championship series aboard MC12s. The GT2 is set to be officially unveiled at July's edition of the GT World Challenge Europe blue riband.

"Early feedback is positive," Bertolini said.

"We've focused on developing a product that not only stands up to its competitors but is also an ideal car for our gentleman drivers in terms of handling, comfort and performance. We want them to experience a unique feeling in this car."

The new car, powered by the same 463kW Nettuno V6 engine from the MC20, has been designed to meet the SRO's GT2 regulations and will be eligible to race in the GT2 European Series. It has a carbon fibre monocoque, composite bodywork, suspension components designed for racing, and a six-speed sequential racing gearbox.

IMPROVED TYRE FOR EXTREME E IN 2023

Extreme E gave a debut to an upgraded tyre from Continental that is lighter and more sustainable than its predecessor at last weekend's Saudi Arabia curtain-raiser.

The CrossContact Extreme E tyre is specially designed for the electric off-road series' Odyssey 21 chassis and is reported to include "around 43% recycled and renewable materials", according to a statement. This includes silica obtained from the ash of rice husks, which would ordinarily be wasted because they cannot be used as food or animal feed, with polyester yarn from recycled PET plastic bottles integrated in the tyre construction.

The 2023 tyre's size, diameter and width are unchanged, but it is 2kg lighter than last year, which is expected to reduce emissions in transportation. Continental's technical manager for Extreme E, Nels von Schnakenburg, added that the German company had "also made further gains with handling performance and have therefore improved driveability".



SABELT WORKING ON NEW SEAT USING NATURAL FIBRES

Safety equipment and racing seat manufacturer Sabelt has announced that its product range will soon include an offering made using natural fibre composites, in collaboration with Bcomp.

The Swiss company has pioneered the use of flax-based fibres as an alternative to carbon to improve sustainability. It supplies OEMs in GT racing with non-performance-inducing bodywork and interiors, while the McLaren Formula 1 team already uses a seat and timing stand devised by Bcomp.

Sabelt, which celebrated its 50th anniversary in 2022, supplies several F1 teams including Ferrari and Alfa Romeo. A company statement said that it is "currently validating" the flax fibres as part of its Carbogreen Project initiative to produce a new line of sustainable seats.

"The Carbogreen Project is an important initiative for Sabelt as a first step," it said, "to be followed by the implementation of natural fibres reinforced with thermoplastic materials, which are more easily recyclable at the end of the vehicle's life and help reduce the environmental impact of seat system production."

IN BRIEF



UPGRADES FOR DALLARA

Dallara has revealed a limited edition version of its Stradale sports car and the EXP trackday variant to recognise 25 years since its first victory in the Indianapolis 500. Both iterations, which will be limited to 25 examples apiece, boast a new livery inspired by Eddie Cheever's 1998-winning IR8 model, and notable upgrades. The Stradale will be equipped with the AMT gearbox from the EXP to halve shifting times, and benefit from a new braking system and intercooler.

FORMULA STUDENT ENTRIES CONFIRMED

Over 130 teams will contest the 25th anniversary edition of Formula Student following the closure of entries, event organiser the Institution of Mechanical Engineers revealed. International teams from Germany, Sweden, Turkey, Serbia and Italy will go up against British universities at Silverstone in July, with more entrants building electric vehicles than any other engine type. A record 20 teams entered the category for automated vehicles.

BMW'S HYDROGEN PLAN

BMW has become the latest OEM to publicly throw its weight behind hydrogen as a power source. Four years after an initial concept was presented, a pilot fleet of iX5 hydrogen road cars powered by fuel cells sourced from Toyota will be made available for demonstrations in 2023, potentially paving the way for production.

BREMBO WEIGHT SAVING

Brembo's 2023 Formula 1 braking system is "around 300/350g lighter" than in 2022, the Italian manufacturer has revealed. The saving, which varies for each team depending on its desired weight/stiffness ratio, was achieved by optimising the design of particular components "while taking the geometries to extremes".



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DRIVING CHANGE LUCAS DI GRASSI

FIRST IMPRESSIONS OF THE RADICAL FORMULA E SHAKE-UP

Formula E's Gen3 racer is lighter and more powerful than ever before. But how is it to drive, and what could be improved?

The new Formula E season has meant a lot of adaptations for me – to a new team in Mahindra, and an even bigger change in the Gen3 car. It's very different to drive than what we had before, which is no surprise as the car has moved on in many respects.

The main technical improvement comes from having motors front and rear, which have a combined regen capacity of 600kW – 350kW rear and 250kW front, for regen only. New battery architecture was needed, as the Gen2 unit only allowed for 250kW of charge and regen. The new battery has less energy, from 52kWh to 40kWh usable, but much more power, up from 250kW to 600kW. And the battery is lighter too, reducing overall car weight.

The power definitely exceeded my expectations. I raced with 1000 horsepower in the World Endurance Championship with Audi, so 350kW (470hp) doesn't sound like much by comparison. But as it's continuous power, it's a lot. The complexity of the car to set up and get the software controls in the window also exceeded expectations.

The increased regen capability completely changes the driving experience – it behaves like an ABS system where the motor can automatically increase or reduce torque to control the dynamics of the car. Under this circumstance, the car's software becomes

more important than the hardware – and it can lead you to brake much later or earlier if you don't have a good system.

You get a certain feedback from having a motor on the front axle, which I experienced before when Audi ran four-wheel drive in LMP1 from 2014 to 2016. The car behaves differently with that, and the Gen3 is harder to drive because it has less mechanical grip with the new tyres from Hankook, so we're sliding more. The car is slightly faster than the Gen2 was, but we lose too much lap time due to the tyres being harder. Also the car has more drag now because the wheels are exposed. When Red Bull designed a futuristic car to beat every record, the

throttle application. Going flat out at any speed from zero to 120km/h (75mph) will lead to wheelspin. The way you apply the throttle is almost like an F2 car in the wet, in terms of how delicate you need to be, so it takes much longer to reach full throttle.

The ratio between grip and power has really decreased a lot from Gen2 to Gen3 and I believe the disparity is too big now. The car is much harder to drive because you're always on the edge of crashing. Now we're not power limited, we are grip limited.

I agree with Jean-Eric Vergne that instead of losing grip from the tyre we should have gone to a slick or semi-slick. We could go four or five seconds a lap faster and have

“We could go four or five seconds a lap faster and have more overtakes with a soft tyre”

X2010 had covered wheels – just like Gen2!

Hankook was asked to produce a product that lasted for up to two complete events. If we had a tyre the same as Michelin's last year, we would have much more apex speed. The harder tyre puts less rubber into the surface so track evolution is reduced too.

Because we now have much more power and torque, we must be very precise with

many more overtakes with a soft tyre compound. It's still possible to have good racing with more grip, as softer tyres won't give that same level of grip all the time. That's what we have now with a super-hard tyre which is consistent through the whole race regardless of how you drive.

