

AUTO

INTERNATIONAL JOURNAL OF THE FIA



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FIA WORLD CHAMPIONSHIPS 2021

Meeting the Challenge



FORMULA 1®



ROLEX 24 AT DAYTONA



FORMULA 1®



24 HOURS OF LE MANS



GOODWOOD REVIVAL



OYSTER PERPETUAL COSMOGRAPH DAYTONA

ROLEX AND MOTOR SPORT

The relationship between Rolex and motor sport began in 1935. Over the years, the partnership has grown, challenging the limits of endurance, from Daytona to Le Mans, and the boundaries of speed, from Monaco to Melbourne. Now, more than ever, Rolex celebrates the athletes and organisations that continue to bring out the best in sport.

#Perpetual



24h
LE MANS



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AT THE 24 HOURS OF LE MANS



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THE FIA

The Fédération Internationale de l'Automobile is the governing body of world motor sport and the federation of the world's leading motoring organisations. Founded in 1904, it brings together 236 national motoring and sporting organisations from more than 135 countries, representing millions of motorists worldwide. In motor sport, it administers the rules and regulations for all international four-wheel sport, including the FIA Formula One World Championship and FIA World Rally Championship.

THE FIA FOUNDATION

The FIA Foundation is an independent UK-registered charity that supports an international programme of activities promoting road safety, the environment and sustainable mobility. It was established in 2001 with a donation of \$300 million from the FIA and is governed by a Board of Trustees. Among its activities, the Foundation participates in various UN road safety and environment-related partnerships and is a member of the UN Global Road Safety Collaboration.

Dear reader, dear friend,

As we bring you this first edition of AUTO in 2021, the world is still dealing with the continuing impact of the COVID-19 pandemic and, while vaccines are progressively giving us a roadmap towards a new normality, vigilance remains the watchword. Nowhere is this truer than in motor sport.

In our cover story, we examine how each of the FIA World Championships is staging a new season despite the obstacles the current environment presents. In FORMULA 1 new CEO STEFANO DOMENICALI tells us about the organisation of what is planned to be the sport's longest-ever season. In the FIA WORLD RALLY CHAMPIONSHIP, WRC PROMOTER MANAGING DIRECTOR JONA SIEBEL and SENIOR DIRECTOR SPORT PETER THUL expand on the return of classic rallies and rallying's hybrid future. We look into the future of the FIA WORLD ENDURANCE CHAMPIONSHIP with the arrival of the exciting Hypercar Class in 2021 and hear from new WEC CEO FRÉDÉRIC LEQUIEN. Moreover, three-time champion JOHAN KRISTOFFERSSON talks about the FIA WORLD RALLYCROSS CHAMPIONSHIP. As the FIA ABB FORMULA E becomes a World Championship, we trace the rise of our premier electric single-seater series from dream to elite status on the world stage. FIA INTERNATIONAL KARTING COMMISSION PRESIDENT FELIPE MASSA also explains how motor sport's entry level category is planning for a big year in 2021.

One of the key developments for the FIA last year was the launch of the #PURPOSEDRIVEN movement, which seeks to generate positive actions for the betterment of society in all sectors, including health and safety, inclusion and diversity, the economy, the environment, and education.

In this issue of AUTO, we explore one of these pillars – DIVERSITY AND INCLUSION – by revealing how Formula 1 is taking action to make the pinnacle of motor sport a broader and even more welcoming community to people of every background. We also study the latest, highly successful FIA action in the pursuit of diversity, FIA GIRLS ON TRACK – RISING STARS. At the end of this innovative initiative, 16-year-old MAYA WEUG became the first female member of programme partner Ferrari's Driver Academy. I salute her, the FIA WOMEN IN MOTORSPORT COMMISSION, FERRARI and PIRELLI, who all helped to make this progressive initiative a success.

Elsewhere, we profile automotive leader JOHN ELKANN, who by creating the STELLANTIS brand has established the world's fourth largest vehicle manufacturer. In another leadership role, we meet with KENYA'S CABINET SECRETARY FOR SPORTS, CULTURE AND HERITAGE, DR AMINA MOHAMED, a key figure in the rebirth of the Safari Rally Kenya and a new member of the World Motorsport Council.

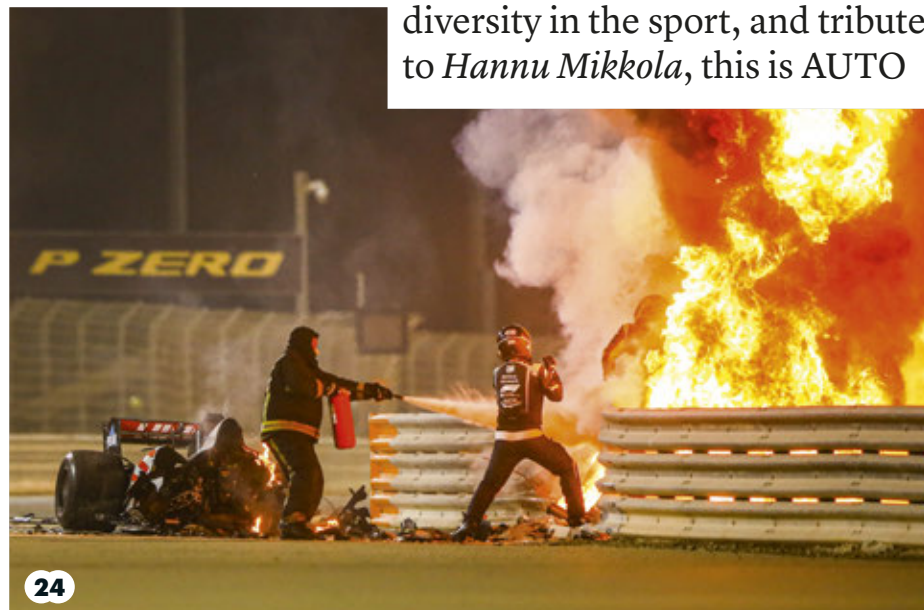
Finally, in our Rear View section we celebrate the career of three-time F1 champion NELSON PIQUET, reflect on the birth of the JAGUAR E-TYPE and pay tribute to my friend, rally legend HANNU MIKKOLA, who sadly passed away recently.



JEAN TODT,
FIA President

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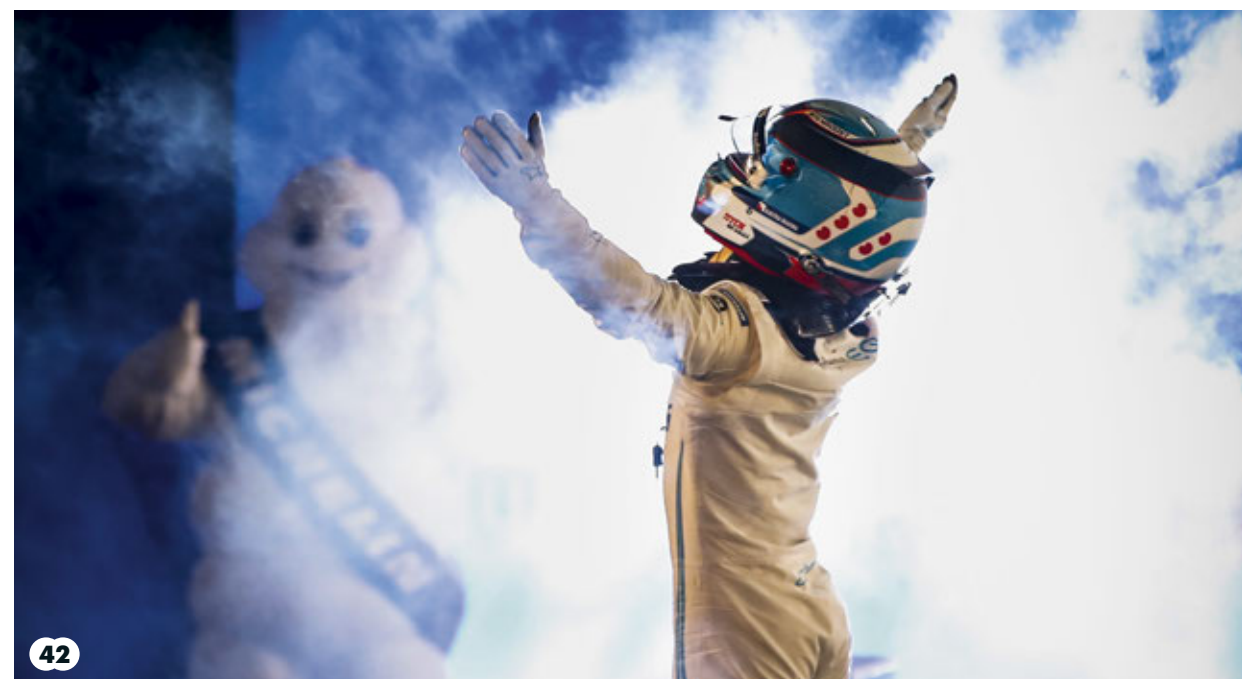
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FIA WORLD CUP FOR CROSS-
COUNTRY BAJAS
**ARABIAN
MIGHT**

The Dubai International Baja, the second round of the FIA World Cup for Cross-Country Bajas was notable for many reasons, not least the four-wheel debut of motorcycle star Laia Sanz (below). The Spanish Dakar racer will compete in the new electric Extreme E series this year alongside countryman Carlos Sainz in the ACCIONA | Sainz XE Team. To prepare, she

teamed up with Sainz's co-driver Lucas Cruz for the World Cup round in Dubai and in the end the Spanish crew finished a creditable ninth overall. The Dubai round was won by Yazeed Al Rajhi and Michael Orr. The Toyota crew beat Peugeot pairing Khalid Al Qassimi and Dirk Von Zitzewitz by 33 minutes and 49 seconds.

SAND STORMERS

Laia Sanz's Dubai Baja was her first adventure on four wheels ahead of her Extreme E debut in April and also her first with a co-driver, Lucas Cruz. "As a biker I'm used to doing everything by myself so it was strange to be getting instructions. But I got used to listening to Lucas pretty quickly. I knew I had one of the top co-drivers, so I was very confident," she said.



FIA WORLD RALLY
CHAMPIONSHIP
**WINTER
WONDERLAND**

Ott Tänak and Martin Järveoja won the first-ever Arctic Rally Finland, round two of the 2021 FIA World Rally Championship. The Hyundai Shell Mobis World Rally Team duo led the Rovaniemi-based event from start to finish, beating Kalle Rovanperä/Jonne Halttunen in a Toyota Gazoo Racing Yaris WRC. The result provided much-needed points for Estonian

Tänak and the Hyundai factory team after their frustrating Rallye Monte-Carlo, but also propelled 20-year-old Rovanperä to the top of the Drivers' standings. The Finn becomes the youngest driver in WRC history to head the points table, a position he will maintain until round three in April, the first Croatia Rally to count as a world championship event.

TÄNAK IN THE DRIVING SEAT
Estonian Ott Tänak holds the rare honour of being a winner of Finland's two world championship events, run in summer and winter, following his dominant victory on Arctic Rally Finland. "It was an incredible experience and the conditions couldn't have been better," said Tänak of the ice-packed Lapland roads. "The stages were demanding and the challenge worthy of some points."



01

NEWS

In this issue: F1 welcomes Aston Martin as safety and medical car supplier along with Mercedes AMG; Ferrari to join Hypercar ranks; FIA and WRC Promoter combine to run World Rallycross; Hyundai targets electric racing future; Zambia lowers speed limits after Foundation-backed campaign

NEWS Aston Martin joins Mercedes-AMG as supplier of FIA Formula 1 Safety and Medical cars

Aston Martin will join Mercedes-AMG in supplying safety and medical cars to the FIA Formula One World Championship in 2021. Both will share the supply of vehicles at different events throughout the season, with this being the first time in 25 years that two vehicle manufacturers have supplied the F1 safety and medical cars.

Aston Martin will run a specially-equipped version of its Vantage – the most powerful model in the luxury British brand's production range – for its safety car, while the Aston Martin DBX will fulfil the auto-maker's medical car commitment. Both the Vantage and DBX will feature a '2021 Aston Martin Racing Green' livery, each with lime green accents, to celebrate the marque's return to F1 after more than 60 years.

Mercedes-AMG, which has supplied the Official Safety Car and Official Medical Car since 1996, will continue to run its Mercedes-AMG GT R and C 63 S Estate vehicles as its safety and medical cars respectively, with both sporting a brand-new look for 2021. New bright red paintwork will adorn both vehicles from the start of the campaign.

Aston Martin will make its debut in Sakhir on March 28 at the 2021 FIA Formula 1 Bahrain Grand Prix, with Mercedes-AMG's rebranded safety vehicles running in Imola for the Emilia-Romagna Grand Prix on April 18. The remainder



of the 2021 season will be split between the two manufacturers.

Germany's Bernd Mayländer will remain behind the wheel of the safety car at each grand prix, while South African Alan van der Merwe will continue his role in piloting the medical car.

"We are delighted to welcome Aston Martin as a supplier of FIA Formula 1 safety and medical cars, sharing the role together with our longstanding partners at Mercedes-AMG who have been with us since 1996," said Michael Masi, FIA Formula 1 Race Director and Safety Delegate. "The safety and medical cars are an essential part of running a safe and successful FIA Formula One World Championship event – from track tests and

Aston Martin's DBX model will run as a medical car in 2021 – the marque's first appearance in F1 for over 60 years.

inspections to race interventions and neutralisations, they are a vital tool for myself as Race Director and my team to utilise in order to keep everyone safe and get back to racing as efficiently as we can following an incident."

Stefano Domenicali, President and CEO, Formula 1, added: "We are very pleased to announce our new partnership with both Aston Martin and Mercedes-AMG to provide safety and medical cars to the FIA Formula One World Championship. Aston Martin and Mercedes-AMG are iconic automotive brands, and we are proud of their place in our incredible sport. The safety and medical cars are a hugely important part F1 and are always there to keep our drivers safe."

NEWS Ferrari unveils Le Mans Hypercar project for 2023

Ferrari has announced that it will return to the Le Mans 24 Hours in 2023 with a new Hypercar challenger.

The Italian firm has started development of a new machine to meet the Le Mans Hypercar (LMH) rules that will be introduced to the World Endurance Championship (WEC) this year.

Both "design and simulation" phases are underway, with a track testing programme, name of the car, and drivers who will make up the official crew set to be revealed as part of future announcements.

In recent years Ferrari has run in the GTE-class, but this will be the first time it has competed in the top class of the category since it tackled the 1973 World Sportscar Championship.

It has 24 world titles and 36 victories in the Le Mans 24 Hours, nine of which are outright wins with the last being by the Ferrari 250LM back in 1965.

Ferrari President John Elkann said: "With the new Le Mans Hypercar programme, Ferrari once again asserts its sporting commitment and determination to be a protagonist in major global motor sport events."

Ferrari's motor sport focus has largely been on Formula 1 in the last few years, but with the strict cost caps and staff limits being imposed on teams as part of the new Concorde Agreement, the firm

has looked at other ways to utilise its staff who it would have otherwise had to make redundant.

Competing in the WEC will also enable Ferrari to showcase and develop its hybrid powertrain technology, which could have greater road relevance for future models of its cars according to FIA President Jean Todt.

"The announcement of Ferrari's commitment to the FIA World Endurance Championship with a Le Mans Hypercar entry from 2023 is great news for the FIA, the ACO and the wider world of motor sport," said Todt. "I believe in the concept of

road-relevant Hypercars competing in the FIA WEC and at the 24 Hours of Le Mans. I'm looking forward to seeing this legendary brand taking on this ambitious project."

Ferrari joins Peugeot, Audi, Porsche and Toyota, who will continue to compete this year, to sign up for the new regulations.

Frédéric Lequien, CEO of the FIA WEC, said: "We are delighted that our new regulations have attracted so many prestigious automotive brands. Ferrari is a prestigious marque which is synonymous with Hypercar, so I have no doubt that they will be extremely competitive out on track."



Ferrari last competed in world sportscar racing with the 312 PB in 1973.

NEWS FIA World Cup Cross-Country stages first rally run on solar power



The Dubai International Baja became the first rally to run on solar power as part of the FIA World Cup Cross-Country in February.

The event was staged at the Mohammed bin Rashid Al Maktoum Solar Park, the largest single-site solar park in the world based on the Independent Power Producer model.

It has a planned production capacity of 5,000 megawatts by 2030 and has received AED\$50 million in investments. When it is completed, the site will save 6.5 million tons of carbon emissions annually.

This follows the Emirates Motorsports Organisation becoming the first National Sporting Authority in the Middle East to receive the highest official recognition available for sustainable development initiatives in 2015, in line with the FIA's environmental goals.

HE Saeed Mohammed Al Tayer, MD and CEO of DEWA, said: "We are glad to support the first FIA World Cup Cross-Country event to be run on solar power at the Mohammed bin Rashid Al Maktoum Solar Park."

"The Innovation Centre is a

global hub for renewable and clean energy innovation that is expected to contribute to shaping the future of sustainable energy in Dubai and externally."

EMSO President Mohammed Ben Sulayem, the FIA Vice-President for Sport, said: "The use of this facility means that electrical power provided to the Rally HQ and Service Park to run the event is generated from sustainable solar power. We're setting an important trend, and we hope other motor sport events in the region and overseas will follow."

NEWS FIA pays tribute to Formula 1 commentator Murray Walker



Murray Walker, 'the voice of F1' who passed away at the age of 97.

The FIA Community has paid tribute to Formula 1 commentator Murray Walker, who passed away in March at the age of 97. The British television personality, who was regarded as 'the voice of Formula 1', first commented on a Grand Prix at Silverstone in 1949. He was the lead commentator on British TV for 25 years, working for the BBC between 1976 and 1996 and ITV between 1996 and 2001. Walker retired from full-time commentary after the 2001 US Grand Prix but continued to work in F1 right up until his final years.

His death was confirmed by the British Racing Drivers' Club, which in a statement said: "It is with great sadness we share the news of the passing of Murray Walker OBE. A friend, a true motor sport legend, the nation's favourite commentator. Murray will be sadly missed, his mark and voice will live on in motorsport and our hearts forever."

Paying tribute to Walker, FIA President Jean Todt said: "I am very sad to learn that Murray Walker has passed away. Formula 1 commentator for over 25 years for the BBC and ITV, most notably alongside James Hunt, he was the voice of Formula 1. All the FIA Family pays tribute to him. My thoughts are with him and his loved ones."

Formula 1 also issued a statement saying the series was "immensely sad to hear that Murray Walker has passed away. [Walker's] passion and love of the sport inspired millions of fans around the world. He will forever be a part of our history, and will be dearly missed."

NEWS FIA and WRC Promoter to run FIA World Rallycross from 2021



The World Rally Championship Promoter Group has agreed to run the FIA World Rallycross Championship from 2021 in collaboration with the FIA.

A tender process was opened last October to find a new promoter for World RX after previous commercial rights holder IMG confirmed its intention to pull out.

This year the new all-electric FIA RX2e Championship will be launched as a support for World RX, before the sport switches its RX1 cars (formally known as Supercars) to electric power from 2022.

The new RX1e electric FIA World Rallycross Championship will debut in 2022, featuring four-wheel drive 600+ hp/500 kW Touring Cars, capable of accelerating from 0 to 100kph in less than two seconds with performance levels that are capable of exceeding the current RX1 cars.

Peter Bayer, FIA Secretary General for Sport, said: "We are pleased to be aligning with WRC Promoter as we build towards an electric future for World Rallycross. The FIA and WRC Promoter have reached a common vision on how to work together for the benefit and growth of rallycross."

In January the FIA launched a second tender process for a promoter for the FIA European Rallycross Championship from 2022-25. The Euro RX and its classes will be promoted separately to the all-electric World RX from 2022.

Jona Siebel, Managing Director, WRC Promoter, said: "World Rallycross sits on the verge of an innovative and pioneering future. We see strong growth potential and are delighted to be at the forefront of a series focused on sustainable technology and e-mobility."

WRC Promoter will also oversee World Rallycross from this year as it prepares to go all-electric.

Jaguar Land Rover is planning to be an electric-only brand from 2025.



NEWS FIA race director and steward seminars bring together over 300 officials online

More than 300 race directors and stewards from around the world took part in the fifth edition of the dedicated FIA seminars in February.

The four-day online event, opened by FIA President Jean Todt, focused on the exchange of expertise and maintaining high standards across the motor sport disciplines.

President Todt said: "The importance of your role in a matter of safety and equitable decisions is inestimable for the reputation and integrity of motor sport and the FIA."

The FIA's commitment to its officials was highlighted via the implementation of a dedicated online platform, enabling participants to network and learn by taking part in online workshops addressing real-life case studies.

The Competitors' Panel, featuring representatives of different top-line competitions, was a highlight of the

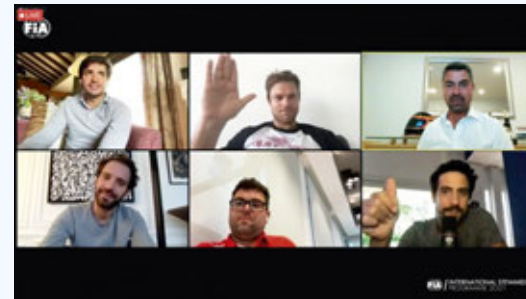
event. Hosted by Formula 1 Race Director Michael Masi, the panel featured Rene Rosin, team manager of single-seater title-winning outfit Prema, Ferrari Formula 1 driver Carlos Sainz, WRC event winner Andreas Mikkelsen, and Formula E champions Jean-Eric Vergne and Lucas di Grassi.

FIA International Steward and Chairman of the Organising Committee Garry Connelly talked about the role of stewards and the qualities required by the FIA, followed by a speech from Deputy

President for Sport Graham Stoker on the importance of stewards in the FIA's Judicial System.

F2 and F3 Race Director Silvia Bellot discussed templates to formulate decisions correctly, granting a fair process, avoiding mistakes and improving consistency between different FIA championships and ASN-organised competitions.

FIA Secretary General Sport Peter Bayer said: "An annual get-together is vital for stewards and race directors to exchange and discuss cases."



Some of motor sport's top names joined a Competitors' Panel for the fifth FIA seminar.

of clean fuel-cell power in line with a maturing of the hydrogen economy, with prototypes arriving on UK roads within the next year as part of a long-term investment programme.

Volvo has echoed these goals by announcing an ambitious climate plan, which seeks to consistently reduce the life-cycle carbon footprint per car. The company wants 50 per cent of its global sales to consist of fully electric cars by 2025, with the rest hybrids. By 2030, every car it sells should be fully electric.

Henrik Green, Chief Technology Officer at Volvo Cars, said: "There is no long-term future for cars with an internal combustion engine. We are committed to becoming an electric-only car maker by 2030. It will allow us to meet the expectations of our customers and be a part of the solution when it comes to fighting climate change."

Volvo will also be an increasing its focus on online sales, with all fully electric models available to buy online only. The company believes its decision builds on the expectation that legislation, and a rapid expansion of accessible high-quality charging infrastructure, will accelerate consumer acceptance of fully electric cars.

NEWS Ford Europe, Volvo and Jaguar to be fully electric by 2030

Ford Europe, Volvo and Jaguar Land Rover plan to be fully electric by 2030 having announced plans to phase out cars with an internal combustion engine in their global portfolios, including hybrids.

By mid-2026, Ford has committed to making all its European passenger vehicle range zero-emissions capable and all-electric or plug-in hybrid, before going fully electric by 2030. The company is investing at least \$22 billion globally in electrification through to 2025, nearly twice its previous EV investment.

Part of the plan will see Ford transforming its Cologne facility into an electrification centre, investing \$1bn in converting the vehicle assembly plant to become its first electric vehicle facility in Europe.

Stuart Rowley, President, Ford of Europe, said: "Our announcement to transform our Cologne facility, the home of our operations in Germany for 90 years, is one of the most significant Ford has made in over a generation. It underlines our commitment to Europe and a modern future with electric vehicles at the heart of our growth strategy."

Jaguar aims to be an electric-only brand from 2025, with the company expecting to offer all Jaguar and Land Rover models with an electric powertrain by the end of the decade. Land Rover will launch six EV variants in the next five years with the first all-electric Land Rover due in 2024.

In addition, Jaguar Land Rover aims to achieve net zero carbon emissions across its supply chain, products and operations by 2039. As part of this plan, the company is preparing for the expected adoption

NEWS Hyundai combines performance and sustainability with electric racing pillar

Hyundai is using motor sport as a testing ground for new technologies in a move towards a more sustainable future, which will see electric racing become a main pillar of the company.

As part of the plan Hyundai will compete in the PURE Electric Touring Car Cup later this year with the Veloster N ETCR.

The Veloster N ETCR is the company's first all-electric, high-performance vehicle and, like the i30 N TCR and i20 N Rally2 cars, is based on a highly modified version of its road-going Hyundai N model.

Equipped with a 798-volt battery pack from Williams Advanced Engineering located in the floor of the car and a double-wishbone rear suspension, it boasts a peak power output of 500 kW and a continuous power output of 300 kW.

Till Wartenberg, Vice-President and Head of N Brand Management and Motorsport Sub-division at Hyundai Motor Company, said: "With the Veloster N ETCR, we are proving how cutting-edge



Hyundai will compete in the PURE ETCC with the all-electric Veloster N ETCR.

technology can be combined with eco-friendly driving to make motor sport cleaner. By building an electric race car, we will prove a high-performance EV is feasible."

The project is being run alongside the development of a mild hybrid powertrain for the Hyundai i20 Coupe WRC, which is set to launch in 2022 and become the world's first rally car with such technology.

Andrea Adamo, Hyundai Motorsport Team Principal, said: "We are excited to have the opportunity to build on our WRC and TCR success as part of the upcoming PURE ETCR.

With our holistic approach we can significantly reduce emissions in motor sport while ensuring the sport we know and love remains fun, for drivers and fans alike."

Hyundai is also utilising its leadership in fuel-cell technology to develop a hydrogen generator that will enable electric cars to charge by converting green hydrogen into charging power, so two road cars can charge simultaneously.

Hyundai says the generator could be used in a range of different cases such as festivals, construction sites, and crisis situations.

NEWS World Touring Car Cup to be powered by sustainable fuel in 2021



P1 Racing Fuels will supply biofuel for all WTCR cars.

The WTCR – FIA World Touring Car Cup will be powered by sustainable fuel from this year under partnership agreements between the FIA, promoter Eurosport Events and fuel supplier P1 Racing Fuels.

After a tender process overseen by the FIA Technical Department, P1 Racing Fuels has created a new biofuel formulation that significantly reduces carbon footprint while

maintaining engine performance according to Martin Poplika, Chief Executive Officer, P1 Racing Fuels.

"As a pioneer in our field, P1 Racing Fuels has always focused on delivering cutting-edge innovation, using new processes, components and technical know-how to formulate sustainable, high-performing biofuels produced and delivered cost-efficiently," said Poplika.

"The future of racing is fossil fuel-free, and we are very pleased to support the WTCR in taking this important step towards a more sustainable future for the sport."

The bespoke fuel features 15 per cent renewable components for the first time in WTCR, which have been derived from bioethanol produced from cellulose and ligneous biomass, as well as bio-synthetic (fully renewable) fuel.

This enables the fuel to be environmentally conscious while also a cost-effective alternative to conventional race fuel, as P1 Racing Fuels works towards an ambitious target of producing 100 per cent fossil-free racing fuel for its partners.

Alan Gow, President of the FIA Touring Car Commission, said: "This is an important first step towards the use of 100 per cent sustainable fuel in WTCR as outlined in the roadmap for the introduction of biofuel in the series. P1 Racing Fuels has delivered this bespoke product, and has also done so on budget as part of ongoing cost-reduction measures."

NEWS Volvo joins up with Gothenburg to create climate-neutral city

Volvo cars has joined with Gothenburg in Sweden to create an emission-free city inside Scandinavia's largest port metropolis by 2030.

The car manufacturer will enlist a wide range of climate-neutral transportation modes and related infrastructure to speed up growth of applied sciences and providers within the areas of electrification, shared mobility, autonomous driving, connectivity and security within the 'Gothenburg Green City Zone'.

Volvo plans to run robotaxis operated by its mobility supplier M in the zone, which through its AI technology has been shown to lower congestion and emissions – with one car now replacing eight privately owned cars in Gothenburg.

Other technologies to be tested include geo-enabling solutions and services ensuring cars in the zone operate in electric-only mode and remain within speed limits, and traffic infrastructure that can connect to safety features in cars and share information between road users.

Håkan Samuelsson, Chief Executive of Volvo Cars, said: "We are initiating a project to limit the number of cars in the city, which is fully in line with our company's purpose. We want to be involved in creating the cities of the future and keep them liveable. This initiative gives us an opportunity to do that and take on responsibility in our own hometown at the same time."

Other potential examples include fully electric mobility hubs, a complete, easy-to-use charging network for electric cars and autonomous taxis.



Volvo is using its latest technology to make the city of Gothenburg an emission-free zone.

NEWS Zambia legislates for low-speed school zones following Foundation-backed campaign

Lower speed limits around Zambian schools and areas with high pedestrian flow have been introduced by the Zambian Government following prolonged campaigning by the NGO Amend, a long-term FIA Foundation partner, and the Zambia Road Safety Trust.

The measures, which reduce speed limits in school zones and other areas of high pedestrian

activity to 30km/h, were introduced following a sustained multi-partner advocacy effort over several years including Amend, the Zambia Road Safety Trust, and political figures like the Mayor of Lusaka. A speed limit of 30km/h is internationally recommended for school zones and one of the key actions of the FIA Foundation's Manifesto 2030.

At the legislation launch event

held at the Ministry of Transport and Communications, Minister Hon Mutotwe Kafwaya said: "Children should be able to walk safely. They need the freedom to use the roads for their social development and for going to school. Unfortunately, this is not the case. Last year, over 100 children died and more than 1,500 were seriously injured while walking and cycling, many of them close to their homes."

Saul Billingsley, Executive Director of the FIA Foundation, said: "This new legislation to reduce speeds where children are most at risk is an important step to save lives on Zambia's roads. It is incredibly important to demonstrate how local interventions can be scaled-up to a national level with the right collaboration and targeted advocacy. Now the challenge is to translate this legal framework into practical delivery, through local advocacy for enforcement and design measures."

NGO Amend has successfully campaigned to reduce speed limits around schools in Zambia.



NEWS FIA Foundation supports new campaign addressing electric vehicles misconceptions

A new project to address common consumer misconceptions about the benefits and limitations of electric vehicles (EVs) has been developed by the International Council on Clean Transportation (ICCT), supported by the FIA Foundation.

Decarbonising the transportation sector is key to keeping global warming below 1.5°C in line with the Paris Climate Agreement, and electric vehicles of all kinds - but especially passenger vehicles - are key to achieving that target.

EVs are an increasingly accessible choice but the pace of change is simply not fast enough, partly because questions and concerns about EVs persist in the minds of some consumers, often rooted in misconceptions.

The new project investigated five common consumer concerns, identified as key factors in decisions about whether or not to purchase an EV: range, charging times, charging infrastructure, climate impact and cost. The project's research into the technology, markets and policies under the title #ExplainingEVs aims to address these misconceptions about the practical performance of EVs and their ability to fit into the lifestyle needs of the vast majority of consumers in North America and Europe.

The project includes detailed explainers, animated video and shareable graphics for a wide consumer audience, while at the same time creating a credible and informative knowledge hub for those who would like to dig deeper into the details.

Sheila Watson, Deputy Director of the FIA Foundation, said: "Vehicle electrification is vital to saving our planet from climate change, and so we are really delighted to support this innovative research into popular misunderstandings around EVs."



An FIA Foundation-backed campaign is aiming to address concerns about EVs.

NEWS FIA Foundation sets 2030 objectives

The FIA Foundation has finalised its plans to contribute to the global effort to meet the Sustainable Development Goals, which will end in 2030.

An initial five-year programme to 2025, totalling €100 million, will see the Foundation seeking to match its resources to significant and neglected public policy challenges, while supporting efforts to ensure that the original source of its funding - motor sport - maintains cutting-edge standards of safety.

The Foundation seeks to contribute through six key objectives: widespread adoption of the safe system approach and significant progress towards the 2030 SDG target to halve road traffic death and serious injury; safe and healthy school journeys for every child, integral for safe roads, clean air and climate action; achieving WHO urban clean air guidelines; accelerated transition to low/zero carbon mobility, achieving Global Fuel Economy Initiative targets; safe, sustainable and accessible motor sport; and sustainable and equitable funding for safe roads, air quality and adolescent well-being.

Alongside continuing core support for major global Safe System initiatives, the Foundation is establishing a Motorcycle & Micromobility Initiative, initially supporting the FIA's new Safe & Affordable Helmet Initiative with funding for helmet production and supply, and policy support.

FIA Foundation Chairman, Lord Robertson of Port Ellen, said: "More than a million people die every year in road traffic crashes, while air pollution contributes to the deaths of several million more. Our new FIA Foundation strategy aims to help accelerate practical delivery of these proven life-saving actions, in partnership with some of the leading experts in the field."



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Building a broader community

01

Onika Miller, the FIA's interim Secretary General for Mobility and Head of the FIA Innovation Fund / Diversity & Inclusion, explains how the Federation is promoting a more inclusive culture within the organisation and its twin pillars – Sport and Mobility

TEXT / ONIKA MILLER

At our Sport and Mobility eConference last June, the FIA launched its PurposeDriven movement. The launch came just as the huge repercussions of the COVID-19 pandemic were being felt – socially, economically and personally – and in particular for the FIA how the health crisis was affecting motor sport and mobility.

When we saw sport being suspended worldwide and mobility screeching to a halt, we really had to look at the outcomes this might have in the longer term. It caused us to reflect on the fragility of humanity, the need for global action, for us to be more meaningful, and to even more strongly pursue our vision of safe and sustainable mobility and motor sport for all.

PurposeDriven crystallises and distils our call to action for us to make a positive contribution to society, and it does so across four pillars – health and safety, environment, community and development, and lastly diversity and inclusion. These four pillars work synergistically. They don't stand alone, they work together for

the betterment of society. And it's the last of those pillars, diversity and inclusion, that I want to address here.