It wouldn't have to be massively more grip, proportionally to what we had before would be fine. On the Michelin last year we had to drive differently in attack mode because the higher energy put through the tyres would overheat the rubber, which was challenging because you needed to use your extra energy and look after the tyres.

Moving forward on Gen3, I would like to see more grip and make the power become modular. At certain races, it could be limited by software changes so you could find the optimal power to grip level for each track – and we could even bring back Paris! I'd also like to see the wheels partially closed, to reduce spray in the rain, and introduce four-wheel drive in attack mode to create new and exciting overtaking scenarios. ■



Power of Gen3 car exceeded our columnist's expectations, grip less so



Podium on Mahindra debut in Mexico has been Di Grassi's Gen3 high point so far



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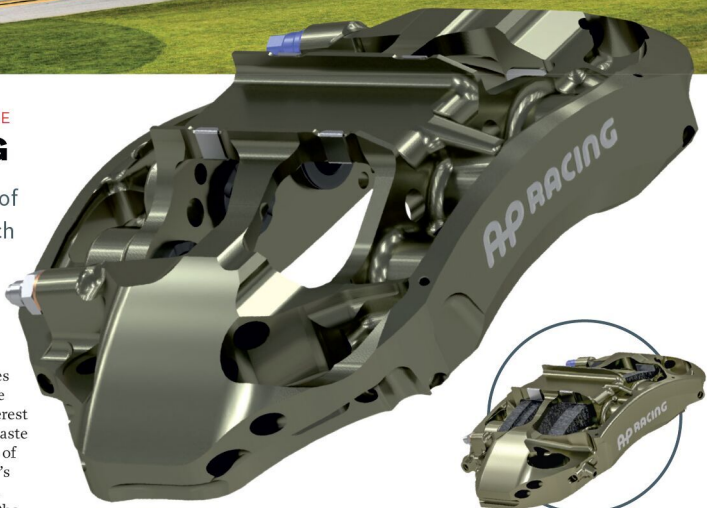


LEWIS/GETTY IMAGES

PRODUCT SHOWCASE

AP RACING

A look inside the design of bespoke brake and clutch components for the new LMDh rules



Cost efficiency is right at the heart of the LMDh rules that have helped to fuel the boom of manufacturer interest in sportscar racing. We were given a taste of what to expect from the new breed of hybrid-assisted prototypes in January's Daytona 24 Hours round of the IMSA SportsCar Championship, where LMDhs are known as GTP cars, and this weekend it's the turn of the World Endurance Championship as it kicks off at Sebring.

Economic frugality of LMDh cars, a necessity given their use by works teams and customer squads alike, is assisted by a spec hybrid system and the requirement to base the chassis on one of four approved LMP2 'spines'. But it is also a fundamental tenet of leading suppliers such as brake and clutch manufacturer AP Racing.

The Coventry company has exclusive supply deals to the British Touring Car Championship and NASCAR Cup Series, but to be competitive on the open market for LMDh affordability was a focal point.

As Jason Carpenter, race engineer at AP Racing, explains: "Efficient collaborative design was key with this project and our design teams worked hard to reduce costs."

"We regularly reassessed the effectiveness of designs to ensure we could take a sympathetic approach to machining but with no effect on performance. Making parts quicker to produce was a key aspect of this."

This was no mean feat given the extra demands posed by the hybrid system for regenerating energy at the rear axle under braking. LMDh cars have their own brake-by-wire systems programmed for the needs of each manufacturer-specific powertrain, but the hardware – calipers, discs, pads – needs to be up to scratch too.

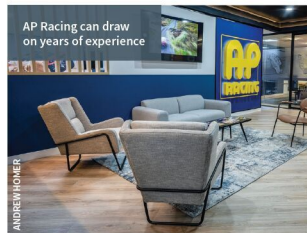
Cooling requirements were carefully considered by AP Racing to keep components within their optimal temperature ranges, and to avoid undue deterioration. AP Racing's LMDh calipers, which utilise the company's patented Radi-CAL design concept, are built to last between 5500 and 6000km before servicing.

The final technical regulations governing LMDh had not been worked out prior to

design work commencing, but AP Racing could compensate by drawing on its extensive experience in other prototype racing categories including with the Le Mans Hypercars (LMH), which will go up against LMDh machines in the WEC's Hypercar class, and in LMP2. "Having a moving target when it came to the final requirements was challenging at points," admits Carpenter, but AP Racing's body of work in other categories gave it "solid starting references and knowledge of our products within a specific environment".

"The initial outcomes on track were close to expectation but, as always, if there is more time to exact performance based around on-track data then designs can always be pushed a little more," concludes Carpenter. "Being race ready is key and, happily, testing so far has pretty much paralleled design expectations, which is always great to see."

Its name may not be the first that comes to mind as the WEC season gets under way, but AP Racing will have a significant part to play as LMDh gains a foothold in the coming months building up to its grand debut at the Le Mans 24 Hours in June. ■



AP Racing can draw on years of experience

ANDREW HUNTER



ENGINEER'S VIEW GIORGIO BREDA

THE HARSH REALITY OF SUPPLY CHAIN DELAYS

It's a global phenomenon since the pandemic, but just how are supply chain delays impacting motorsport? The co-founder of leading pit equipment supplier Breda Racing explains



Limited availability of certain materials has forced Breda Racing to find new solutions

It is well known that we are experiencing a historic period that requires radical and unexpected changes compared to what we were used to in the recent past.

A main point of focus for our company has always been giving our customers the fastest delivery possible, even when processes were challenging. This has never been easy, but we were used to making this our absolute priority. However, in this condition, only one small piece of the puzzle can cancel all our efforts. It's been very frustrating not being able to deliver in the same way as before, because we depend on some material or components that are continuously delayed.

We know that all companies are impacted by this situation, and we are currently struggling with delays at all levels of the supply chain. The particular unavailability of some accessories means that we must find new ones with similar traits. But in addition to the time taken up by searching for, finding and testing valid alternatives, we also have to keep updating documents to the new components. This results in a lot of work not dedicated to research and other important tasks in the company,

and only invested in problem-solving.

Additionally, we are also struggling with delivery delays from specialised third party partners affected by a lack of workforce or an overloaded production. To work with them, there is no choice but to wait. In some cases, we have no alternative as other companies may not have the same quality or reliability. All of this means we dedicate much more time to meticulously following each order, trying to react as quickly as possible when something doesn't go to plan. It's necessary to involve expert human resources to solve these issues,

“The circumstances teach us to find new solutions and step outside our comfort zone”

as other important tasks are being set aside. Clearly, this is not good.