Simply put, this is about recognising that we live in a world with diverse populations, and we need to ensure a greater sense of belonging and inclusion – that we share this common space, that we demonstrate respect for everyone and that our resources are available for all.

When we talk about diversity, it's important for us to understand the language we use in that regard. Diversity talks about difference, in terms of a population, on the basis of gender and by virtue of physical or mental ability. We also talk about diversity from the standpoint of racial and ethnic diversity, of religion and through the lens of sexuality, or sexual orientation. All these forms of diversity are important. And when we talk about inclusion, that's where we value and respect these differences, and create a culture and environment that fosters diversity of all kinds and fosters a sense of belonging.

The FIA in conjunction with the Women in Motorsport Commission and the Disability and Accessibility Commission has been working on aspects of diversity for some time, and we're very proud of the gains made so far.



Onika Miller is calling on FIA member clubs to help create a more diverse culture in motor sport and mobility.

As I mentioned earlier, last year was something of a watershed in many ways and efforts to promote diversity resulted not only in the foundation of the PurposeDriven movement, but the complimentary launch by Formula 1 of its #WeRaceAsOne campaign and the establishment of a foundation to help finance internships and apprenticeships within F1 for under-represented groups. The FIA committed €1 million towards this foundation.

Crucial to the work being undertaken, specifically within the F1 ecosystem but also in the broader motor sport community, is working

along this path, we've engaged a consultancy which will look at the actions the Federation has taken so far and what more needs to be done. That process will begin by working with our staff to gain a better understanding of what diversity means to us collectively. Once we conclude our internal consultations, the process will then move to consultations within our broader community where we hope to promote greater diversity throughout the FIA family.

For example, in motor sport the opportunity is for us to increase the representation of a wider variety of countries at the higher levels of the

'PurposeDriven distils our call to action to make a positive contribution to society'

with our ASNs to ensure we have a more diverse talent pipeline. At the same time, we want to be able to develop a STEM career pathway. We feel that Formula 1 is an excellent platform to be able to showcase not only great motor sport, but also the other opportunities in terms of careers that are available.

But we want to make further strides and, in order to guide us

sport. One of the things that we see – and we see it similarly with gender and the number of women represented – is that our base is not as wide as we would like it to be. We want to have as many participants as possible, coming from as many countries and cultures as possible.

Finally, we want to encourage people to engage in this conversation with us. We want to better understand diversity and inclusion from the perspective of each member club, and to see it from their eyes, from their angle, and then be able to identify how we can improve diversity and inclusion. So, it starts with a conversation and with learning. We are asking each member club to participate, to go on this learning journey with us, and to give us their full commitment, because it takes our concerted effort and all of us working together to be able to create a more diverse and inclusive culture. ◀



The FIA's Girls on Track – Rising Stars programme is promoting diversity within motor sport.



Rally's medicine man

TEXT
/
ANTHONY PEACOCK

02 *Adrien Fourmaux's* journey to the World Rally Championship has not followed the tried and tested path, but after a stellar junior career this one-time medical student is hoping to operate at the highest level with the giant-killing M-Sport team

The term 'medical miracle' is one you hear quite often. But France's Adrien Fourmaux, next in line for a factory seat at the top of Ford's world rally tree, gives it a new dimension. He started off life wanting to be a surgeon, but paused his studies in the fourth year when rallying took over.

The medical profession's loss was the sport's gain, but there's no doubt that the ability to work precisely under pressure plays a huge part in his success.

Even more incredibly, Fourmaux's family background in rallying is precisely zero. Dig into most family histories in the WRC and you'll find a connection with the sport somewhere. You could excavate the Fourmaux family history in rallying with a blunt trowel, as it's very thin. His brother Maxime – five years older – once applied for the Rallye Jeunes selection process in France (the same route that Sébastien Loeb took to break into rallying). Maxime failed to get in. And that's about as far as the family connection with rallying went.

But in a triumph of optimism over experience, Adrien decided to give the Rallye Jeunes scheme a go himself, in 2016. And unlike his brother, he was selected – from around 5000 candidates.

Yet while that would be the culmination of a dream for most 18-year-olds, this caused the younger Fourmaux a bit of a problem. Rallying had to fit around the study of trauma surgery, which caused a bit of mental trauma, as Adrien somehow had to balance two lives. He'd been incredibly devoted to his studies, even moving into his grandmother's house to be close to university and remove all temptation from his way. For a little while, he tried to combine rallying and medicine. But eventually, medicine had to be put into stasis.

"I guess my story is quite an unusual one," he says. "I'd worked really hard on my medical studies and made sacrifices to get there, but when you have an opportunity in rallying like I had, you don't turn it down. Coming from where I do, in the north of France near Lille, there were lots of good rallies in the area and I always had a real passion for this."

The Rallye Jeunes programme took him to the French Junior Championship, which he won in 2018 after a learning year in 2017. That 2018 season was remarkable, as he swept to victory after winning the first five rounds in France, wrapping up the title before the end of the year.

The one constant in Fourmaux's career had been – and still is – the Ford Fiesta. The Fiesta was used in the Rallye Jeunes selection and Fourmaux went on to drive an R2 version of the car (in national specification) on the French Junior Championship.

The next step up was the R5 Fiesta, which he drove on none other than Rallye Monte-Carlo in 2019 – an event he had spectated on since he was 15. In an astonishing performance, he finished second in the WRC2 category. And then, his life changed. That performance put him firmly on the radar of factory team M-Sport, which entered him in a selection of WRC2 and European championship events during 2020. By the end of the season, he was third in WRC2 and the winner of Rally Islas Canarias in the ERC.

But this year is when he will take the biggest step up of all, making his World Rally Championship debut in a Ford Fiesta WRC.

He'll be doing seven rounds in a WRC2 car as he bids to win that title, and five rounds in WRC machinery, starting off with Croatia in April.

It's not the first time that Fourmaux has driven the Fiesta WRC though, as he also drove it on the Rally Legend event in San Marino last year. He won.

Since 2016, the 25-year-old has driven pretty much every rally Fiesta ever made: from the national R2 car, to the R2, to the R5, to the World Rally Car. These days, it's no secret that the privateer M-Sport team doesn't have the same resources as the full manufacturer squads from Hyundai and Toyota at the top level.

But that doesn't bother Fourmaux. "I've never driven anything else other than a Fiesta, so I can't really make a judgement: I just know it's a fantastic car," says the Frenchman. "In any case, the World Rally Car was good enough to win the championship with Sébastien Ogier only a couple

'My objective is a full-time drive next year, but I have to show I deserve it first'

of years ago. This is a fantastic opportunity for me and I need to make the most of it. My objective is to try and get a full-time drive for next year, but I have to show that I deserve it first. So I'm simply concentrating on doing the best job that I can."

'HEIR TO OGIER'

Last year, Fourmaux finished third in WRC2 on the back of three second places. In fact, he's had five second places in his WRC2 career to date, with the top step of the podium so far eluding him. Nonetheless, this year's Rallye Monte-Carlo (second again in WRC2) was another career landmark as he finished 10th overall: in the world championship points. That wasn't actually the first time he had scored points, as he was ninth overall on last year's Rally Turkey.

"Monte-Carlo is a simply incredible rally; one that's close to my heart," says Fourmaux. "My favourite surface is probably snow and ice. It's maybe not the sort of surface where I have the most experience, but it's where I take the most pleasure."

Among his WRC2 championship rivals this year is experienced former WRC driver Andreas Mikkelsen, so Fourmaux faces a tough task to win it. But the 'heir to Sébastien Ogier', as some of the French press are already calling him, is certainly going to try.

Fourmaux was second in WRC2 and made the top 10 overall on this year's Rallye Monte-Carlo.

Ironically, Fourmaux's very first taste of the Fiesta WRC came as a passenger – when he was given a ride by Ogier in 2018. "Seb was my hero when I was growing up and watching rallying, so to be in a car with him was a great honour for me," says France's big hope for the future.

Now he finally gets to compete against his idol, after a long wait. Last year was tough for everyone, with rallying kept on hold by the COVID-19 pandemic, but Fourmaux's medical background helped him to appreciate the gravity of the situation and what doctors all over the world were having to cope with. And he kept himself busy by swapping his rally car for a van to deliver essential parcels.

Malcolm Wilson, a legendary talent-spotter and the managing director of M-Sport, firmly believes that Fourmaux has the ability needed to go all the way to the top. And with M-Sport targeting a return to the front line under the new WRC regulations next year, the Frenchman may yet get to follow in Ogier's wheel tracks: the last driver to win a world title with Ford. The speed is definitely there, and undoubtedly the intelligence. In fact, he might just be the cleverest man in the service park. And certainly the person you'd want around in case you had an accident.

"At M-Sport, we've got a huge history of bringing on young drivers, such as François Duval, Markko Märtin, Mikko Hirvonen and Jari-Matti Latvala," says Wilson. "Adrien is the next one. What he's done in WRC2 so far is fantastic. He's shown plenty of speed and demonstrated total maturity."

Fourmaux adapted brilliantly after stepping up from the junior category into WRC2. Now it's time for the doctor to operate on the main stage. ◀





LIVE & LEARN

03

Major accidents, like the one suffered by *Romain Grosjean*, are both a tragedy and an opportunity to learn and improve motor sport

TEXT
/
MARC CUTLER

When Romain Grosjean emerged alive from the fireball that engulfed his wrecked car following his accident at the 2020 Bahrain Grand Prix, the world praised the incredible developments made in motor sport safety over the past 20 years. And there is no doubt that a combination of driver safety equipment, race car safety structures and the expert intervention of medical crew and marshals all played a crucial role in saving the driver's life.

But the FIA's pursuit of safety is never-ending and there are always lessons to be learned. In fact, the research into this accident, and the other serious accidents that the FIA investigates each year, will hugely improve safety even further for many years to come.

As FIA President Jean Todt says: "Important learnings have been drawn from these investigations that will drive our continuous mission to improve safety in Formula 1 and global motor sport. The enduring commitment of the FIA, particularly the Safety Department, on reducing risks associated with motor sport enabled Romain Grosjean to maintain consciousness and survive an accident of this magnitude."

As technology has developed, the FIA's Safety Department has found increasingly more analysis tools at its disposal to examine exactly what happens during an accident of this type. For the

Grosjean investigation they could rely on various sources of data and visual information.

The onboard Accident Data Recorder (ADR), which performs a similar function to the black box in aviation, captures data to show how the passive safety structures of the car and the driver's safety equipment have performed, enabling researchers to more fully understand how they help to minimise driver injury.

This is accompanied by data from the in-ear accelerometers, which are moulded to fit inside a driver's ear canal to measure the movement of his head in a crash. Biometric gloves, which are currently used in F1 and Formula E and are likely to filter through to other championships, measure a driver's vital signs following an accident.

Another important tool is a high-speed camera, which is mounted inside the cockpit facing the driver, filming at up to 400 frames per second. The data captured by the camera provides accurate information on what happens to a driver in the event of a crash, which may not be recorded by the range of sensors inside the cockpit, and can improve the understanding of the cause of any injuries.

This is supported by film footage available from the host broadcaster cameras, which are

plentiful in F1, as well as the circuit cameras which are always fixed facing the track.

All of these are incredibly important for FIA researchers as the more data they have the better they can analyse an accident case and react where needed.

The investigation into Grosjean's accident also included interviews with those involved and inspection of the physical evidence – the car, barrier and driver's safety equipment.

ACCIDENT ANALYSIS

The investigation focused on the two cars that were involved in the accident – the #8 Haas driven by Romain Grosjean and the #26 Scuderia Alpha Tauri driven by Russia's Daniil Kvyat, noting that several other cars were in close proximity but not directly involved in the accident sequence.

During the opening lap of the Bahrain Grand Prix, Grosjean's car was travelling at 241km/h when he lost control on the exit of Turn 3 following contact between his right-rear wheel and Kvyat's left-front wheel when attempting to pass from the left to right-hand side of the track.

The car-to-car contact lifted the rear of

Grosjean's car, forcing it to yaw to the right and placing it on an out-of-control trajectory into the run-off area on the inside of the circuit at the exit of Turn 3. Kvyat's car also altered trajectory and entered the same run-off area but was able to re-join the track shortly after without further contact.

Grosjean's Haas impacted the triple guardrail barrier behind the run-off area at 192km/h and at an angle of 29 degrees, with an estimated yaw of 22 degrees to the direction of travel and a resultant peak force equivalent to 67g. Following the failure of the middle rail of the barrier and significant deformation of the upper and lower rails, the survival cell was able to pierce the barrier and came to rest behind it, constrained by the primary roll structure against the upper rail.

The car suffered extensive damage during the impact including separation of the power train assembly from the survival cell. The fuel tank

'Important learnings have been drawn from these investigations'

Safety equipment designed to protect Romain Grosjean worked well in Bahrain, and the medical team arrived within seconds.

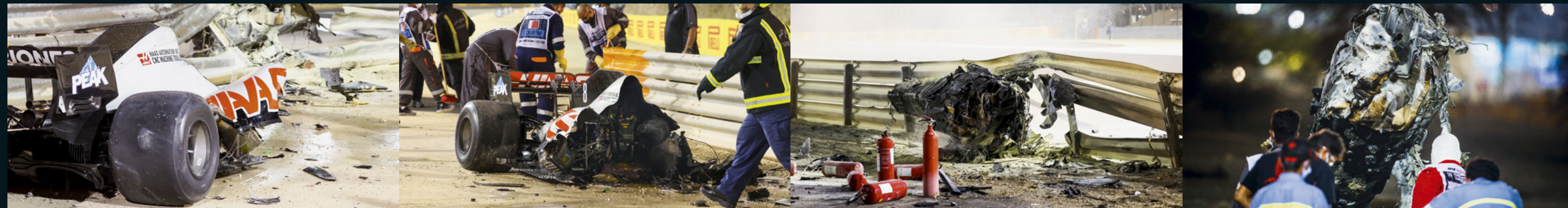
inspection hatch on the left-hand side of the chassis was dislodged and the engine fuel supply connection was torn from the fuel tank "safety bladder"; both providing primary paths for the escape of fuel from the tank.

The driver safety equipment, including helmet, HANS device and safety harness as well as the survival cell, seat, headrest and Halo frontal cockpit protection, performed according to their specifications in protecting the driver's survival space and managing the forces applied to the driver during the impact.

The high-voltage Energy Recovery System (ERS) battery was significantly damaged, with some parts of the ERS battery assembly remaining with the powertrain and others remaining attached to the survival cell.

Fire was ignited during the final moments of the barrier impact, starting from the rear of the survival cell and progressing forwards towards the driver as the blaze grew.

The resting position of the survival cell, relative to the upper rail of the barrier, significantly restricted the path for driver egress. Due to damage to the survival cell and a number of components within the cockpit environment, Grosjean's left foot was initially trapped as the car came to rest. ▶



The driver was able to free his foot by withdrawing it from his racing boot, leaving the boot in the entrapped position in the car, and then moved both the dislodged headrest and steering wheel to escape.

The race was red-flagged approximately 5.5 seconds following Grosjean's impact with the barrier.

MEDICAL AND RESCUE

A comprehensive medical and rescue response to the incident was immediately initiated. The FIA Medical Car arrived within 11 seconds, a time achieved partly due to the fact a 'short cut' was taken to avoid Turn 1, demonstrating both local circuit knowledge and pre-planning.

The arrival of the Medical Car carrying the FIA F1 Medical Rescue Coordinator Dr Ian Roberts, FIA F1 Medical Car Driver Alan van der Merwe and a local doctor, provided immediate assistance with each performing a pre-determined role.

Dr Roberts went immediately to the scene of the incident and instructed a marshal to operate the dry powder extinguisher around the cockpit where he identified Grosjean as trying to make his escape. Van der Merwe retrieved a fire extinguisher from the rear of the FIA Medical Car while the local doctor prepared the trauma bag.

Grosjean was able to egress unaided and was out of car after 27 seconds.

He suffered burns to the back sides of both hands. Following initial examination by the FIA Medical Car personnel he was transported by ambulance to the circuit Medical Centre for evaluation. He was subsequently transported by helicopter to the Bahrain Defence Force Hospital for further assessment and treatment. The French-Swiss driver was discharged from hospital after three days on December 2, 2020.

REVIEW PROCESS

The full findings of this investigation were authored by the FIA's Head of Research Tim Malyon, Head of Circuit & Rally Safety Stuart Robertson, Head of Competitor & Road User

Safety Nuno Costa and Rescue Specialist Ian Dunbar. The findings were reviewed by FIA Safety Director Adam Baker.

"Incidents involving fire of this scale are thankfully rare, so it is very important to learn what we can, including the interaction with the high-voltage system," says Baker. "The efforts of those involved were heroic and have quite rightly been the subject of much praise."

This investigative work was then peer-reviewed by the FIA Serious Accident Study Group (SASG), chaired by FIA President Jean Todt and with membership comprising the presidents of every FIA sporting commission, including Single-Seater, Rally, Touring Car, Karting, Drifting, Drag Racing, and Hill Climb. Also in attendance are FIA Safety Department staff and sporting department heads.

This multi-disciplinary make-up of its membership, which includes doctors, engineers, researchers and promoters, ensures that no area of motor sport is left unrepresented in these meetings.

Each accident analysed by the SASG is looked at from technical, operational and medical sides, and measures are then taken forward.

Input into the Grosjean investigation was also received from the Grand Prix Drivers' Association. The findings of the investigation were presented to the FIA's Circuits Commission, Medical Commission, Single Seater Commission, F1 Commission, Safety Commission, Drivers' Commission, Volunteers and Officials Commission, and the World Motor Sport Council.

The objective of the accident investigation was to identify factors that contributed to the accident consequence, as well as other tertiary factors that did not influence the severity of the outcome but nonetheless provide invaluable learnings for the FIA's ongoing efforts to improve safety in motor sport. The findings will help to inform multiple safety projects and discussions in future.

As President Todt says: "Safety is and will remain the FIA's top priority. ◀

2021 FIA Circuit Racing Safety Initiatives

Following extensive studies, the FIA's work into safety features will continue unabated this season

In 2020, the FIA Safety Department ran investigations into 19 significant accidents related to circuit racing, backed by the ASN (National Sporting Authority) in each country. In line with the FIA's commitment to continuous safety improvement and as a result of its pre-existing body of motor sport safety data, extensive expertise, ongoing research projects and the know-how generated by motor sport incidents globally in recent decades – including those 19 accidents – the Federation is undertaking work in these areas:

VEHICLE

- Regulation of survival cell front geometry, plus additional load tests in that area
- Review of existing regulations regarding rear view mirrors
- Review of steering column mounting requirements
- Review of regulation and homologation requirements for headrest assembly
- Analysis of Power Unit mounting and mount failure modes
- Ongoing research project: Wheel Restraint Cables (tethers)
- Design review of safety fuel bladder installations in all FIA single-seater categories
- Recommendations for safety fuel bladder installation best practice
- Update of the FIA Standard for safety fuel bladders
- Review of regulations for safety fuel bladder connections design and inspection hatches
- Fuel homologation to include compatibility of bladder material and specific fuel

CIRCUIT

- Increased functionality for Circuit Safety Analysis Software (CSAS) including quantitative impact probability classification
- Review of existing circuit barrier opening installations

- Review of guidelines/process for circuit homologation and licence renewal

DRIVER SAFETY EQUIPMENT

- Investigation into improvements to the gloves' Heat Transfer Index (HTI)
- Ongoing research project: Visor opening/locking mechanisms; project scope extended to include requirements to ensure that visor opening systems are operational after fire exposure
- Ongoing research project: Extinguisher system for open cockpit cars; project scope extended to include investigation of improved activation mechanisms

MEDICAL AND RESCUE

- Updates to Medical Intervention Vehicle equipment, including alternate extinguisher types
- Provide ASN guidance on post-fire decontamination
- Ongoing development of FIA firefighting training module for ASNs
- Ongoing development of FIA high-voltage safety training module for ASNs
- Ongoing development of FIA Incident Command/Coordination training module for ASNs

The FIA Safety Department is also planning these research projects:

- Investigation of options for proximity warning systems and electronic visibility aids
- Research into retrofit and upgrade options to improve impact performance of existing guardrail barriers
- Research into novel barrier systems, effective across a wider range of impact conditions
- Research to assess current fire extinguishing media, firefighting equipment and personal protective equipment and assess new technologies.



Grosjean could count on medical car driver Alan van der Merwe and rescue coordinator Dr Ian Roberts.

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SMALL DEVICE, BIG IMPACT

TEXT
/
MARC CUTLER

A tiny low-cost device developed by the FIA could hugely improve motor sport safety worldwide

03

Graham Stoker has witnessed his fair share of accidents. The FIA's Deputy President for Sport was a regular steward for the UK's Motor Sport Association (now Motorsport UK) in the 1980s and '90s, working across every category of racing from club level to professional touring cars.

"Back then, after an accident it was very much a case of taking down statements of what happened, talking to people, trying to put the puzzle together with engineers," he remembers. "But thankfully there has since been a data revolution where the whole approach to accident investigation has become more scientific based."

The more data you can glean from an accident, the more you can learn and the better safety improvements you can make to stop those accidents reoccurring. However, grassroots motor sport is still a long way behind when it comes to gathering such data.

This is why Stoker is encouraging ASNs worldwide to embrace a new low-cost device

created by the FIA to record data in an accident and help researchers improve safety.

TOP-DOWN APPROACH

At the top level of motor sport, such as in Formula One and the World Rally Championship, Accident Data Recorders (ADRs) are fitted in all cars. They act as black boxes that trigger when a car is in a major incident, collecting data such as G-Forces, speeds, steering and yaw rate. They also often trigger a warning light for marshals in case they need to take appropriate care of the driver.

But due to the cost of ADRs, less than one per cent of racing cars globally currently have them fitted. This means that at national level motor sport, stewards have often relied on eye-witness accounts from marshals and footage from onboard cameras.

In fact, recent worldwide statistics from the FIA show that 99 per cent of fatal accidents in

amateur level motor sport contain no form of accident data recording, which makes it very difficult to attain a detailed understanding of the crash sequence and learn from an incident to improve safety for the future.

To combat the problem the FIA Innovation Fund approved a project in 2019 that set out to create a low-cost variant of an ADR, which can

be used to collect data and ultimately reduce the number of fatal accidents at grassroots level. It aims to make motor sport safer for all competitors, no matter the country, category or level of competition.

The result is a novel device, measuring just 6cm and weighing 12 grams, that features no wires, can run off an internal battery for two years, and syncs with a smartphone app via Bluetooth to send data.

Developed by the FIA Safety Department in collaboration with AiM Technologies in the UK, the new Impact Data Recorder (IDR) can be fitted to any car and will cost just £25, which is a fraction of the price of the current ADR used in top-flight championships.

"To have an affordable data recorder using modern technology that can be distributed around the world at low cost to ASNs, and encourage everyone in the pyramid to fit this to their competition vehicles, is quite remarkable," says Stoker. ▶

The Impact Data Recorder can be fitted to any racing car, such as historics below, and linked to an app, providing valuable accident information.



'To have an affordable data recorder that can be distributed around the world is remarkable'



Shaped in the form of an arrow, which is designed to be fitted facing forwards, competitors can mount the IDR as close to the centre of the car as possible and directly onto the vehicle chassis.

It kicks into action once a car suffers a high-G impact above a minimum threshold and can record over 80 accidents in its lifetime. The IDR can record and store x, y and z acceleration data 1,600 times every second.

Race officials can simply scan the unique QR code located on the top of the device and sync it with a phone app that collects the data it generates. This data is then sent directly to a secure cloud storage service location, which is selected by the ASN that is responsible for the sale of the device.

There is additional functionality within the app which enables ASNs to gain a better perspective of every incident through more thorough reporting, including photos and accompanying notes all stored in the secure database.

Safety experts within the ASN can then view this data, enabling them to make informed choices regarding their national technical and sporting regulations, as well as their safety equipment requirements. The data can also be sent to the FIA for further analysis, which will then be compiled into a data report for the ASN.

"As technology is becoming more affordable, you can come up with a sound imperial-based

'Using an IDR has to become part of the safety system, like wearing a helmet'



FIA Deputy President for Sport Graham Stoker believes the IDR should be used globally at every level of competition.

solution to an accident to try and make it safe and deal with the particular risks," says Stoker. "That's multi-level - it might be the track or rally stage, the vehicle, the equipment people are wearing, or it might be the way an event is organised."

As circuit officials use this data to identify

accident 'hot spots' the end result over the long term could not only be a reduction in fatal accidents, but also an increase in track time for drivers as hazards are identified, incidents reduced, and fewer red flags are needed.

The other advantage for ASNs is the opportunity to potentially reduce their insurance premiums in events where the device is deployed, exploiting the value of accident data capture to companies dealing with liability.

SUPPORTED ROLLOUT

The FIA will support ASNs in the distribution of the IDR via two methods. Firstly, if they choose to mandate it in their national championships in 2022 and in all ASN-sanctioned competition by 2024, they will receive up to 500 units for free. Alternatively, the FIA will provide 50 units to each ASN with no obligation, with both only requiring that the ASN pays import taxes/duty.

"This is a remarkable opportunity to improve safety in grassroots sport worldwide," says Stoker. "We have created an affordable data recorder using modern technology that can be used in any championship and we want everyone in the pyramid to fit this to their competition vehicles. Ultimately, using an IDR has to become part of the safety system in the vehicle, like putting on gloves or wearing a helmet."

Stoker likens the rollout of the IDR to the recent COVID protocols introduced to motor sport events worldwide through Appendix S of the FIA International Sporting Code, and the success this represented in making something that has its risks and dangers socially acceptable in the modern world through technology.

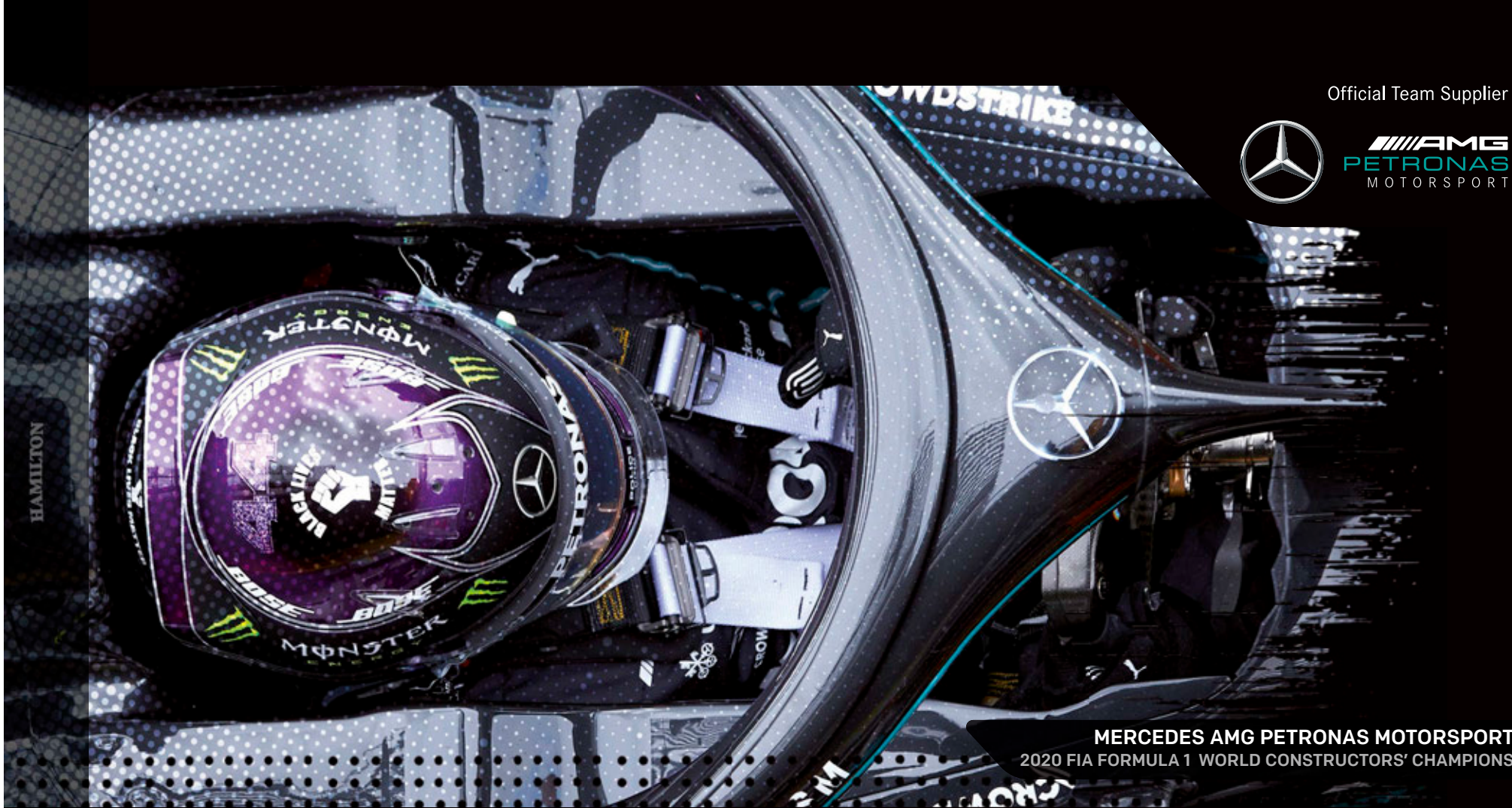
"At the heart of it is this remarkable safe system that we apply as a benchmark to our events, and it actually overlaps with COVID and Appendix S. It's that ability we have to take a sport - which has its risks and dangers - and make it socially acceptable in a modern world. We can have complete confidence in this technology because we've used it in elite championships, and we know exactly what will happen which is that we will get the information we need to make that sport safer."

With this new technology the FIA will have an even clearer picture of what happens during a crash in grassroots motor sport worldwide, and the hope is that with increased adoption from ASNs drivers will think of having an IDR on their car in much the same way they make sure their car has a fire extinguisher onboard and they turn up with the right safety kit.

"There is no excuse now - it's affordable, the technology is there, we're going to use it in the right way to improve the sport," adds Stoker. "When you're sitting in the seat of a rally car, dragster, touring car, single-seater or whatever we drive, I would like people to think, 'have I got an IDR fitted?' and that is a vital part of the safety package." ◀



ASNs would distribute the new device and monitor data collected, with support from the FIA where needed.



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2020 FIA FORMULA 1 WORLD CONSTRUCTORS' CHAMPIONS

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SÉBASTIEN OGIER AND JULIEN INGRASSIA
2020 WORLD RALLY CHAMPIONS

COVER STORY

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Karting continuity

Felipe Massa on the success of 2020 and prospects for this year



04

THE RACE GOES ON

We might still be fighting a global pandemic, but that hasn't stopped motor sport's major championships and star players from gearing up for 2021 and beyond



Now in charge of F1, Stefano Domenicali has a clear view of the sport having served as Single-Seater Commission President.



STEFANO DOMENICALI: Challenge accepted

04

New Formula 1 CEO *Stefano Domenicali* has taken the helm at the pinnacle of motor sport at one of the most critical junctures in its history. But while the road ahead is complex, the new boss believes that there are no obstacles, only opportunities

are many things we need to work on. That shows how complex from one side is the decision process that we need to consider. But that is our opportunity.

And the threats, where do they lie?

Threats are a good signal to keep you alive, to keep you awake. There are threats in terms of platform, the fact that younger generations could be attracted to other things, there could be threats that potentially the market is evolving away from the traditional manner of selling the product. Technologically is a threat if we choose technologies that are wrong. The threats are around, but I consider them to be a wake-up call to ensure we don't make mistakes.

Moving on to racing matters, the F1 Commission meeting in February was significant with a number of major talking points. Chief among those was approval for a freeze on power unit development from 2022 onwards. How important was it to see that decision taken?

I think that for our future it was massively important, for many reasons. Firstly, because from a strategic point of view, there was the need to give a signal that everyone understood the importance of this move and everyone voted in favour of it. But let's look at the wider reason. Cost is an element we are really focused on. Technology is very important to the DNA of Formula 1; we are the pinnacle of motor sport. But we need to look at the strategic value of the technologies we employ. We want to anticipate the next engine with a clear indication of what the targets are – regarding carbon neutrality, cost and investment – because there is no project in the world that you enter into without a business plan, starting from what you spend, what you invest and what is the return on that investment. Therefore, starting from that basic principle and giving F1 the chance to work on every decision, that was the strategy which was agreed by everyone. ▶

'There are threats to our sport, but I consider them to be a wake-up call'

TEXT

JUSTIN HYNES

The 2020 season was something of a triumph over adversity in managing to stage 17 events in the second half of the year. In 2021, with the world still battling the pandemic, Formula 1 is targeting its largest ever season. How much more complex is it this year?

I would say a lot more. Last year there were less complex international relationships. Now, because of the diffusion of the virus and the different situation that each country is going through, the situation is incredibly fluid. We need to be able to manage possible changes of local regulation at short notice. So it's absolutely more difficult. But as we said, being humble, being strict with what we're doing, respecting the different national legislations, I think that we can deliver an incredible show in the context that we are experiencing today.

Do you expect the first part of the season to run to the same conditions as last year? How long might it be before we have fans back again?

We need to be realistic, but I hope that because of this what happens in F1 is tied to the vaccine situation in every country. I think that in terms of full crowds, it's too early. We really hope to see controlled numbers, in a safe way, from the first Grand Prix in Bahrain, simply because the situation appears to be better there. Other countries are obviously moving in the right direction but there is no normalisation yet. My wish would be to see fans at the track in the first part of the season

and getting bigger and bigger when we move towards the end of the season.

How much flexibility have you built into the system? If local regulations prevent you from having a race, are there easy fixes in terms of moving to another territory?

Easy is not the right word. There are structures in place but we need to be as flexible as possible. And the good thing is that we share that situation with all the involved parties – the teams, broadcasters, and of course the organisers, who we really need to thank because we know how difficult it is to work in this environment.

You have taken the helm at Formula 1 with major changes to the technical, sporting and financial regulations already fixed, but at the same time you have arrived at a very difficult point operationally. If you were to do a classic analysis of strengths, weaknesses, opportunities and threats, what would you find?