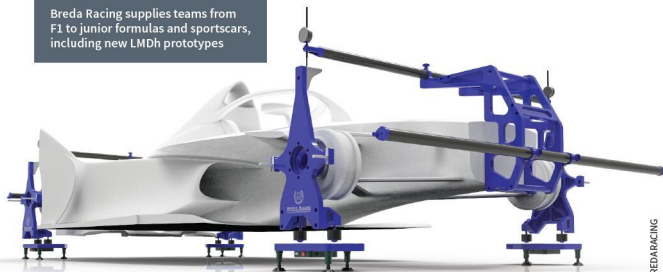
All of this means we need to approach suppliers and partners differently. It's vital to strengthen human relationships, which is something all of us lost a bit during the past few years sitting behind screens, and to remember that we're all in this together.

the same, keeping them constantly updated about the evolution of projects and orders.

I don't have the magic formula to solve this problem, but I can say that Breda Racing is continuously trying to improve and looking for new alternatives. In some way it reminds me of race track challenges, when the car is damaged a few hours before the race and only a very strong team is able to react accordingly. Currently, the pressure in the production area seems to be similar to the pitlane but without the same thrill!

Nevertheless, it can be seen also as a positive aspect. We recognise that the present challenge requires a difference that only human skills can provide. These circumstances teach us to find new intelligent solutions and step outside our comfort zones. I consider the situation as a chance to reinforce our organisation by consolidating what allows us to succeed. Going beyond our limits has always been a point of strength at Breda Racing and now we are forced to rediscover and to reinforce it more than ever. ■

Breda Racing supplies teams from F1 to junior formulas and sportsracs, including new LMDh prototypes



BREDARACING



HOW CLOSE IS WIDESPREAD ADOPTION OF HYDROGEN IN MOTORSPORT?

Momentum is building behind hydrogen as a solution for zero-emissions motorsport. But what challenges face those taking the plunge, and how long will these take to iron out?

BY JAMES NEWBOLD



H

ydrogen has long been touted as the silver bullet to answer motorsport's sustainability problem. Water is the sole byproduct of fuel cell vehicles using green hydrogen – that is, hydrogen produced by a process of electrolysis using renewable energy sources, rather than derived from natural gases where carbon monoxide is also emitted in its production – and a growing number of programmes are seeking to exploit its credentials. They range from internal combustion engines (ICEs) converted to run on hydrogen, which still emit some nitrogen oxides (NOx), to fuel cell electric vehicles (FCEVs) that use hydrogen to power electric motors.

The first racing championship to run on fuel cell technology, Extreme H, will kick off next year, but there is little consensus on whether hydrogen will become widely used in racing, let alone at what stage. Significant hurdles must be overcome to fully win over sceptics yet to be convinced by factors of cost and safety, while battery electric vehicles (BEVs) have reached a point of technical maturity that seems a long way off yet for hydrogen, which is still in the early stages of being optimised.

Fuel cells are especially complicated. Through a process of reverse electrolysis, hydrogen meeting air is converted into electrical power, which uses up energy that contributes to making it less efficient than EVs using power stored in batteries. This factor, and the limited number of commercially available options using hydrogen propulsion as a consequence, goes some way to explaining why Toyota is the only major OEM to have publicly demonstrated the technology in a motorsport setting so far.

Those who have taken the plunge aren't blind to the challenges, but they are optimistic.

"There's a lot to do and a lot to have a look at, but it's like a snowball at the moment," says AVL Racetech motorsport director Ellen Lohr. "You see this snowball gets speed and suddenly there will be the point where it's just rolling and being big and there. I personally think the ball is rolling already."

WHY HYDROGEN INTEREST IS GATHERING

While Formula 1 has pursued sustainable fuels for a net zero exhaust emissions and a hike in the electrical contribution of its powertrain for its 2026 engine rules reboot, the impending 2030 ban on the sale of new petrol and diesel vehicles in the UK means the push for zero-emissions motorsport is gathering pace.

Lower classes of racing face future challenges to become sustainable...



...a key factor behind AVL Racetech's decision to build its own H2 ICE

Toyota has proven its H2 ICE-powered Corolla in Fuji 24H



“There’s a lot to do and a lot to have a look at, but it’s like a snowball at the moment”

Hydrogen and BEVs become the two clear approaches to satisfy this criteria, but as hydrogen consultant to the Automobile Club de l'Ouest Bernard Niclot explains, BEVs are “not adapted for endurance racing”, with four laps at the Circuit de la Sarthe reckoned to be enough to drain most batteries. By contrast, hydrogen permits refuelling rates and range that are closer to conventional ICE cars and work in collaboration with battery technology used in EVs. While Niclot concedes that “it’s a huge challenge”, he is convinced that the zero-emissions solution for endurance racing “is a hydrogen option”.

His view is shared by Green Corp Connection (GCK), the team behind a hydrogen fuel cell assault on the 2024 Dakar Rally, and which concluded that hydrogen is the best-suited zero-emission alternative to fossil fuel for long-distance cross-country rally raids.

There are emotive factors involved in a pursuit of hydrogen too. Lohr, a DTM race winner with Mercedes in the 1990s, has overseen the creation of a hydrogen-powered ICE that is the first engine built in the history of AVL's racing department, which until now has only sold software in its own name. The two-litre engine, which is anticipated to produce 300kW, is set to begin dyno testing next month and it is hoped to be



Toyota WRC boss Latvala is convinced by potential of hydrogen vehicles

sufficiently reliable by the end of the year to put into a physical car. “I personally see a great future in hydrogen combustion and now the racer is speaking, because I love that with this technology you can keep the sound,” she says.

Toyota World Rally Championship boss Jari-Matti Latvala agrees. The Finn raced a Corolla powered by hydrogen ICE in the Fuji 24 Hours last year, while Toyota company president Akio Toyoda demonstrated a hydrogen ICE GR Yaris on a stage of the Ypres Rally last year. “Hydrogen is something really interesting, it would be great to have in motorsport,” enthuses says. “For me the great thing with hydrogen is the same feeling as the normal internal combustion engine and you get the sound.” ►

PROJECTS CURRENTLY UNDER WAY

MissionH24 has been at the vanguard for hydrogen motorsport, racing against conventional combustion LMP3 and GT3 cars in the European Le Mans Series-supporting Michelin Le Mans Cup series with its fuel cell racer. Built by GreenGT as part of a joint venture with the ACO, its ADESS LMP3-based H24 made its race debut last year and is evolved from the original LMPH2G that first appeared in practice sessions in 2019. The goal, GreenGT technical manager Bassel Aslan explains, is “to be more competitive and to the level that you cannot even distinguish between a hydrogen car and a classical car”. But so far reliability and ironing out the foibles in the enormously complex system has been an equally important focus.

“You can imagine, we just got in the races and we will lose our credibility, lose our image if you see the car just stopped on the circuit, and this is why we put a huge effort there,” he says. “Six months before the first race in Imola we worked a lot on this and we did a lot of tests tracing all the anomalies to work on them one by one, solving them, avoiding them stopping us on the circuit. All the sensors, all the actuators in the system and the accessories of the fuel cell and the actuator can really stop the whole car.”