I find a lot of opportunities because if I don't see that it would be wrong. But it is correct to say that we need to put in place a very detailed analysis of all the elements that are part of our business, in terms of the sporting side, in terms of technology, fans, organisers, the manufacturing processes, in terms of people, competences that are needed, media and broadcasting. So without thinking too hard I can already tell you there

Dawn of the New Age

TEXT
/
PIOTR MAGDZIARZ

04

The FIA World Endurance Championship embarks on a thrilling journey in 2021, with a top class set to usher in an new era of competition that's technologically fascinating, designed to excite manufacturers and captivate fans of one of motor sport's most demanding disciplines

With a whole new breed of cars set to battle it out at the top level of the 2021 FIA World Endurance Championship and at the Le Mans 24 Hours, the upcoming season may go down in memory as a turning point in the history of sportscar racing.

Built to innovative technical regulation, the new Le Mans Hypercars (LMH) take over form LMP1 machinery. Non-hybrid LMP1s will still be allowed this year under the 'grandfathering' rule, however, the LMH division will usher in a new era of competition designed to encourage manufacturer involvement and boost fan participation.

Although the modern incarnation of the FIA World Endurance Championship began life in 2013, LMP1 machines, in their various guises, have ruled endurance racing for far longer with the LMP1 term first used in 2004. However, LMP900 category cars first appeared in 2000 (the '900' signifying the minimum weight of the cars), while the origins of the 'Le Mans Prototype' date back as far as the early 1990s and the dusk of the Group C era.

Following the positioning of the LMP1 category as the WEC's top level, competition in the class became enthrallingly intense. But as costs spiralled, manufacturer commitment ebbed and flowed. And, over time, LMP1 lost out on the sort

of fierce rivalries that had initially defined it.

Recognising the issues, the Automobile Club de l'Ouest (ACO) and the FIA took action, and in 2021, the world's premier endurance racing series gets a new lease of life with the incoming rules representing a major shift in philosophy in terms of regulatory approach.

REIGNITING PASSION

The fact that the LMH technical regulations allow far greater variety in terms of approach has reignited manufacturer interest in top-flight sportscar programmes.

Reigning Manufacturers' and Drivers' champion, Toyota Gazoo Racing, was the first major player to commit to the new ruleset, with its GR010 Hybrid LMH challenger, revealed in January, being the first of the new generation of cars to break cover.

"The new regulations are designed to showcase road-relevant technology in [FIA] WEC while also delivering a top-level, attractive spectacle," says the outfit's Technical Director Pascal Vasselon. "The GR010 Hybrid is a completely new car, designed to a different philosophy."

It's a view echoed by the team's President

Hisatake Murata: "It is a fascinating time for endurance racing. The GR010 Hybrid is a preview of our road-going cars and what we learn on the FIA WEC race tracks will directly benefit our customers."

It is the road relevance and the potential of a greater transfer of technology from motor sport divisions to the automotive sector that were vital to the manufacturers committing to LMH.

Peugeot is another major automotive brand alive to the opportunity of being able to develop road-relevant technology through its LMH programme, having announced its comeback to the FIA WEC last September with the aim of joining the fray in 2022.

Overseeing the LMH programme at Peugeot will be new CEO Linda Jackson. Appointed in January, Jackson takes over after six years as Global CEO of the Citroen brand, She is also a member of the PSA Global Executive Committee.

But what is perhaps as appealing to the manufacturers as the technical relevance is the fact that due to the less rigid aerodynamic constraints established in the regulations, they will have the opportunity to incorporate styling elements into their designs.

Speaking of the LMH rulebook, Olivier Jansonnne, Technical Director of Peugeot Sport's

FIA WEC programme, says: "It certainly sets limits, but also allows room for many technical possibilities in our development, specifically on the general shape, as long as a certain overall aerodynamic efficiency is not exceeded."

"LMH offers an unprecedented and historical opportunity for sports and design teams to collaborate" adds Peugeot's Design Director Matthias Hossann.

"The regulations answer fully to Peugeot's need and appetite to embody its vision for the future in its next competition car. The look of the vehicles will no longer only be the result of wind tunnel sessions – we will have a dedicated space to create a unique, iconic product, combining performance and expressiveness," he summarises.

James Glickenhaus, Managing Member of Glickenhaus Racing, whose team's pair of 007 LMH racers are set on to take on Toyota this season, also stresses the importance of the aesthetics of the LMH cars.

"We love the Le Mans Hypercar class. It brings back the excitement of the days when the top Le Mans class had dream sportscar prototypes racing against each other," he says.

"We have worked very hard to make our LMH beautiful – more sportscar and less

prototype. I hope that the top-class cars look more like hypercars than prototypes."

LEVEL PLAYING FIELD

Building a class in which cars of differing design ideals go head-to-head against each other required the rule makers to rely on the concept of performance windows in order to achieve sporting equality and prevent cost escalation.

The principle is a new regulatory approach to the top category of the FIA WEC and has been made possible by the application of a precise and modern methodology for measuring performance parameters, combined with the experience of efficient data acquisition and analysis processes.

In short, instead of constraining the design process with geometric requirements, the FIA and the ACO are overseeing the outcome. This is possible owing to 'windows' that limit the minimum and maximum values of areas such as power unit and aerodynamic performance, with each of the cars having to fit into those windows. Power is set at 500kW, while the minimum weight is 1030kg.

During the homologation process, the cars are measured in the wind tunnel, the bodywork is scanned and engine performance is measured live on track with the use of torque meters. This is to ensure the cars fit into the windows.

The design of the LMH machines is then 'frozen' for their homologation cycle (five years for cars developed for the 2021 season), ensuring they will remain unchanged for their life span. ▶



New Peugeot CEO Linda Jackson will oversee its LMH entry.



Jim Glickenhaus is anticipating a new golden age of racing.



Pascal Vasselon: LMH showcases road-relevant tech.



'LMH offers a historical opportunity for sports and design teams to collaborate'

LMH creations from Toyota (left), Peugeot (right) and Glickenhaus (below).



'By reining in costs, this new class is the dawn of a bright future for the discipline'

Exceptions will be considered only in certain circumstances, such as reliability issues or proven performance deficits.

As the performance targets are clearly defined, manufacturers can choose the most cost-effective technical solution without the additional burden of ultimate optimisation around regulatory constraints.

Other cost-saving measures include supervised testing in the first year of the homologation cycle of the LMH cars, greatly limited use of expensive materials and technology, a single aero kit per year as well as tyres exclusively supplied by Michelin, but with different dimensions depending on whether cars are in rear- or four-wheel-drive configuration. Furthermore, lower power output brings power unit development costs down.

The FIA and the ACO rely on the Balance of Performance (BoP) formula developed jointly and tailored specifically for the needs of the Hypercar category.

Both the FIA and the ACO have a long history of using BoP to lean on. The FIA started balancing out cars in GT racing the mid-2000s

and is constantly improving the process. Each year there are more than 40 FIA-sanctioned events with BoP in use, varying from the FIA Cross-Country World Cups, through the WTCR – FIA World Touring Car Cup to GT racing, such as GT3 and the LMGTE categories. The best practices and learnings were taken into account in developing the Hypercar BoP.

One of the most innovative solutions is the use of torque meters, allowing for better control of powertrain parameters on track. These sensors, resistant to electromagnetic field and heat, are implemented onto the driveshafts of the cars to measure and limit the BoP-allocated power. This recently developed technology is effective in limiting development costs.

This year 'grandfathered' non-hybrid LMP1s are permitted to race alongside LMH cars in the top category, with their performance balanced out. In 2022 the regulations will allow LMDh cars, developed jointly by the ACO and IMSA and sharing several components with the next generation of LMP2 cars, to race in the Hypercar class of the FIA WEC with the LMH machinery.



Fillon identifies Hypercar class as a turning point.



Cost-effective approach is needed, insists Mille.

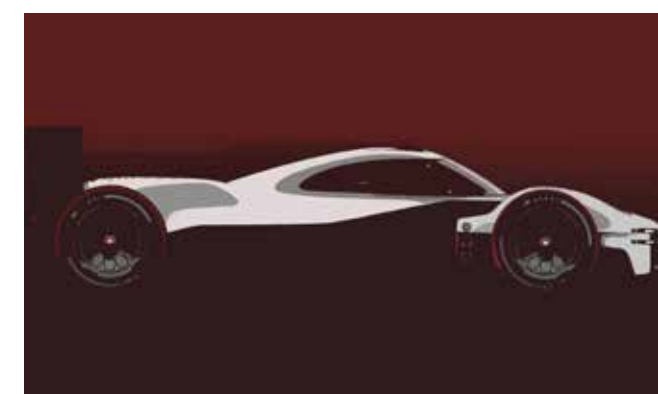
PURSUIT OF SAFETY

With safety being the overriding priority for any FIA category, the LMH regulations feature a number of safety improvements.

Due to the high level of performance achieved by cars, during homologation all competitors must prove that their aerodynamics remain stable regardless of car attitudes, within the limits set by a table of critical speeds.

The LMP1 cockpit safety standards have been updated. The seating position is more upright, mitigating the risk of spinal injuries during serious accidents. This is the result of extensive research following several real-life accidents as well as accident simulation using the THUMS virtual human body model. In addition to the seat load tests, seat belt anchorage load tests have been introduced.

Leg padding is now mandated and a new load test for the inboard leg protection panel has been introduced. In order to ensure increased energy-absorption capability during front-angled impacts, headrest coverage has been increased. The strength of the fuel tank bladder has also been upgraded.



Alpine (top) will field a grandfathered LMP1 car in the Hypercar category. Porsche (centre) and Ferrari will build cars for 2023.

Both the FIA and the ACO believe that despite the difficult circumstances caused by the global health crisis, the LMH concept will be a success and will rejuvenate sportscar racing.

"Le Mans Hypercar should please both manufactures and fans, resulting in spectacular cars and a high level of competition," reckons the FIA Endurance Commission President, Richard Mille. "We'll see greater variety across the competitors while the more cost-effective regulatory approach is something much needed in the current economic climate."

Mille's views are shared by the ACO President, Pierre Fillon. "Hypercar marks a turning point for endurance," says the Frenchman. "By reining in costs, this new top class is the dawn of a bright future for the discipline with the prospect of major manufacturers returning to engage in thrilling battles on the track."

While it's difficult to predict what the future holds for LMH and the FIA WEC, there's no doubt that the early signs are optimistic, and the chances are that 2021 will be remembered as the year when a new golden era of endurance racing began. ◀

Accelerating growth

Newly-appointed FIA World Endurance Championship CEO *Frédéric Lequien* on how endurance racing is powering towards a hugely exciting new era of competition



Lequien will transfer wide skill set from cross-country rallying into new FIA WEC role

Frédéric Lequien took the helm of the FIA World Endurance Championship earlier this year, succeeding Gérard Neveu as its CEO. The Frenchman has a wealth of experience in motor sport to call upon, having started out at Eurosport, where he worked on the LG Super Racing Weekend initiative, a series of events featuring the FIA GT and the FIA European Touring Car championships. He then went off the beaten track, joining the Amaury Sport Organisation and serving as a Deputy General Manager on the Dakar Rally. Most recently, Lequien, having set up his own marketing and events agency, led a team of individuals organising the Silk Way Rally.

What goals have you set yourself ahead of your first season as the FIA WEC CEO?

"The goal is to ensure that we manage the championship as well as we can within the current pandemic. We are not working in normal conditions right now. I also want to pay special attention to my team. This season will be a year of preparation ahead of an even bigger 2022 and 2023 with more Hypercar entries and the introduction of LMDh too. We will need to use 2021 to ensure we are ready for far larger growth to come with more manufacturers and events."

How familiar were you with endurance racing prior to your appointment?

"I really discovered endurance racing and the Le Mans 24 Hours during the GT1 period, and I have been following it ever since. I've been to Le Mans several times and, very honestly, it's the best motor sport experience I've had. But my last visit there was not as a VIP guest, but on a trip with two friends in a camper van – it was incredible, lots of good memories and laughter."

Your background is in cross-country rallying. Is there anything you learned in that category that can be successfully applied to endurance racing?

"Cross-country rallies are incredibly complex. It's not like a stadium or a track

– you are in the middle of nowhere so it requires organisation on an entirely different level. The key is to anticipate, I have a good sense of being able to spot when something is wrong – an important skill that can be applied to endurance racing too. I also had to liaise with all sorts of people in my job from competitors, manufacturers and dignitaries – another important skill which I can take to my new role."

How difficult it is to run a world-class motor sport championship during the global health crisis? What precautionary measures have you undertaken to safeguard both this season as well as the longer-term future of FIA WEC?

"What is important is that we continue to anticipate and adapt to ongoing difficulties that arise from the pandemic to ensure that we hold our events in the safest way possible – both for our competitors and for our fans. The FIA have done a lot of work in this area, which we are very grateful for. While we don't have all the answers right now, there is a lot of work going on behind the scenes to ensure that WEC Season 9 can run as smoothly – and safely – as possible. There will undoubtedly be difficult times ahead but I am confident that the WEC, and endurance racing as a whole, can face these challenges and emerge even stronger."

What's on your agenda for the next month?

"Lots and lots of meetings! I am spending these first few weeks getting to know my team and familiarising myself with all aspects of the WEC and ELMS. There's a lot of work to do before the start of the season and I want to be prepared as much as possible."

A world of possibility 04

Last month in Saudi Arabia, Formula E reached its biggest milestone yet with its first event as an FIA World Championship. AUTO charts the electric championship's thrilling charge from a dream scribbled on the back of a restaurant napkin to elite status on motor sport's world stage

TEXT

TONY THOMAS

The idea was simple. Simple enough, in fact, to be written down and enshrined on the back of a napkin: electric motor racing. On city-centre street tracks. Global. Youthful. Green. Simple... though not easy to achieve.

The Paris dinner at Le Stresa restaurant between FIA President Jean Todt and Formula E co-founder Alejandro Agag, over which the framework of an electric motor-racing series was drafted, has passed into the legend of a still-young sport. The FIA President's pioneering vision that the Federation should found and launch an all-electric racing championship was clear, and in Agag he'd found a youthful, entrepreneurial and energetic promoter, who shared his zeal for creating a mould-breaking new motor sport discipline of the sport.

"I say it many times," says Agag, "I am the founder of the promoter of Formula E, but the real founder of Formula E is Jean Todt."

However modest that may be the collaborative spirit and natural rapport shared by the two men and their respective organisations was fundamental to the FIA's successful launch of the championship and its dramatic growth.

Hard to believe now, as FIA Formula E embarks on its seventh season with the new lustre of World Championship status, but the road to success wasn't always smooth. Early logistical and technical challenges – natural for an all-new international racing series – had to be met and strong commercial partners found.

But thanks to the commitment of the founders and the synergistic working relationship between the FIA and Formula E Holdings, the new electric racing series survived and thrived, to become the ABB FIA Formula E World Championship. Its ever-increasing status within the motor sport arena is proof positive that nothing is as powerful as an idea whose time has come.

Recalling those buccaneering early days, Todt confirms that mirroring global megatrends in the realms of sustainability, clean energy and low- or zero-emission transport, was – and remains – fundamental to the Formula E proposition.

"The world is changing very quickly," he says, "and you see this evolution of motoring. It was important to define the motor sport category which would be green and which would encourage people mainly in cities to use electric cars. And Formula E was the answer."

Cost containment was a priority for the first electric racers – the 'Gen 1' cars – and they were designed around a financially sustainable formula, with a common chassis, standard tyres and batteries among a range of prescribed parts. So groundbreaking was the powertrain technology that the batteries of the cars used in the first four seasons were capable of supplying only enough power to last for the first half of races. ▶



Nyck de Vries won the first official world championship Formula E race and the first run at night – the 2021 season-opener at Diriyah.

'We improved performance by 100 per cent in five years... those are numbers we're not used to seeing'

Mid-race car swaps, which obliged drivers to pit, then leap from the cockpit of one car to another identical, fully charged machine, were a defining attribute of the first years that spoke to just how pioneering the series was.

"Most of the time the FIA is the regulator but Formula E is a unique project where the FIA is so much involved. It was always Formula E Holdings plus the FIA making it happen," says Frédéric Bertrand, Director of the FIA's Formula E and Innovative Sport Activities Department.

"We were changing everything," notes Burkhard Goeschel, former President of the FIA's Electric and New Energy Championship Commission (ENECC). "Not only the technology, but the infrastructure, the sporting concept... It was totally new for the FIA."

Crucially, the novelty was neither fleeting nor empty. Manufacturer buy-in was also crucial and the validity of the infant series was confirmed by the early support of manufacturers including Renault, Audi and Indian giant Mahindra.

The series' growth was concurrent with seismic shifts taking place in the world of Mobility. Increasingly stringent controls of combustion power became the norm in many countries while Dieselgate crystallised a willingness among the public to change course. All the while Formula E was bringing the message of clean electric mobility to city dwellers around the world and reinforcing it from Season 3 with the FIA Smart Cities Forums that brought discussion of technologically-driven new mobility solutions to the forefront.

Before all of that though, the series had to launch, and in Beijing in September 2014, Jean Todt's dream on the back of a napkin went green.

"The first race in Beijing is probably one of the best memories of my life," says Agag, "because it was so much work, so much pressure, so much effort, to get to that point and then to see the green lights go and the cars just drive off... That was a fantastic moment."