According to Niclot, the ACO has considered hydrogen as a solution since GreenGT pulled its Garage 56 entry for the 2013 Le Mans 24 Hours, deeming its H2 car to be not sufficiently developed. To that end the ACO set up a working group, which first met in May 2018, with the goal of creating a hydrogen category for the World Endurance Championship and Le Mans. It was originally planned for 2024 with suppliers for spec chassis, hydrogen tanks and electric powertrain communicated in January 2021. Manufacturers would be able to develop their own fuel cell technology. But delays induced



ACO consultant Niclot is impressed by H24



GCK is working on a hydrogen fuel cell Dakar challenger

by COVID mean a start date of 2026 at the earliest is anticipated.

“It’s clear that from this learning programme with H24 we have understood some tricky points that were not so obvious from the beginning, and we know we have to be attentive to these points for the development of the H2 category,” says Niclot. “So for me, this H24 programme is really doing the job we wanted.”

“When you see where we were two years ago in terms of performance and where we are now, it’s really impressive. Now we are very close to GT3 cars and at that time we were 10 or 15 seconds behind.”

Having made a splash on the World Rallycross Championship by retrofitting a Lancia Delta to run on electric power, GCK plans to do the same with the Dakar-winning Peugeot 3008 DKR, which forms the basis for its e-Blast H2 hydrogen challenger. The final regulations have yet to be agreed with organiser the ASO, but project leader Cedric Challine of GCK Performance says significant progress has been made since a show car was revealed at last year’s event.





Challine is leading Dakar project for GCK



GCK's Delta would not be suitable for hydrogen due to packaging constraints

RALLYCROSSPROMOTER GABRIEL RED BULL CONTENT POOL

"We have the last evolution of tanks into the vehicle and also the last evolution of our fuel cell, which is at the moment on the [test] bench," reveals Challine. "It will run in hard conditions really soon."

The same hydrogen fuel cell that Guerlain Chicherit will use in the gruelling Saudi desert will also power snow groomers patrolling the Alpe d'Huez ski resort, which Challine points out will mean it has data from both temperature extremes that should "permit a lot of fast development".

Meanwhile, a hydrogen offshoot of electric off-road series Extreme E, called Extreme H, is on its way for the second quarter of 2024. The brainchild of Formula E founder and alternative fuels visionary Alejandro Agag, its first prototype built by Spark Racing Technologies is set to begin testing in June. Having used hydrogen to power the Extreme E



AVL has developed a solution to produce its own hydrogen reserves

paddock, championship manager James Taylor is optimistic and feels that Agag's track record makes for a good omen. "We feel confident we understand it, we feel confident we know how to handle it, how to transport it and understand the risks as well," he states. "Alejandro is a trailblazer, what he achieved with Formula E was so far ahead of other championships. We want to do the same with hydrogen."

"When you see where we were two years ago and where we are now, it's really impressive"

THE HURDLES

Weight is arguably the first major obstacle when it comes to comparing hydrogen vehicles to conventional combustion. "If you take fuel cell technology today, you can get some good power but fuel cells are quite heavy in respect of standard ICEs," says Niclot. And hydrogen storage is another related headache.

"If you want to have enough hydrogen on board you need to compress it," Niclot explains. "The pressure is 700 bar, which is huge, and you have to keep this hydrogen at this pressure. If you want an image, it's the weight of an elephant on a postal stamp."

"For each kilogram of hydrogen that you have on board, you have more or less 18 to 20 kilograms of tank. So to remain competitive, you have to find a compromise between the quantity of hydrogen you have on board, which defines the quantity of energy, and the weight and all the other parameters of the car. You cannot say 'I multiply by two the power' because you need to have much more hydrogen on board if you want to make enough laps in a stint, and then you become embarrassed by the weight."

The challenge of packaging and cooling hydrogen effectively presents further difficulties. It's not as though one fuel cell will produce enough power. Most FCEVs arrange multiple fuel cells ►



MissionH24 has been racing against conventional ICE cars in Le Mans Cup

WHY HYDROGEN AND EVS AREN'T MUTUALLY EXCLUSIVE

Speaking at the Autosport International show about future propulsion methods for motorsport, Hypermotive strategy director Jonathan Brown made some telling remarks.

"Hydrogen is not necessarily the answer to everything and that's one of the key things we need to understand as we move forward away from the ubiquitous ICE," he said. "In the future, we're going to have to be very much more willing as a society to understand that there will be much more specific solutions to different applications."

It's clear therefore that development of hydrogen technologies will not come at the expense of battery electric vehicles. AVL Racetech's Ellen Lohr agrees that the two approaches "serve different purposes and both will exist in the near future and in the far, far future too".

Where short, sharp sprint races in rallycross are ideally suited to EVs, hydrogen can be tailored for use in longer distance formats. With feet in both camps, having established Extreme E and working to prepare Extreme H for a 2024 start date, championship manager James Taylor believes "there's absolutely space for both" forms of propulsion in motor sport.

Developments in electric motors and batteries will not go to waste if hydrogen takes off, believes GCK's Dakar project leader Cedric Challine, "because anyway the electric motor will be the same" in a fuel cell vehicle or conventional EV.

"If you use only a battery, or you use hydrogen recharging the battery and then an electric motor, the electric technology will be the same," he says.

He considers the multitude of options only as a positive. "We have a lot of technologies in front of us that we can use either separated or all together," Challine adds. "It's quite fantastic to have everything in front of you, as is the case.

"If you have a customer then I can choose from one way to the other what we can do and what we can integrate into it."

in stacks – the H24 has one fuel cell system with four stacks. GCK's Delta RX project would not have been possible with hydrogen given the constraints of the bodywork, says Challine. "The volume you can put into the car to have it driven by an electric motor and energy is quite limited," he explains. "If you want hydrogen technology put inside this car at the moment, with the technology we know and the volume it takes to have a few kilos of hydrogen into a car, it's becoming more difficult.

"Maybe it will be possible later on if the technologies evolve and as we had before with batteries. The batteries are less heavy now than they were 10 years ago and take less volume, so maybe hydrogen will be the same in 10 years. At the moment the only way is to have [the Delta] electrical."

Cost, naturally, is also a stumbling block. Hydrogen tanks that can withstand that enormous pressure and are leak resistant don't come cheap. And the same goes for platinum, the most common catalyst in fuel cells.

All told, truly green hydrogen requires significantly more resources to produce, and significant investment in infrastructure, all for inferior efficiency to EVs. So those serious about hydrogen propulsion have begun investing in their own power supply.

AVL has developed its own containerised electrolyser using solar panels to produce its own green hydrogen, which Lohr believes will be "a very good solution, especially when it comes to race tracks". And GCK, a diverse company of which its motorsport arm is only one part, has stepped up its work on the distribution of electric and hydrogen power as it seeks to roll out a fleet of coaches – currently being homologated – and Renault Master utility vehicles converted to use its own in-house fuel cell. This will also be crucial to make its Dakar programme feasible, Challine says, "because at the moment we know it's difficult for organisers to be in the middle of the desert and to provide the hydrogen to 20 teams".

The H24 car has a mobile hydrogen filling station built by TotalEnergies that cools and compresses the stored hydrogen. But to run more cars on hydrogen at the same event could pose logistical issues, Niclot explains, because currently "you need to have more or less such a container per car in the race". That would be problematic with a 62-car grid at Le Mans. "Six to 10 cars in Le Mans is something we can do," he points out. "To go from 10 cars in Le Mans to the complete grid, you need to have an update in the technology."

But not all industry figures anticipate that infrastructure will be a significant stumbling block in the way it has been with electric charging, which may smooth its adoption in motorsport. "People

think hydrogen infrastructure is complicated and it doesn't have to be if you look at it in stages," reckons Cosworth CEO Hal Reisinger, his company one of many including ORECA to have invested in hydrogen test cells. "Internal combustion engines can be very easily converted to hydrogen; put different injectors in, remap the ECU and there's this entire infrastructure of engines that are available. It's much easier to establish a hydrogen infrastructure than an electric infrastructure."

Asked how far away a hydrogen-powered engine is for Cosworth, Reisinger cryptically replies: "It's the present." Hydrogen is "one element of an overall strategy"

Extreme E is confident its new hydrogen offshoot will complement its EV offering





Consensus is split on how far away widespread H2 adoption is



for the battery supplier for the British Touring Car Championship that through its Delta Cosworth arm has over the past several years developed a catalytic generator that interacts with hydrogen to provide portable power generation and produces no emissions. It is used as a range extender on Ariel's newly released electric Hipercar.

Lohr agrees that hydrogen combustion "will come much quicker than everybody is thinking", particularly as she recognises a great need to "democratise sustainability in motorsport" and help future-proof lower categories that lack the investment afforded to F1 and the WEC.

"We have to do something, that is very clear," she declares, explaining AVL's decision to embark on its hydrogen engine project. "We should not forget when we talk about motorsport that we have hundreds and thousands of cars on a lower level and we cannot forget them because then motorsport at a point will only be the top classes, because the other classes will be forbidden. Look at 2030, so what do we do for them?"

"That's the key idea with this engine, to really bring it to a customer level. We started with a two-litre now because it fits to many needs. But there will be a wider range of hydrogen combustion engines as well, for sure."

WILL IT EVER BE WIDESPREAD IN RACING?

Niclot believes the ultimate validation of hydrogen's potential will be if it can one day beat conventional technology. To do that, significant investment from manufacturers will be needed to improve the standard of technology currently on offer.

"It's always difficult to say exactly when, but I imagine that one day a hydrogen car could be the top category in Le Mans," he says. "What we want to do from 2026 is to demonstrate that these cars are competitive and able to win the race."

"Will they win? I don't know, but we would like to have cars able to, and one day, in some more years, it could be the only winning car. But from the beginning, of course, they will have to compete and demonstrate that this technology can be competitive against gasoline cars."



Cosworth's Reisinger: rulemakers are crucial

Niclot's prediction that "you need at least 10 years if you want to have hydrogen quite mainstream" isn't universally shared, however.

"We are not talking about decades," reckons Aslan. "I think it's a matter of years. In the beginning when we started, our refuelling station was put away as far as possible from the paddock and other facilities. It's psychological – 'it's hydrogen, it's dangerous'. People are programmed like this. And gradually, when they saw that it's as safe as any other refuelling, gradually we got closer. In Le Mans [last year] we were next to the paddock."

Challine believes that it could be as little as five years if enough rulemakers are sufficiently inspired to take the plunge. "It all depends on the regulations and on the organisers, I think," he says. "We've seen the electric technology growing and getting better and more powerful every year, and batteries less heavy and more efficient, and we are sure that hydrogen will be the same. The technologies are there and people are using the technologies, so now I think it's more up to them."

"The powers in the different motorsport bodies need to have a better understanding of what hydrogen is capable of," agrees Reisinger, who regards synthetic fuels as "an easy default". "[F1] has thus far gone down the road of energy recovery and the like. I think when they want to maintain the visceral and emotional benefit of an internal combustion engine, and yet still then achieve the reduction in the climate footprint, then they'll arrive at that as a solution."

Hydrogen is still a long way from being fully optimised in motorsport. Even five years into the MissionH24 project, Aslan says "we are still in the beginning, we can really make jumps in a very limited time". And while there are problems that have to be worked out, motorsport's track record as a laboratory suggests it may be a fertile proving ground for hydrogen, especially as barriers to entry reduce with investment.

"Like with all new technologies it's getting cheaper, it's getting less complicated, it's getting better understood in the future," predicts Lohr. "There is more to come."

"The world has not been built in one day and so we need to do it step by step," adds Niclot. "That's what we are going to do." ■



H24 INSIDE THE HYDROGEN MOTORSPORT GROUND ZERO

Green GT's technical manager for motorsport Bassel Aslan sheds light on MissionH24's cutting-edge technology

BY JAMES NEWBOLD



POWERTRAIN

The main change from the first-generation LMPH2G to the current H24 concerned the powertrain, which "was completely replaced", Aslan explains. A much-simplified configuration now features two electric motors instead of the four used in the LMPH2G. These are powered by three hydrogen tanks to give the car sufficient range.

The car doesn't have a differential. Its motors power the left and right-hand wheels independently, as Aslan explains: "They are connected to a completely independent gearbox for left and right." A battery acts as a buffer to bolster the fuel cell's dynamic performance and recover braking energy. Aslan says an important development was achieved recently to enhance the battery's thermal behaviour and increase its power limit to 350kW. With all three tanks filled, the H24 has a range of 45 minutes at full racing speeds.

CHASSIS

The ADESS chassis has been kept standard "as much as we can, because it's not [part of] our added value", explains Aslan, although there have been some necessary adaptations. "With a completely different system integrated you cannot keep it exactly the same, so it's modified to be adapted to our car," he says. "But I would say we have not invested a lot of development there. It's not our war to go in this direction."

IN-CAR CONTROLS

With no clutch and no gearshifting, the experience inside the cockpit for driver Stephane Richelmi differs considerably from conventional prototypes. The opportunity for the driver to control the left and right wheels independently is "an advantage we have in our system", believes Aslan.

"You can imagine all the reflecting possibilities of traction control, torque vectoring," he says. "Even if in certain championships they are banned, since we are out of the categories and we are one unique car for the moment, we are getting benefits of this and the target is to improve the performance."

Running in a special 'Innovation' class outside the remit of conventional LMP3 rules, the H24 managed lap times comparable to GT3 cars in the Portimao Michelin Le Mans Cup race last year. Richelmi can tune the traction control system to improve power distribution and stability over kerbs.