Somewhat less 'fantastic' was the huge last-lap accident that befell Nick Heidfeld in the same race. As he was attempting to pass leader Nicolas Prost, Heidfeld clipped Prost, launching his car into an airborne roll followed by a heavy, upside-down crash-landing. Both drivers were unharmed and violent though the impact was, it served to prove that Formula E was no mere e-tech roadshow: it was authentic motor sport, contested by combative, highly talented drivers.

"It was the moment where we showed we were real racing, because the drivers wanted

to fight," says Frédéric Bertrand.

"It was not a show, it was a sport," adds Lucas Di Grassi, winner of that inaugural race, Season 3 champion, and one of the first investors in Formula E. "From then onwards the championship just took off and became what it is today."

DRAWING THE ROADMAP

Viewed from the newly lofty 'World Championship' perspective, those early seasons already seem like a more innocent, swashbuckling time – the learning years.

But the direction of travel had always been clear, thanks to an agreed technical road map carefully drawn by the FIA that by Season 5 resulted in the introduction of the Gen2 car. This dramatic, Batmobile-esque, all-electric racer was designed to a specification laid down by the FIA, with direct input from Jean Todt. More than any other international racing series, Formula E benefits from the close involvement of the FIA in managing the technical specification of the cars.

Gen2 instantly elevated Formula E's racing to a new plane. Mid-race car changes were gone, thanks to a new battery from McLaren Applied Technologies that delivered efficiency gains and enough power for a full race distance from a single charge.

"For me, innovation and milestones have to be very clear and very easy to understand," says Agag, "and [with Gen2] we did a big innovation: we went from two cars to one car, to finish the race. And that is a very clear, very big and very understandable innovation for the general public."

Drivers loved the overnight slicing of two seconds from average lap times: "[It gave] more power and double the range," says Season 6 champion Antonio Felix Da Costa. "We improved performance by 100 per cent in just five years – and those are numbers we are not used to seeing anywhere else in the world."

Meantime, a new title partner, technology giant ABB, began its first full season, while BMW joined as manufacturer entrants, building on their existing relationship with the Andretti Motorsport team. Mercedes, fellow titans of the German auto industry, took a first step towards full works entry via a partnership with the HWA privateer squad and Nissan took over the Renault e.dams entry to become Nissan e.dams. Their presence, alongside the likes of Jaguar, who'd joined in Season 3, NIO and Venturi, made the manufacturer roster in Formula E the strongest in international motor sport. ▶



Sébastien Buemi joined Formula E at the start and became champion in 2015-16.



The first race took place in Beijing in 2014, with the Bird's Nest Stadium as a backdrop...

...While the Season 4 Zürich ePrix was the first motor race on Swiss soil since 1954.



Nelson Piquet Jr was the series' inaugural champion in 2014-15.



Techeetah's Jean-Eric Vergne became Formula E's first repeat champion in Season 5 (2018-19).



FIA President Jean Todt was an early believer in the electric racing concept and the founder of Formula E.



As well as being 2016-17 champ, Lucas di Grassi helped with early car development.



Formula E's Gen2 cars have been a game changer – capable of lasting a race distance.



A strong finish to the interrupted 2019-20 season gave Felix da Costa the title.

The Gen2, indeed, was proving to be “a game-changer” (as described by Mercedes team principal Ian James), embodying a compelling showcase of high-performance electric mobility. For auto-makers keen to flaunt their electric vehicle expertise in a credible, exciting, sporting arena, Formula E was becoming irresistible.

POWERFUL MESSAGE

To flourish from start-up to globally relevant World Championship in six short seasons is a remarkable achievement for any new series and Formula E's boom has necessitated the introduction of a corporate-world management structure over the past 18 months.

A new CEO, Jamie Reigle, was appointed in 2019 with a brief to expand the championship, attract more manufacturers – perhaps Korean or American – and secure a presence in new territories, such as Japan, Australia or the US West Coast.

In his view, while Formula E has already achieved so much, vast untapped potential remains: “It's really a credit to Alejandro and Alberto [Longo, the series' co-founder and Chief Championship Officer] and the team – as well as to the teams and partners – who have made this a success in a pretty short time,” says Reigle. “But I was brought in by our board because there's a belief that this can be much, much bigger than it already is. Our stakeholders have very high expectations of where we can take Formula E and the way I look at it is, our message is really powerful. It's around climate change, around sustainable human progress, innovation, sustainability, all of these themes which are

really important. And we need to be able to make it bigger so that our message gets out to more people. If you believe the message is important, then it makes sense that you have this responsibility to scale the business.”

That process is ongoing, though not without the challenges of running a sporting championship in the midst of a global pandemic.

Season 6 of Formula E was brought to a juddering halt by the COVID-19 outbreak shortly after last year's Marrakesh E-Prix, in February. Racing would not resume until August, when, with characteristic chutzpah, Formula E found a way of staging six races over nine days at Berlin's Tempelhof airport venue, to conclude the season.

The health protocols introduced for those races, which included accelerated testing programmes and ‘bubbles within bubbles’, were so successful that they were quickly adopted by other sports as examples of best practice. The achievement was a source of quiet pride

Chairman of Formula E Alejandro Agag with new CEO Jamie Reigle.



among the Formula E community and primed all participants to meet the disruptions that doubtless lie ahead in staging Season 7 events.

That ‘can-do’ spirit at the heart of Formula E allows an optimistic eye to the medium-term future, and the introduction of the Gen3 cars for Season 9. Lighter, faster and designed around ultra-fast charging and a battery capable of taking a mid-race ‘flash charge’, the Gen3 technical template is the first Formula E upgrade designed explicitly to boost performance (rather than ‘efficiency’, which framed Gen2). It's likely to further enhance the series' raw spectator appeal as well as its relevance to road car technology.

“That is the next big jump forward in electrification. If you can go to an electric charging station, plug your car in and charge it in five minutes, it completely eliminates the range anxiety that is limiting the adoption of electric cars. It's a key technology and where is it going to be tested? In Formula E,” says Agag.

“It's going to be so relevant. Lighter cars, faster cars, more efficient charging... All of this is stuff that you want to bring to the road as soon as possible,” says Dilbagh Gill, team boss of Mahindra Racing. “So being here, learning this and transferring it is something that we have all taken on as a mission.”

Purpose-driven motor sport with the brightest of futures? That doesn't seem too bold a claim.

“Working hand in hand with Formula E, the FIA, the drivers, the teams, the manufacturers,” says FIA President Todt, “we will go very far. But we must all remain united and humble to progress in order to get the success the championship deserves – and to keep climbing the mountain.” 4

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This year's WRC
started as planned
with a successful
running of Rallye
Monte-Carlo.

TEXT
/
JUSTIN HYNES

04 The new stage management

The FIA World Rally Championship was severely disrupted by the global pandemic, but with the 2021 campaign already successfully underway, WRC Promoter's Managing Director *Jona Siebel* and Senior Director Sport *Peter Thul* are confident that the lessons learned last year have made the series more agile, resilient and headed towards an exciting future

Looking back to 2020, how did the difficulties posed by the COVID-19 pandemic inform the plans for this year's WRC?

Jona Siebel: It was obviously an extremely challenging year. Without live events the fundamentals of our business are gone: we need the live experience. However, we were extremely happy with the co-operation we had with the FIA, the manufacturers and event organisers, and we were very pleased to successfully finish seven events under difficult circumstances. Inevitably there were some consequences on the business side. We had to renegotiate all the broadcast agreements and reframe other partner agreements we have. I would say there was a little too much daily crisis management. To compensate for the losses we produced additional content. Our focus turned to eSports, to the digital business, and we were surprised and encouraged by how committed our fanbase is, even without live events. Right now, we are still in what you might call a crisis period for all stakeholders. It's a big challenge to keep the business together. But we have defined 12 events for this year, largely focused on Europe because of the travel restrictions we can't ignore. So, no Mexico or Argentina and the only overseas events we have planned are Kenya, Chile

and Japan. The good thing is, we have contingencies. And we have very, very motivated countries, event organising structures, which are willing to jump in if one rally can't happen.

Peter Thul: January's Rallye Monte-Carlo was, on the sporting side, marvellous. The commitment of the Monte-Carlo organisers was beyond comparison. And that was also true of the French people, who respected the regulations and stayed away from the stages. So the FIA, the organisers, all the stakeholders were brilliant and this shows also the pure spirit of rallying. And the same spirit was shown in Finland for Arctic Rally Finland. They were totally committed. We have had a really good start to the season.

We now have a gap until Croatia and again the event organisers there are totally committed and very much in contact with the FIA to just build up a new event from scratch. We are looking forward to that, with or without spectators. So in the end it's not the time to complain. It's a challenge, yes, but we see also that we will have a fantastic season of 12 events hopefully.

Where do the contingencies lie? Do you have promoters and ASNs who are willing to step into the breach?

PT: We have some attractive contingency events that could be run as WRC rounds if needed. ▶



We made the most out of the learnings of last year and we are really prepared to go forward.

And what about the protocols to which events are being run? Are you still working to the same standards?

PT: It worked successfully and that's down to tremendous work from the FIA together with our people, such as [WRC Event Director] Simon Larkin. We have a responsibility and we strictly honour that responsibility. Rallying people are very disciplined. Everybody is following the rules and it has been a great success.

JS: Peter mentioned the word commitment and that's key in our eyes, because in these times we need it. We have committed partners on the event side, the team side and the FIA side. We have commitment from local authorities, from fans and we all work together. It's teamwork.

Fan engagement in these times is particularly tricky for a sport such as WRC, due to the nature of the events, so if you don't have fans at events, how does that change what you do? How have you adapted fan engagement for these times?

PT: We have a fantastic format, WRC+ All Live, which is unique. I think it's a benchmark for automotive sport. From waking up until going to bed fans can follow the action live, not only seeing cars on the road, we also have feature stories, behind-the-scenes content. Everybody can really be a part of it. Yes, it's different to standing on the stages and seeing the cars, smelling the sausages on barbecues in the Mediterranean Alps and we are missing that terribly. But the passion of the fans is still there and with WRC+ we have something by which fans can really join the action.

JS: The OTT platform with the live experience launched in 2018 and this was a game changer. Fans love the product, so our plan is to grow that. We want to distribute the live stream also on external digital platforms. So I see great potential to attract new fans in distributing the live stream not only on our platform, but also on third party platforms. WRC+ has been a really strong step to attract new fans. But the key is also to enter new markets – Japan, Kenya... Japan, is an extremely exciting market in our eyes, we have three corporations there with new broadcast partners and media TV business.

Looking at the technical future of the sport, the WRC is moving towards hybridisation in 2022. Are you comfortable with the future being hybrid and not fully electric?

PT: There's a study from consulting firm Oliver Wyman Limited from 2019 that says we currently have 84 per cent combustion cars, 13 per cent hybrids and only three per cent electric. This will of course change dramatically over the next 10 years, but as a bridging technology, hybrid will have around



Hybridisation will help attract new manufacturers to WRC, says Jona Siebel.

37 per cent penetration. And if you look at the use case for hybrids, you can run certain mileage in big cities and long-distance travel, you can recharge, you can boost. And that's exactly what we are doing in rally. We can use electric power in the city, for example at the event start. Then we can use it as a boost on the stages or even to get the energy back. We are mirroring the daily life of a standard road car and we can help to develop the technology. This kind of technology very much fits rallying.

On the other side are purely electric formats. And if you see that electric cars have the most benefit in big cities, you transfer that to stadiums and there we have the FIA World Rallycross Championship – fully electric. We should also not forget that we will have hybridisation in the support categories. The FIA is already discussing with stakeholders the option of mild hybridisation of Rally2 cars. This is again the right strategy because you see in the passenger car market that many small cars use mild hybridisation.

We will also have sustainable fuels, so the story evolves. There is not one solution to a sustainable future and all of them will be done in the world of rallying.

Regarding hybridisation, how important is it to go down this road now in order to retain and attract manufacturers?

JS: Extremely important. And we are very optimistic that we won't have only the three commitments from Ford, Hyundai and Toyota, and that combined with our new media event commercialisation strategy we will be able to convince new partners to join us. We want to explain, to 'emotionalise' the hybrid technology and create a much better showcase for existing or new partners for the next few years. It's no secret that we are looking in the direction of the Far East. It has the biggest car market in the world and should be

present in our championship, as an event or as a manufacturer. We are having talks, but we would not like to discuss names at the moment.

You mentioned Safari Rally Kenya earlier. How important is that event to modern WRC? Is there an emotional significance to it?

PT: Kenya is heritage, an iconic event. And to transfer it to modern times is wonderful. What we have learned is this young country is very much pushing ahead for the future. The event is government backed and they're so enthusiastic. And due to the fact that the people are so committed we hope that the situation will allow us to go there. We should never forget where rally comes from and Kenya is an icon.

Are you happy with the structure of the junior categories now? Is there more clarity to it and greater opportunity?

PT: It's now very transparent. And if you compare it again to Formula 1, Formula 2, Formula 3, everybody now understands what we are doing. We have Rally 1, the big cars, Rally 2, the supporting category, also with the support of manufacturers, Rally 3, which is 4x4 for beginners, and then the two-wheel-drive cars underneath. It's a really good, clear structure and a really innovative move by the FIA to build this pyramid.

Final question: how are you feeling about the rest of this season?

JS: We are generally optimistic, positive people. We know that together we have to beat the pandemic and it's not over yet, full stop. Football players will often say they take things one match at a time and we're taking things the same way. We move from event to event, but together with our partners we have a big goal and we will do it. ◀



Peter Thul: teamwork has got WRC and its partners through the pandemic.



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04

Crossing the racing divide

Despite claiming a third FIA World Rallycross title in four years in 2020, *Johan Kristoffersson* still sees huge potential in the category. But while he believes the future is bright he's also spreading his racing wings in other categories

TEXT

HAL RIDGE

"I'm testing until Thursday, can I call you on Friday?" read the message from triple World Rallycross Champion Johan Kristoffersson, in response to the question about when he would be available to speak.

For most racing drivers, early February is still the off-season, especially with so many COVID-19-related restrictions governing what it's actually possible to do right now. But for Kristoffersson, who notched up his third World RX crown last term and has a contract in his pocket for the new all-electric Extreme E series this year, the off-season isn't time to rest. The test was in the snow-covered Swedish forests aboard a Volkswagen Polo R5, ahead of an announcement that he would compete in the Arctic Rally Finland World Rally Championship round. The Swedish 32-year-old is not a man given to lazy weekends of couch-surfing.

Kristoffersson may have won his third World RX title in four years in 2020, but in the year he didn't claim the crown, 2019, he wasn't even in the series. That year was spent with Volkswagen in WTCR, following the withdrawal of VW and the PSRX team for which Kristoffersson was driving from World RX at the close of 2018. But, having won races in WTCR, adding to his cluster of domestic touring car crowns, he returned to World RX last year with an ex-works Polo to complete a mission.

When he followed in his father Tommy's footsteps of competing in the mixed-surface discipline in 2013, it was with one goal – to win

the world title, and within a set number of years too. It was a gamble, as rumours were only just circulating at the time that rallycross would secure the coveted FIA World Championship status for 2014. And while Kristoffersson executed the plan to achieve ultimate success in 2017, before repeating the feat with an unprecedented 11 wins from 12 starts the following year, the missing element was that it wasn't with his family-run concern. Last year put that right.

"We knew it was going to be a different season with our family team last year, but it turned out to be even more different and difficult with the COVID-19 situation," he says. "One of the biggest things was that I was alone in the team. In rallycross it's not easy because you get such a limited amount of practice time, and on top of that last year we had double-header weekends, with so many points available every weekend. It was even more important to get up to speed quickly and with no team-mate to compare data with or to work on set-up it was quite tricky. But I had a good team around me and experience of most of the tracks. It really meant a lot to be able then to score the victories we did and win championship as a family team. That was quite cool."

UNFINISHED BUSINESS

With the most Drivers' titles and a bucketful of other records, including 24 wins, 12 more than the next nearest driver, does the Swede have any unfinished business in the discipline? "Not really, I can't say I do," he confesses, before adding, "but that doesn't mean I don't want to do it either. I've reached all the goals I had within rallycross and I'm happy with that, but if there is an opportunity to drive in rallycross again I would be interested. I really like the sport and it has a great future." ▶

While at this moment Kristoffersson's own rallycross plans for the coming season hang on a number of factors and are far from complete, there are positive noises about the discipline.

WRC Promoter has secured the commercial rights to the series in a new agreement with the FIA, following the departure of former promoter IMG last year, while the sport's governing body has committed to an electric future for the discipline's highest level, set to begin from 2022.

"I'm looking forward to seeing if the new promoter can make the sport grow even more, and hopefully the electric switch can give the sport and the teams a push in the right direction," says Kristoffersson. We have to remind ourselves that it's not an easy task to do what IMG did as well – starting the world championship – and there are big shoes to fill. But if there is anyone that can do it, I believe the new promoter will be able to. I'm just wishing the best for rallycross because it's a sport with great potential."

While he's far from walking away from world rallycross, Kristoffersson is turning his hand to new endeavours, including his recent WRC3 outing at the Arctic Rally, where he finished 10th in class, and his drive in the new electric off-road Extreme E series, in which he'll drive for Nico Rosberg's team alongside former Australian Rally Champion Molly Taylor.