STATS

Drivetrain Three hydrogen tanks, one fuel cell system, two electric motors
Peak Power 550kW
Tank capacity 8.6kg of hydrogen
Storage pressure 700bar
Weight 1416kg
0-62mph 3.4s



COOLING AND PACKAGING

Packaging the additional components required to facilitate a hydrogen fuel cell inside the ADESS-03 EVO LMP3 chassis was “a real challenge”, explains Aslan. The three hydrogen tanks – placed on either side of and behind the driver – combined with the ancillaries involved with the fuel cell, motors and electronics powering it (not to mention the battery) mean there is a significant requirement for cooling.

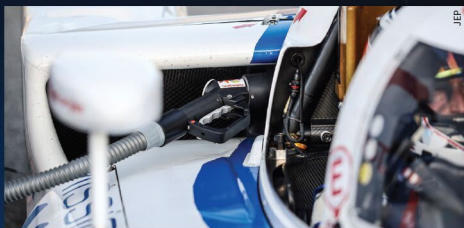
Although a fuel cell system is more efficient than a thermal engine, it is not designed to be heated up in the same way – “You don’t have exhaust gases getting out of it, like in an [ICE] engine evacuating a lot of heat, so all this heat will accumulate in this fuel cell” – and can be damaged if temperatures rise too steeply.

“The fuel cell needs to be cooled, they need big radiators that enter directly in conflict with the aerodynamics,” says Aslan. The H24 also

features a dedicated water air exchanger, used to cool air, which is important for the fuel cell’s functionality.

Given that the side-mounted hydrogen tanks are exposed to incidents, vigorous crash checks had to be passed for the car to meet safety standards and “ensure this is a safe structure”, says Aslan. “Even in case of an accident they can survive up to a certain level without being a danger for the surrounding marshals, the other people around the circuit.”

The refinement in the powertrain has also helped free up space and resulted in “a significant weight reduction” relative to the LMPH2G, and H24’s packaging will continue to shrink as the programme matures. Fuel cell system elements, explains Aslan, are “already getting smaller and more compact”, allowing more freedom to integrate components in a manner befitting of optimal weight distribution and aerodynamics.



REFUELLING

The H24 can be refilled in three minutes from a specially developed station built by TotalEnergies. Keeping the pressure (the hydrogen tanks are designed to handle 700bar) and temperature under prescribed limits while maintaining a consistent flow rate of hydrogen is a constant challenge.

“When you press the hydrogen in those tanks you are increasing the temperature of the gas and there are limits that you should not exceed, otherwise you can damage the tank,” Aslan says.

The TotalEnergies system makes safety a top priority, with automatic procedures in place to reduce the flow as needed. Even when the fuelling system is engaged, Aslan explains, “not even a gram of hydrogen will go out before you have the lock of the plug giving a green light to verify that everything is sealed and closed”.

Increasing flow rates within the thermal limits is a planned development phase that Aslan hopes will mean the H24 loses less time in the pits: “We are working with TotalEnergies on how to cool down the gas and this will help a lot to enhance radically the time of refuelling and getting closer and closer to the refuelling of classical [ICE] cars.”

WHEN THE ITALIANS INVADED BRITAIN

Emperor Claudius in AD43 had nothing on what would happen 1950 years later in British F3. Three decades on from Dallara driving out the indigenous Ralts and Reynards, it's time to look back with the guys who fought out the 1993 title

BY MARCUS SIMMONS

PHOTOGRAPHY  **motorsport**
IMAGES



The title was beginning to slip away, but help was at hand in the form of a shiny new Dallara. Par for the course for Formula 3? Not in 1993, when a belated switch rescued Kelvin Burt's season. "Yeah, I would say 100%," he reflects when asked whether the arrival of the Italian machine 30 years ago was his salvation. "From that point forward we would have struggled to get any more wins."

The Dallara revolution in British F3 was one of the biggest hammerblows to the UK's racing car industry. For all its success in Europe, Dallara's products were untried (save for a brave, and brief, effort from Tech-Speed in 1989), and the conservative – some might say complacent – British scene was reluctant to take a punt. Former Bowman Racing staffers Trevor Carlin and Anthony 'Boy' Hieatt, who half a decade later would combine to make the former's new team the dominant force in British F3, had tried to put a deal together to form a squad to run a Dallara in 1993. But they were short of money and backing, and it was the unfancied Richard Arnold Developments team that finally took the plunge.

This was via engineer Chris Weller, who had been working with Alan Docking Racing. Weller was convinced the Dallara was the way to go, and had befriended Arnold, whose team was set up to run son Steven. Docking's deal to be the de facto works Ralt team sent Weller to the Arnolds, and the revolution started...

By the time Burt switched to a Dallara F393, immediately after finishing a distant fourth in the British Grand Prix support race at Silverstone in July, the championship had boiled down to a fight between himself and F3 rookie Oliver Gavin. With Gavin on a winning spree in his Dallara, his deficit to Burt was down to 11 points (with nine for a win), and six races still remained. Hence Burt's opening remark...

It was a fascinating dynamic. The laid-back Burt, in his second season of F3 but already a veteran of the junior categories, was with the all-conquering

Paul Stewart Racing, run and engineered by Andy Miller. Fresh-faced 20-year-old Gavin, meanwhile, was fighting out of the corner of Peter Briggs's Edenbridge Racing. Miller, like many of his contemporaries, is a lovely man and perhaps something of a motorsport puritan; Briggs, while he'd paid his dues as a mechanic with March and Surtees in F1 and F2, has a bon viveur charisma whereby you'd not be surprised to learn that he'd managed bands in the swinging sixties.

Briggs had future Red Bull head of race engineering Ian Morgan working with Gavin on the important stuff of making the car go quicker, which freed him up to take a big-picture view. For the start of the 1993 season, this sent Briggs in the wrong direction. Edenbridge had played its part in rescuing Reynard's market share in F3 in 1991 when Gil de Ferran won races and, when the Brazilian moved on to PSR in 1992, that team switched from Ralt to Reynard and claimed a dominant title. So, for 1993, Edenbridge went to Ralt... "Basically I always had the theory of when you have the same as everybody else, you're not going to get any advantage," explains Briggs. "The idea was to have something different, and in theory with the factory supporting you, which was the plan, you'd make an improvement. But sadly it was a bad car to start with. It just would never really work."

Meanwhile, the Arnolds had taken delivery of a second Dallara in time for round two at Thruxton, and given the reins to their driver coach: Edenbridge's 1992 pilot Warren Hughes. Suddenly, the goalposts had moved and everyone could see how good the car was. "The thing was an absolute missile!" laughs Gavin. "The boys at Dallara had really done their homework and it was super- ▶





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Gavin and Marcos Gueiros (behind) in Edenbridge Dallaras

“You could see how good the Dallaras were. The Ralt was bulky”

efficient, it seemed like it just glided through the air so much more efficiently than anything else out there at the time. It was like Warren was running quarter of the wing level that the Ralt was, but it still was going around the corners just as fast, and so its efficiency levels were significantly higher.”

With the Ralt, Gavin had taken a best result of seventh from the opening three rounds, and just a single point had been scored by the RT37 courtesy of a sixth for Docking driver Ricardo Rosset. When the field assembled at Donington for round four in early May, Edenbridge had doubled the Dallara count to four, with Gavin and Gualter Salles joining Arnold and Hughes in the Italian camp.

“The Arnolds got the first Dallaras with the Fiat engine and you could see how good they were, and so we made the big rush and sent the lads down to Mr Dallara, bought two cars, ran them round their little test track down there just down the road at Varano, brought them back and immediately Ollly found the big jump forward,” relates Briggs. “The Ralt was a big bulky thing. And also underneath the chassis was a splitter, and if you ran over a kerb it



Briggs had ‘big picture’ view



Gavin was an F3 rookie

cracked the chassis. I sold them to [David] Gould who turned them into hillclimb cars.”

“You look back at it and you think, ‘Was I a bit green, did I not really know, and technically was I not really up to speed with the F3 car at that point?’” questions Gavin. “But when we got to that Ralt we were all scratching our heads. It was doing some really unusual, kind of random things that we were not that comfortable or happy with, so Peter took the bold decision of switching. That was the sort of thing that Peter was great at – he could stand back, look and go, ‘That’s where the next move is, that’s the direction that we need to go in’.

When we started running the Dallara [at Varano], the traction that the car had off the slow-speed corners was just phenomenal, and it was a real breath of fresh air in how driver-friendly it was, how it did so many things just nicer than the Ralt, just predictable and easier to set up, and it was very fast in a straight line as well.”

On his third race in the Dallara, at Silverstone, Gavin claimed his maiden F3 triumph, and went on to make it four in a row when he won in front of the British GP crowd. But it was the third of those wins, at Donington in late June, that put the writing firmly on the wall. Gavin held off a charging Hughes in the battle for victory, while Burt’s Reynard 933 was 25 seconds adrift in third; the fastest lap by a non-Dallara was 1.02s off the new lap record of Hughes, on a 66s lap...

By the time of the British GP support, Docking was running a Dallara for Rosset and West Surrey Racing had one for expected title contender Marc Goossens. The following Monday, one had arrived chez PSR to be prepped for Burt for the coming weekend’s round at Donington.

“It was difficult,” remembers Miller, “because we were sort of the works-supported team, and just on a personal basis we wanted to make the Reynard work. Reynard worked very hard with us to try everything, including [Dallara] lookalike bodywork, radiators down the front, anything you could possibly do. We weren’t going that bad, but we realised there were a fair few races left and if we wanted to win the championship we just had to commit and cross over. Dallara basically bought a Reynard, a Ralt and anything else that was any good and they twisted it and bent it, and improved on anything that was out there – and they had a wind tunnel. That’s why they became unbeatable. We tried all we could but in the end we just had to bite the bullet and go and see Ingegnere Dallara.” ►



Gavin in Ralt RT37 at 1993 campaign launch



Burt was in his second F3 season



Burt's Donington Dallara debut: he took pole and led away from Rosset and Gavin

First time out in the Dallara, Burt took victory. "There was usually a test at Donington on the Thursday," adds Miller, "but we decided, 'No we'll rip it to pieces, build it the way we want'. We knew the circuit so that wasn't a problem. Kelvin drove out of his skin that weekend, and Briggsy was strutting around saying, 'Oh it's going to take you a month to get on top of this car – you've got no hope' and everything. So we were quite pleased when we went there and stuck it on pole position and won the race. A lot of the performance at Donington was probably down to Kelvin. He had a point to prove. He wanted a Dallara and he got it, he had to win and he did. We then did two or three days of testing and we knew what we had."

Over the final six races, Gavin would take just one more win in a superb display at Pembrey. Burt finished second on that day, his only defeat during that time, and won the crown by 25 points. "It was a really good car out of the box, and they [old-philosophy Dallara F3 cars] still are now," declares Burt. "You just get the car and it's so good, and it got better over the subsequent 20 years. Forget trying to improve it, just run the car with what they say."

The key to success in F3, where the cars were high on grip but relatively low on power, was having the car on the edge of braking traction in corners to keep momentum as high as possible. "I remember the biggest impression was it felt like it was on top of the road, not in the road [like the Reynard]," reckons Burt. "The Reynard felt stable and planted, like heavy on its feet, and when you got on the power in a long corner it didn't really accelerate, and that's all to do with torsion I'm sure. The Dallara almost felt

like a car on skinnier tyres. The torsional rigidity of the car made the most out of the little power you'd got.

"In a long corner, where the car's binding up and you're asking it to accelerate through the corner but you're scrubbing as well, that's where it pays off because you've kind of got more power through the corner. And not only that, there was a double gain. Neil Brown [whose Mugen engines set the standard in British F3] told me straight away that in the Dallara he could advance the ignition more on the engine. So not only does it feel like you've got more power – you have actually got more power because he can wind the ignition up. In a car that binds up, it's loading the engine up more. Let's say in a fifth-gear corner you go to full throttle at low revs, that's where it's going to detonate. If the car's not winding up so much you can crank the ignition up more, which gives you more power, without it detonating."

"We battled all the time to try and find out what the difference was, and in hindsight I think that the problem was the adaptor plate and gearbox assembly on the Dallara was so much stiffer and better," explains Miller. "The Reynard had this one cast piece. And I said this at the time, because people were saying to Reynard, 'Oh we need a new chassis because they're flexing', but I was under the impression that the chassis were fine, it was just literally the adaptor plate and the gearbox. That was what was winding up and taking power and so on, because there were tell-tale signs of chafing on various components within the gearbox. I honestly think that's where Dallara had the advantage. They had a very nice gearbox assembly and a separate adaptor plate, and it was very, very stiff I'm sure. We never did rig tests or anything like that, but I'm convinced that's where it was."

Miller doesn't necessarily agree with Burt's remark that the Dallara could be run straight out of the box. "Obviously the base Dallara set-up is very good, but you've got to do all you can to make it better, haven't you?" he points out. "You're up against everybody else and you've got to find that little adjustment that makes the difference. You just really go through a sweep of all the things that you can adjust, and then you get in a nice envelope of performance, and you know where to go when the driver's complaining of something. It's the same with any car – somehow you've got to try and make yours better than they've got. We'd been running Quantum dampers – we got them first with [David] Coulthard on the Ralt [in 1991], and then we put them on the Reynard and I think they became original equipment on the Reynard, and then exactly the same thing happened with Dallara, because I ran Quantum dampers on it. That's the sort of difference



Burt began season on winning form in Reynard



Cheer up boys: Gavin beat Burt at Pembrey

“Kelvin was so laid back, you’d wonder if he was awake”

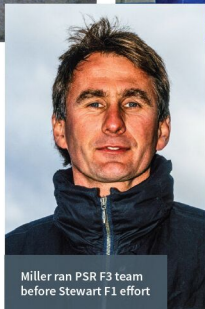
you can make with just little bits and pieces like that.”