So, will scratching the those itches mean Kristoffersson will have a complete set of strings to his motor sport bow? "I've done a lot, but I haven't done everything. There are other motor sports I would like to try in the future as well," he says. And you could bet your bottom dollar on him being pretty damn good at whatever seies he chooses to venture into. ◀

Johan Kristoffersson is one of the most accomplished multi-discipline drivers currently in action.

'I'm just wishing the best for rallycross because it's a sport with great potential'



04 FELIPE MASSA: Keeping Karting on Track

TEXT
/
JUSTIN HYNES

FIA International Karting Commission President *Felipe Massa* looks back on a successful year for the discipline last year, despite the pandemic, and explains why there's a huge amount to be excited about in 2021

Can you give us an overview of the 2020 season and how the FIA Karting Championships were affected by the COVID-19 pandemic?

It is clear that the 2020 FIA Karting season was disrupted by the COVID-19 pandemic. Two events had to be cancelled, but the other seven were postponed or relocated. The majority of FIA Karting Championships and Trophies were held in good sporting conditions and guaranteed the value of the titles awarded. The number of participants proved to be more than satisfactory in these circumstances. Like many other disciplines, the public was not able to attend the events, but we did our utmost to make up for this deficit with broadcasts on numerous television channels and on the internet, notably via social networks.

How did the protocols put in place help with the organisation of events and how satisfying was it to be able to eventually hold the world finals in Portimão in November?

The rigorous infection-control protocol developed by the FIA and the Medical Commission headed by Professor Gérard Saillant was successfully applied to our karting competitions. It convinced the authorities of the countries hosting FIA Karting events and ensured the safety of all those present at the circuits. Its efficiency has undeniably proved itself. The personal involvement of all the members of the sporting community has played a decisive role in the smooth running of the season.

We must also thank the ASN of Portugal and the Portimão circuit for providing a setting that is equal to the challenges of the FIA Karting World Championships – OK and Junior. This event is one of the most important of the season and it would have been regrettable if it could not have taken place.

Q: Despite the difficulties were you impressed with the standard of competition in 2020 in terms of the number of entries and the quality of the drivers we saw?

On track, the intensity of the competition was remarkable and was little affected by the health situation. It is true that some of the drivers were not able to attend all the events they had entered. The number of participants did fall slightly, by about 15% over the year as a whole. However, the standard of the competitions and of the drivers present remained very high, and the best drivers were able to showcase their talent and further their careers without too many problems.

Who impressed you most?

I can't just pick one name. I am thinking of course of Britain's Freddie Slater who won the FIA Karting World Championship - Junior in demanding weather conditions at the age of 12 in his first season in OK – Junior. Young Ugo Ugochukwu from the USA, crowned FIA Karting European Champion – Junior after many strong results, also stood out for his speed and determination. Italy's Andrea Kimi Antonelli made a strong impression when he entered the OK category. He brilliantly won the FIA Karting European Championship – OK and was crowned FIA Karting Rookie of the Year. Finally, I would like to salute the tenacity of Frenchman Jérémy Iglesias whose talent has finally been rewarded with the title of FIA Karting World Champion – KZ.

Moving to this year – the world finals are moving outside Europe, to Birigui in Brazil. Are you personally pleased that the finals will take place in your home country?

I am of course very happy that the FIA Karting World Championship – OK and Junior is taking

Felipe Massa:
"We need to stick together and be ready to go back to 100%."

place in Brazil, on the American continent. It is desirable to broaden the horizon of high-level karting beyond Europe. This is a major sporting and economic challenge. The efforts made by Brazil and the state of São Paulo to facilitate the arrival of competitors to the Birigui circuit are to be welcomed. I am convinced that we are going to experience an exceptional event from which the karting world will benefit fully.

We're seeing young talent emerging from what you might call non-traditional countries – you've already mentioned Ugo Ugochukwu who has recently signed with McLaren and there's also 2020 FIA Karting Academy Trophy winner Connor Zilisch who is also from the United States. How important is holding finals outside the Karting's European heartland in discovering future talents such as this?

In recent years, several new countries have been represented at the highest level of international karting. Russia, China, India, as well as other dynamic nations such as Singapore and the Eastern European republics are in a position to shine against the best representatives of European countries that have been involved in karting for a long time. Let's not forget that it was the United States that created karting in the 1950s. Like Brazil, they have a long history in karting competition. It is obvious that the FIA must

strive to organise important events on other continents to support the practice of our discipline throughout the world. This is not an easy challenge as the main manufacturers and teams are all based in Europe, particularly Italy, and the logistics of exporting competitions are complex. I am convinced that this challenge is a priority for the future of karting.

Brazil is sadly suffering with the effects of the COVID-19 at the moment. Is there a contingency plan in place should the situation make holding the finals in Brazil impossible?

FIA Karting last year showed its capacity to react to exceptional circumstances, in agreement with the organising countries and the main players in the discipline. It went well in 2020 and there's no reason why it should be any different in 2021. Furthermore, I think we can be reasonably optimistic about the evolution of the pandemic thanks to the vaccination campaigns that are expanding in many countries. The beneficial effects of these vaccines could be felt from this summer onwards and if that's the case then it will have a positive impact on our sport.

Two events on the European calendar – the rounds in Zuera, Spain and in Adria, Italy – have been rescheduled for July and August



respectively. How tough is it to organise a calendar due to changing local restrictions?

There is a close relationship between all of the stakeholders involved in FIA Karting competitions. Alongside the CIK-FIA, the promoter of the FIA Karting Championships, RGMMC Group, is in direct contact with the manufacturers, the major international teams, and the ASNs and the organisers. Decisions are taken on a case-by-case basis in consultation with all the parties concerned. I would like to point out that everyone cooperates in a very positive manner for the good of karting.

The standard of competition in 2020 remained high, says Felipe Massa.

encourage the development of talent around the world by limiting the financial impact in a regulatory context. This is a complex task, but one that could lead to significant changes in the near future.

Has electric karting moved any closer on the horizon? We've seen the development of electric such as Electroheads run by your former F1 race engineer Rob Smedley, which is building electric karts with Birel. Is the technology beginning to make sense in terms of weight and other considerations?

We are following the progress of electric propulsion in karting with great interest. This power source is now well established in the leisure sector, while several projects have also been launched in the field of pure competition. However, to date, there is no electric kart that can offer a formula combining sufficient performance, reasonable weight, good autonomy and affordable cost to compete with current combustion engines. Current experiments are not totally conclusive on all of these points. I remain convinced that new technologies, particularly those concerning the storage of electricity, could soon appear and solve the equation.

What are your hopes and expectations for 2021?

We must remain realistic. This will still be a difficult year for karting competition. The pandemic is still very much present and many precautions must be taken to overcome the difficulties it presents. Nevertheless, I am confident that the karting season will go well. The FIA's strict health and safety protocol has proved its worth in conjunction with the collaboration of every member of the community. We need to stick together and be ready to go back to 100% as soon as the health situation is under control.

'At the top level, FIA Karting Championships have an indisputable reputation'



FIA Karting European Champion Ugo Ugochukwu.



2020 FIA World Karting Champion Freddie Slater.

FIA >> **PurposeDriven**
DIVERSITY & INCLUSION

The changing face of motor sport

While it is present in almost every country worldwide and involves participants from a huge range of cultures, motor sport still has issues to confront and overcome regarding equality and inclusion, particularly at its elite levels. AUTO looks at how diversity is being put at the heart of development at the pinnacle of motor sport

TEXT / JUSTIN HYNES

05

The 2020 motor sport season will undoubtedly go down in history as the year in which it was faced with the enormous challenge of the COVID-19 pandemic. But while the health crisis and the measures put in place to keep motor sport on track dominated the news cycle, the fabric of that narrative was strongly threaded through by another development – motor sport's increasing recognition of the need to be more diverse and inclusive.

Reacting to the death of George Floyd, an African American who was killed at the hands of a white police officer in Minnesota in May 2020 and the global outrage that followed, sports around the world began anti-racism campaigns and motor sport was no exception.

At its highest level, in Formula 1, the season-opening Austrian Grand Prix marked the start of a series of ongoing campaigns to promote diversity and inclusion and to highlight racism.

Most publicly and led principally by World Champion Lewis Hamilton, drivers from across the F1 grid joined athletes from other sports in 'taking a knee' before races, demonstrating their solidarity with anti-racist movements.

Their stance matched moves put in place by the sport's organisers. In the weeks leading up to the start of the season the FIA, at its virtually-held June conference, launched its #PurposeDriven movement.

Unveiling the wide-ranging movement FIA President Jean Todt said: "As the regulator of

world motor sport and a major player in mobility, we have a particular responsibility. We must protect all participants and spectators in our motor sport competitions from the COVID-19 pandemic. We must preserve lives on the roads, promote safe, clean and affordable mobility for all, defend gender equality and diversity, and facilitate access to motor racing and driving, particularly for young people."



FIA President Jean Todt has led calls for greater diversity in motor sport, while Lewis Hamilton has encouraged F1's stars to 'take a knee' at races (right).

In support of the ideals, Formula 1 at the same time launched its #WeRaceAsOne campaign as a "way for the sport to help tackle some of the biggest issues facing motor racing and the wider world today". A Diversity and Inclusion Foundation was launched to which the FIA committed a €1 million donation via the FIA Innovation Fund (FIF).

Onika Miller, interim FIA Secretary General for Mobility, Head of the FIA Innovation Fund, and Head of the Diversity and Inclusion pillar of PurposeDriven says that broadening motor sport's make-up is key to the FIA's future.

"The FIA responded and committed €1 million towards the Foundation and the taskforce that Formula 1 set up to support diversity and inclusion, specifically within the F1 ecosystem, but also across the broader motor sport community," she explains. "Crucial to that is working with our ASNs to be able to ensure that we have a more diverse talent pipeline. At the same time, we want to be able to develop a STEM career pathway. ▶

'We must defend gender equality and diversity, and facilitate access to motor racing'



We feel that Formula 1 is an excellent platform to be able to showcase not only great motor sport, but also the other opportunities in terms of careers that are available.”

There is certainly room for progress as Paul Mills, Chief People Officer at the Mercedes Formula 1 Team, explains.

“When you look at the data, three per cent ethnic minorities and 12 per cent female. That’s not a great reflection of society,” he says. “Clearly, against any benchmark or standard, we’ve got to do better than that from a diversity point of view. That was really something right at the front of all of our own work on this.”

DIVERSITY ISSUES

The question, then, is does motor sport have an issue with diversity and is it taking steps to change? As with all such questions, the answer is not clear-cut.

James Dornor is an electronic support engineer at Mercedes and admits that as a black

person the lack of diversity in the Formula 1 paddock was readily apparent when he began working in motor sport in 2012 and F1 in 2017 – and that it is still obvious.

“It’s in the back of your mind,” he says. “I don’t really think about it because I try to be comfortable in myself, because I know I can do the job, as you can end up doubting yourself and your ability. At the end of the day it’s about doing the job, being experienced and doing it to the company standard. But still, the lack of diversity is in the back of your mind as you like to see people you can relate to and cosole in with confidence – and you do get comments. I guess people see as banter.”

‘Friendly banter’ often excuses casual racism, however, and Dornor feels that, as in wider society, motor sport has problems to address.

“I do think there is an issue,” he says. “For example, prior to F1, when I was working in the automotive sector and mentioned to my colleagues that I wanted to work in F1, there was a comments that stood out. I was told: ‘you’ll

never get into that industry; that’s not something people like you do’. Someone actually said that, which was shocking. I’ve had a lot worse said to me, too. Most of the time, I let those things go. A lot of things have been said to me, I’m used to just letting them go. However, following events in 2020, I feel now is the time to share my experience and journey in the sport. I definitely think the impression is Formula 1 is a privileged sport, without a clearly accessible pathway.”

British-Thai racer Alex Albon, who spent the latter part of 2019 and all of 2020 in a race seat at Red Bull Racing before switching to a test driver role this year, admits that in his case a privileged background largely inured him from childhood discrimination but adds that he doesn’t feel motor sport is systemically exclusive.

“Did I encounter discrimination? Truthfully, no,” he says. “I think especially the younger generation are a bit more open-minded. I did grow up quite privileged – I went to a private school and so on. I had no real issues and never really faced any discrimination. Growing up I saw

my background more as an opportunity. A lot of my sponsorship, if not all of it, came through Asia rather than the UK. That is not to say that there aren’t situations where there are issues, but from my side it was pretty easy.”

Albon’s feeling is that motor sport’s lack of diversity stems largely from its European heritage.

“Motor sport is big in Europe and that’s where the breeding ground for young talent is. So, if you want to be the best you have to race against the best and go to Europe. If you are in Asia and want to succeed, you can’t improve as a driver by staying in your national country, and to travel to Europe you have to have a budget behind you. That makes motor sport very exclusive. Japan has its own little micro-climate but beyond its borders it’s hard to escape a national ecosystem and that creates a problem.

“It’s about making it accessible for people, through development programmes, scholarships. How the FIA does development through karting is a really good way of identifying talent and is a lot more affordable way to get involved. Instead of paying for all this stuff you’re really only paying for your plane ticket and entry fee, and that’s a lot more realistic for a sponsor to get involved with.”

FOCUS ON ABILITY

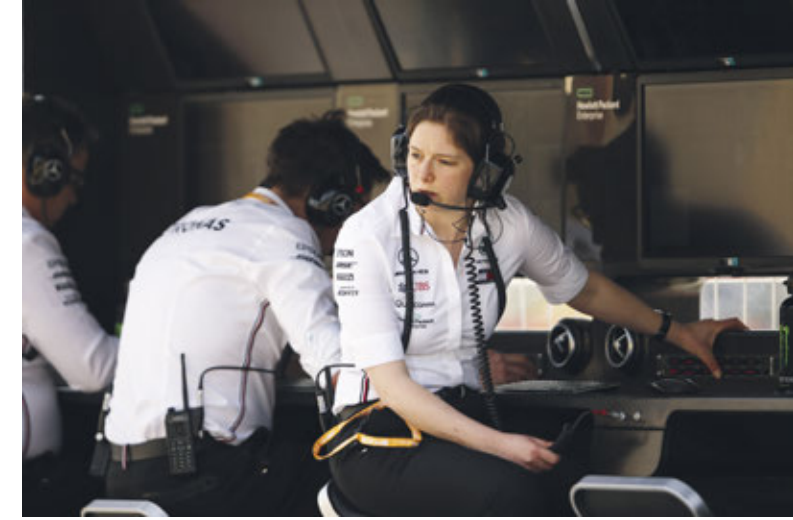
It’s a problem Guanyu Zhou was able to solve, but the Chinese driver admits his childhood move from Shanghai to the UK to race was not without its issues.

“When I moved to Sheffield I was the only Chinese person in the karting category and I did encounter some resistance,” says the FIA Formula 2 racer who is also part of the Alpine F1 team’s driver academy. “It was difficult and on track there were times in the first year and half you get smashed off. But I was so young that I don’t think it affected me. The key thing is to do well. Once you start to get some podiums and win some things then you get respect.”

Zhou’s boss at the Alpine Academy is Mia Sharizman, who more than a decade ago swapped a job at former F1 track Sepang International Circuit in his homeland of Malaysia for a career in European motor sport, first with Lotus/Caterham and latterly with Renault and Alpine where he is tasked with bringing young drivers through from junior level to F1. Like Albon, he has not personally suffered discrimination.

“Particularly in F1 there’s never been a time when I felt victimised for being a minority or a time when I would use it as an advantage,” he says. “I never felt that, from day one, at Lotus or in [the Alpine factories at] Viry or Enstone that I was there for any other reason than that I could do the job well. Similarly, I never felt any animosity in the paddock.

“In my experience if you are looking at getting a position, or knocking on the door of a junior team to get a job, if they feel and they see you do have the ability then background doesn’t matter,” he says. “My role is to look at what the grid will be like in 2025 and 2026, and we



Mercedes Head of Strategy Rosie Wait and Alpine Academy boss Mia Sharizman (left) have risen through motor sport’s ranks but say gender and ethnicity issues still exist.



years in an industry there are always a few people you’d prefer not to work with again.”

But while she feels that in some circumstances “doors opened by the fact that I wasn’t like every other graduate coming in” motor sport has lagged behind other industries in promoting gender diversity and that it remains ill-prepared to facilitate it.

“Fundamentally my impression is that the ethnic diversity is a long way behind where we’ve got to with gender diversity,” she says. “I’ve seen that each year there is a slightly more diverse intake, especially in the graduates. It’s very small, but it does get slightly better and if you look on TV you see, across the whole industry, slightly more presenters who are females. You see slightly more female representation on the pit wall. But I would say that it is very slow. The pace is nowhere near where I think it should or could be.

“I’d also be interested in the retention of people in from under-represented groups,” she adds. “Quite rightly a lot of focus is on recruitment, because if you start from a position with no diversity then you’ve got to recruit it, but retention is also important especially from a gender perspective.

“Once you are out of your twenties your vision spreads beyond the career, if you look at the rest of your life. But motor sport is uncompromising, so I suspect retention is a problem. There are a lot of people who might have to compromise on life choices if motor sport is really the dream and that’s a problem. Like I said, it’s a wider problem, but recruitment and getting the graduates in at the bottom is only part of it.”