Edenbridge, meanwhile, had its own differentiator: it was the only team that used the Spiess-tuned engine that was so successful in Germany as an Opel, and ran in the UK as a Vauxhall. The marque’s motorsport boss Mike Nicholson wanted to promote drivers from his Formula Vauxhall Lotus series, such as Hughes in 1992 and Gavin in 1993, and this helped the team with publicity and some budget. The engine was regarded as strong, with Hughes, using the Fiat motor in his Dallara, remarking at the time about Gavin that “it’s easy for him”.

What wasn’t easy for Gavin was Burt’s first-time-out win in the Dallara. “Not that I gave up, but that did really take the wind out of my sails because I was riding on the crest of a wave; I’d pretty much got everybody else covered even when they’d gone and got a Dallara themselves,” he recalls. “Marc [Goossens] was quick and on his day, if Dick [Bennetts, WSR chief] had really got the car in the window for him, he was really fast and tough to beat, but most of the time we could just about see him off and anyone else. But when Kelvin turned up with the car and with Andy working his magic on it, it was a bit of a slap in the face, we needed to double down. It taught me a lesson that you need to keep learning, digging, keep working away at making yourself better, understanding the car better, working with your engineer to get it better for you.”

But Gavin is magnanimous that the right man won: “That was the thing about Kelvin. It was effortless. That’s just his manner and just his way. At times it did turn Andy Miller grey I think. Kelvin was just so relaxed, so cool about it all, and when he was in the zone he was unbelievably difficult to beat. He had great overall pace, but he also really understood about how to build a race and make the tyre work and last, and switch things on after a restart. He was the full package there in F3 that year.”

Miller concurs about Burt. “It was good fun, but he turned me grey – he was such bloody hard work to run because he was so laid back, and took absolutely no responsibility on anything himself!”



Miller ran PSR F3 team before Stewart F1 effort

he laughs. “But it was worth it in the end. So many times I wanted to throttle him! And then he’d go and stick it on pole and give you that cheeky grin as if, ‘What’s all the fuss about?’ Turning up five minutes before practice at Donington because he’d still been in his bloody bed... Kelvin was so laid back, you’d wonder if he was awake. To be honest, most of the time he was just sitting in the sun somewhere. But he was very, very talented, there’s no question. When we got the Dallara, that was impressive what he did then.”

PSR had staved off an attempted heist by the little guys at Edenbridge – for two years anyway, because Gavin would return to F3 with the team in 1995 and win the title, with Morgan (“He’s right up there with the best three or four engineers I’ve worked with in my racing career”) in his corner again. “Did we have the resource of some of the others?” asks Gavin. “No we didn’t. But Peter and Ian and the guys worked their bloody socks off and kept giving us a good car.”

And Edenbridge will always go down in history as the first to take a Dallara to victory in British F3. “Reynards and Ralts, when you bought spares it was always an effort to fit them,” recounts Briggs. “Dallara spares just bolted straight on, everything just fitted – it was perfect. And they were such lovely people to deal with. Mr Dallara, whenever he sees me, he always says, ‘Thees is the man who made us successful in Britain!’” ■



All-Dallara train: Gavin, Burt, Arnold, Goossens

HOW TO BE AN ACE ENGINEER

Gavin Bickerton-Jones reveals insights from race engineering – and specialising in dampers

BY JAMES NEWBOLD

Years of preparing his own karts and single-seaters gave Gavin Bickerton-Jones plenty of the core skills needed to make a career from motorsport. But not content to rest on his laurels, he developed a damper specialism. That, combined with his priceless first-hand experience, made him a title-winning race engineer in Formula 3000, a cornerstone of GP2 championship-winning squad iSport International and latterly the strategy engineer for a Le Mans 24 Hours class-winner. All told, Bickerton-Jones has come a long way since the days he spent scraping together second-hand tyres for his Class B Reynard in the 1987 British Formula 3 championship.

“I certainly wasn’t the next Ayrton Senna, but I think I was a decent, average jobbing driver,” he reckons.

After calling time on his “hand-to-mouth” racing career when he realised that “I’d been kidding myself, you just can’t expect to do really well on nothing”, Bickerton-Jones became an F3 mechanic before joining David Sears Motorsport in Formula Vauxhall Lotus. Despite having no formal qualifications in the field, he began to dabble in engineering and really hit his stride upon switching to Martin Donnelly Racing in 1994. Jamie Davies, who he ran to second in the championship, recalls an “absolutely brilliant” engineer whose attention-to-detail was bang on. That was partly down to throwing himself into understanding the period’s “clunky” data systems, which Bickerton-Jones reckons “was what elevated me from where I was



Bickerton-Jones ran Senna to second in the 2008 GP2 standings with the iSport team he co-owned

and set me on the path”, and a self-confessed fascination with dampers.

He was able to truly indulge this passion upon joining Sears’ second Formula 3000 team, Den Bla Avis, in 1999. Bickerton-Jones built a damper dynamometer and wrote the software to run it, which greatly simplified setting up the one-make Lola. In Bruno Junqueira he found a kindred spirit and together they won the 2000 title. “It’s a big thing,” he says, “to know that you’ve got the damping somewhere in the window while you mess about with other things.”

That deep expertise combined with his experience as a driver are two areas of strength that Bickerton-Jones has lent on throughout his career. “Some people almost forget there’s a human being sat in the car,” he says. “Having driven myself, you know the anxieties you’re feeling as soon as you put the helmet on.”

After DBA folded in 2003, he and former Petrobras colleagues Paul Jackson and Richard Selwin started iSport, which took a podium on its GP2 debut in 2005 with

Red Bull protege Scott Speed. Timo Glock arrived midway through the following season, and secured the 2007 crown. Bickerton-Jones, who ran Bruno Senna to second in 2008, regards it as a career high.

“It was a big moment in all of our lives,” he says of Glock’s title. “It was all our own work, our own money. We had to plan what was spent on what. It was very nice to beat the establishment.”

Bickerton-Jones has focused on contract work since iSport ceased operations at the end of 2012 and doesn’t miss the stresses of running a team. It also allowed him to go outside his comfort zone in joining Porsche customer Project 1 for its World Endurance Championship debut, which yielded the GTE Am title in 2018-19 and class spoils at Le Mans in 2019. Having “really got into how you run the weekends totally different than a sprint-based single-seater series”, he doesn’t rule out a sportscar return, and will spend 2023 consulting for Hitech – having helped set up its F2 arm in 2020 – alongside his ShockBox damper business. ■



Preparing his own cars gave Bickerton-Jones key skills

TOP TIPS FROM GAVIN BICKERTON-JONES

- It’s good to get into engineering in racing at a lower level where you have to do more jobs in a team. It makes you a lot better, more rounded person.
- Even if you’re never going to change a spring or whatever,

learn how long they take to do so you know what jobs to tell the mechanics to do first.

- Always look for the problems in any new thing you implement. And if it doesn’t work, be big enough to take another route.

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