While it seems that motor sport in many cases lives up to its oft-stated billing as a meritocracy in which the only traits judged are skill-based, it does, however, appear to exclude minorities based on economics, education, and an antiquated and somewhat androcentric belief

just look at the fastest and quickest. Yes, it is predominantly European but that is motor sport culture. But the quickest is the quickest – whether he or she is Brazilian or Japanese. There is no difference in where drivers are from or what their background is; there is only a difference in speed.”

Sharizman admits, however, that while he feels the environment of motor sport is welcoming there remains an exclusivity about the sport that discourages sections of society from joining. “In Enstone I do not see a single Black person,” he says. “I think you have to look at how F1 recruits.”

That recruitment process has been under scrutiny in recent years in gender terms, with gender pay gap reporting showing that female representation is poor and skewed away from senior or technical roles.

Rosie Wait is one of a number of exceptions to that paddock rule. Starting at McLaren in 2009, Wait is now Head of Strategy at F1 champions Mercedes.

“I believe I was one of two women in engineering at McLaren,” she says. “I think there were probably about 200 people there at the time, but I never felt discriminated against. There have been a couple of colleagues I probably would not choose to work with again in the future where me or some of my peers felt like we were being treated unfairly, but in 10

‘The lack of diversity is in the back of your mind, but I know I can do the job’



After moving to the UK, Chinese driver Guanyu Zhou says he earned respect on the track.

The 4 pillars of #PurposeDriven

To inspire action across our community, the FIA will focus its efforts within four key ‘Purpose’ areas: Health & Safety, Environment, Diversity & Inclusion, and Community Development.

HEALTH & SAFETY

Advocating for the highest standards of safety on the track, the road and beyond.

ENVIRONMENT

Taking an innovation-led approach to deliver sustainable Motor Sport and Mobility to contribute to global environmental and sustainable goals.

DIVERSITY & INCLUSION

Fostering a culture of inclusion and diversity for the benefit of all.

COMMUNITY DEVELOPMENT

Delivering a positive economic contribution to communities worldwide through employment, professional development and social investment.



The FIA’s #PurposeDriven movement aims to make motor sport more accessible.

that work comes before family life. So where do the solutions lie? ▶

For over a decade the FIA has championed gender equality in motor sport through the Federation's Women in Motorsport Commission. As well as talent detection programmes the Commission's work has focused heavily on promoting science, technology, engineering and mathematical subjects among school age girls, and making them aware of the multitude of career opportunities that exist in motor sport.

In June 2020, the FIA and the FIA Women in Motorsport Commission launched FIA Girls on Track – Rising Stars (see p62). In association with programme partner Scuderia Ferrari and the Ferrari Driver Academy (FDA), the project aimed to detect female racing talent for the future and concluded in January with the selection of 16-year-old Maya Weug as the first female member of the FDA. To further advance diversity and inclusion the FIA also developed Rally Star – a detection programme aimed at finding the next World Rally Champion. The selection process specifies that for every five competitors put forward by an ASN, one must be female.

The FIA Disability and Accessibility Commission launched the Grant for Disabled Drivers – Safety Equipment initiative aimed at supplying safety equipment to mobility-impaired drivers and co-drivers, and developing regulations for the certification of the adaptations necessary for disabled drivers to compete.

For Mercedes Chief People Officer Paul Mills, change starts with a change of culture within organisations.

"We invited an external organisation to come in, which was a really good first step because it just put a fresh set of eyes on all sorts of things that we do," he says. "They came in and conducted an audit, giving you a measure of your culture and engagement around these topics.

"We've formed a partnership with the Association for Black and Minority Ethnic Engineers (AFBE-UK). We've joined forces with the STEMettes. Those partnerships are, hopefully, going to prove fruitful. They're teaching us a lot.

"We also took what I think is quite a brave step and formed a partnership with the Mulberry Schools Trust," he adds, referencing Mercedes' educational partnership with the multi-academy trust set up in 2016 in the ethnically diverse district of Tower Hamlets in east London.

The Mulberry STEM Academy in partnership with Mercedes-Benz will offer an extra-curricular programme in science, technology, engineering and maths education through vocational training, specialised study and masterclasses for students aged seven to 18 within the Mulberry family of schools and beyond.

Mills adds that Mercedes has embedded diversity into its corporate culture through its Accelerate 25 programme. "We wanted to make an ambition that was a hard number, aiming for at least 25 per cent of all new starters to come from under-represented groups in each year until the end of 2025."

The FIA's Girls on Track – Rising Stars initiative has proved successful since its launch last year.



Mercedes engineer James Dornor says diversity should be based on skill, not making up numbers.



Red Bull's Alex Albon feels his ethnicity helped him attract sponsorship.

'If we want a more diverse industry we need to go faster with recruitment'

For electronics engineer James Dornor changes in recruitment and educational outreach are steps in the right direction. "What Mercedes are doing, that's brilliant," he says. "They've put a time on what they want to achieve by 2025, and with regards to education going to less affluent areas and raising the awareness that STEM subjects can be done by anyone regardless of background is the key message.

"The FIA have done quite a lot with Girls on Track and that programme has been going for a number of years," he adds. "That's been really good and works through the local communities, so I think a similar kind of project from F1 and the FIA would benefit communities in the UK in terms of generating the engineers of the future.

"Some companies will be invested in wanting to make their teams more diverse based on the experience that people from minority ethnic backgrounds and females have and the qualities they can bring to the company."

"That's the key message," Dornor says. "Not just bringing in people to up the numbers and tick boxes, but to actually make a difference and to keep the performance levels of the team high."

Team-mate Rosie Wait agrees. "With ethnic diversity especially I think progress is through scholarships and bursaries because it has to start pretty early. We are in such a poor position that it's probably going to have to start with a few pioneers and then we can build from that.

"With regard to gender diversity, that's probably in a better position but there are still some big questions to be asked. If we really want to get a more diverse pitlane and industry then keep doing what we're doing but realise that we need to do it faster with recruitment."

While there is a way to go before motor sport provides a truly diverse environment in which there are no barriers of entry based on ethnicity, gender or disability, Alex Albon believes the events of the past year point to a brighter future.

"We are on an upward trend," says the Thai driver. "We could definitely accelerate the curve but it is going in the right direction and in 2020 we saw a big push from all angles. Hopefully that will continue and we can make a difference. Formula 1 is a great platform for raising awareness." ◀

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DIVERSITY & INCLUSION

Girls take a starring role at Ferrari

Never before has a female driver joined the celebrated Ferrari Driver Academy. But the dreams of one young racer, *Maya Weug*, have come true thanks to a partnership between the FIA Women in Motorsport Commission and Scuderia Ferrari

05

TEXT
/
HAYLEY GALLAGHER

"It was an emotional and historic moment to see the FIA Girls on Track – Rising Stars programme come alive," says Michèle Mouton, President of the FIA Women in Motorsport Commission, reflecting on the pride felt at the success of one of the most innovative and significant programmes created by the Commission in more than 10 years of existence.

The FIA Girls on Track – Rising Stars programme was launched in early 2020 to detect and nurture the female racing talent of the future, and critically, to provide them with a tangible long-term pathway on which to progress their career. This has come in the shape of the Commission's partnership with Scuderia Ferrari and its world-famous Driver Academy.

After a global call for 12-16 year-old racing talent through the FIA's national sporting authorities, the Commission and its panel of experts whittled the numbers down to 20 drivers who were invited to a shoot-out at the Paul Ricard Circuit in France. From there, 12 progressed to a karting-focused Training Camp and, following that three-day assessment, eight were selected to attend a second Training Camp, this time focused on Formula 4 single-seaters. After weeks of on-going assessment, four drivers then secured coveted places for the final Scouting Camp at the Ferrari Driver Academy (FDA) in Maranello, Italy.

Delayed from December until January 2021, due to travel restrictions surrounding the global

pandemic, another week of intense evaluation, interviews and Formula 4 track time on the Fiorano circuit followed as the aspiring racers vied for the ultimate honour of becoming a member of the FDA with a full season in an FIA Formula 4 Championship.

During the live online announcement that followed the week in Maranello, Mouton declared 16-year-old Maya Weug as the first FIA Girls on Track – Rising Stars driver to join the FDA, the first-ever female to do so.

Congratulating the winner, FIA President Jean Todt said: "The FIA Girls on Track - Rising Stars programme is key to our commitment to supporting gender equality in our sport. I would like to thank the Ferrari Driver Academy and all our partners who have joined us in embracing such an innovative and positive initiative."

"It was such a special moment for everyone involved," says Mouton of the announcement. "To become a member of the Ferrari Driver Academy is tough, the standards are at the highest level, and there was never a guarantee one of our Girls on Track – Rising Stars would make it. I feel incredibly proud of what has been achieved."

TOUGH TESTS

Confirming that the girls underwent the same rigorous evaluation process as any Academy hopeful, Marco Matassa, Head of the FDA says:

"The evaluation process for the girls is the same we use for everyone who goes through the FDA Scouting Camps. Motor sport and equestrian sports are the only disciplines where men and women compete together and therefore we saw no reason to create a simpler or different evaluation to choose the winner of the Girls on Track – Rising Stars programme."

Only the elite realise the dream of becoming a student of the FDA, and even though these youngsters have already developed a driving skill, outright speed on the track was not enough.

"It might be stating the obvious, but we look for talent," explains Matassa. "The four finalists in Maranello were 14, 15 and 16 years old and when you are dealing with such young people, you can't just base a decision on their speed. To identify who deserved to join the Ferrari Driver Academy we decided to use a matrix that took into account an extensive number of parameters. Obviously, an ability to be fast on track is essential, but other elements are also vitally important, such as a straightforward approach, the ability to adapt and learn, as well as the ability to make decisions under pressure or to change one's approach during a race to deal with any unforeseen situations that might arise."

Having made it to the FDA Scouting Camp, all four Rising Stars finalists needed to impress during this once-in-a-lifetime opportunity, and according to Matassa their commitment was

evident from the moment the girls arrived in Italy.

"The four finalists made a really positive impression," he says. "Apart from the normal enthusiasm you find in all racing drivers, we saw that these young women were really keen to get the most out of this experience. We made some tough demands over the five days of the Camp, but not one of them ever complained about the workload. Clearly at this final stage, we were dealing with four girls who had gone past the stage of just being motor sport enthusiasts and were very determined to make motor sport their way of life."

Such was the impression made by the youngsters that at the end of the assessment, as well as announcing the winner, Ferrari chose to award a test at the wheel of a Ferrari 488 Challenge Evo for the other finalists, Julia Ayoub, Antonella Bassani and Doriane Pin.

And Matassa is convinced that the talent on display in the programme allied to the

Girls on Track – Rising Stars participants were put to the test at Paul Ricard. Left: eventual winner Maya Weug.



training provided at the FDA will eventually elevate a female driver to the pinnacle of motor sport, Formula 1. ▶

"We firmly believe that, especially with talented young drivers, you can do a lot with the realistic goal of developing their full potential," he says. "To do this, the Ferrari Driver Academy has developed a programme to help the youngsters progress in a positive atmosphere, taking on board the values that are those of Ferrari and also at the basis of motor sport. That's why we were immediately keen to work with the FIA and its Girls on Track - Rising Stars initiative.

"Similar to what we have done with other FDA drivers, the best example being Charles Leclerc, our shared task is to contribute to help young talented female drivers to express themselves at their best in the top level motor sport."

And in the driving seat as the Academy's first female member is Rising Stars winner, Maya Weug. Almost as soon as the news of her victory was announced, the 16-year-old racer's historic journey through the Ferrari Driver Academy began as she joined seven young men in early February for the start of the 12th year of the Prancing Horse's Academy activity.

Weug, who was born in Spain to a Belgian mother and Dutch father, began karting at seven years old and made her debut in the European Karting Championship in 2016 in the OK Junior category. She'll now undertake a full test and race programme in an FIA Formula 4 Championship.

Maya's progress will also be followed by an Academy expert at the race tracks, who will provide constant support and guidance at all stages of her development, not only as a person, but also as an athlete and racing driver.

ACADEMIC SUCCESS

The first edition of FIA Girls on Track - Rising Stars exceeded expectations and opportunities are now being explored to expand the initiative.

"It is in Ferrari's DNA to always aim to be at the forefront in all areas. This is true for technological research but also when it comes to training young drivers," said Laurent Mekies, Sporting Director of Scuderia Ferrari. "We firmly believe in bringing on the most promising talents, as can be seen from the effort put into the FDA.

In this particular instance we wanted to give a tangible sign of our efforts to make motor sport ever more inclusive by actively encouraging girls to join our Academy. We also trust that, more globally, it will help our sport engage with more women around the world, let it be as drivers, as team members, or as fans".

Mekies is also enthusiastic about the future prospects: "We are very proud of the partnership we have with the FIA Girls on Track - Rising Stars programme and we are keen to see how the project will develop in its second year. The level of the girls was already very high for this first year. Maya is now living in Maranello and taking part in the daily activities of the Academy with our other drivers. We will closely follow and



The four finalists with members of the Ferrari Driver Academy. Left: WIM Commission President Michèle Mouton.

'We believe there are young female racers with the talent to progress to the highest levels of the sport'

support her progresses. We expect to get even more engagement in the second year of operation, as the programme and its opportunities become more known worldwide. We look forward to meeting the next four finalists and we hope they will be as motivated, determined and accomplished as our Maya, Julia, Antonella and Doriane. If they are, then it will be a pleasure to evaluate them and select at least one to join us at the FDA."

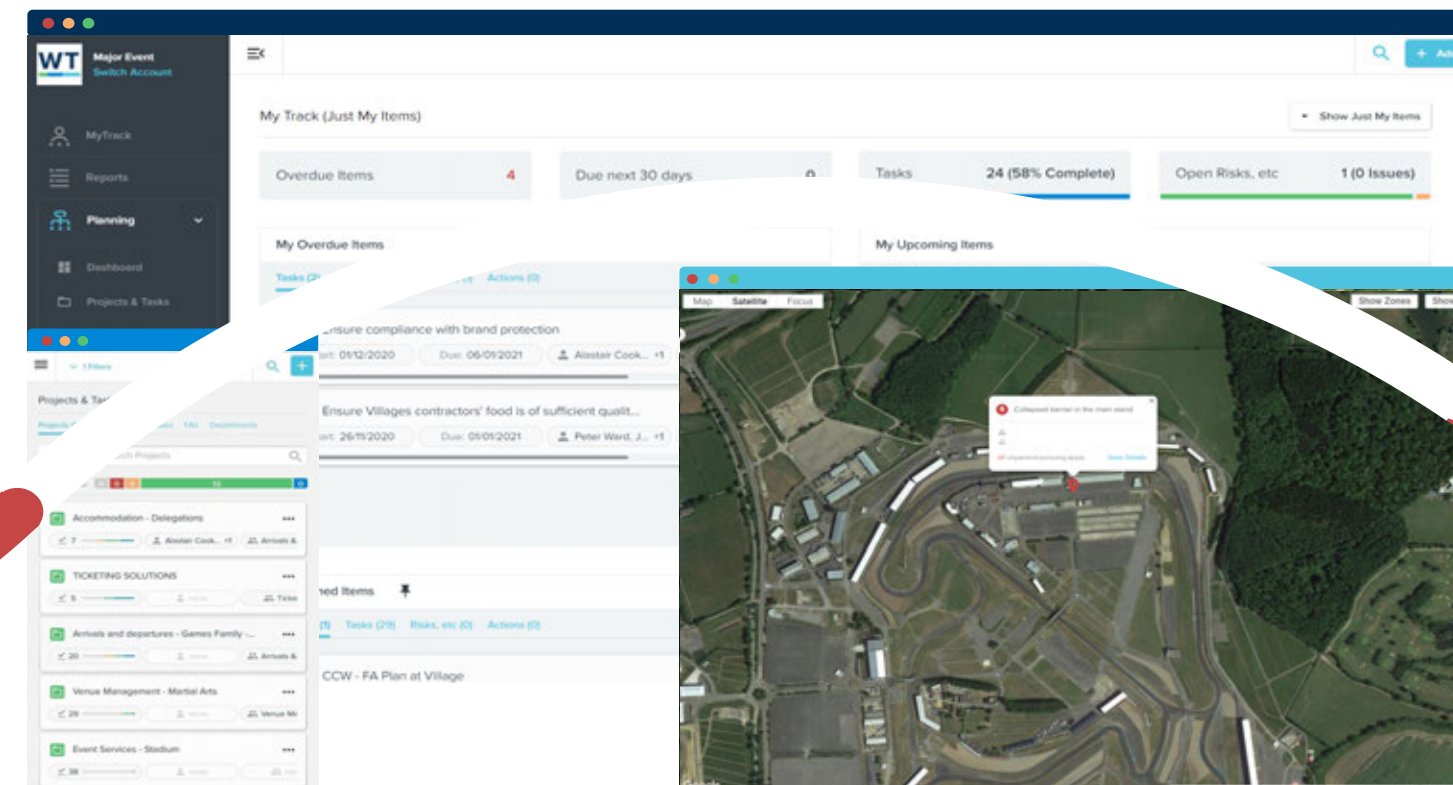
Reflecting on the progress made to support women in the sport through FIA Girls on Track - Rising Stars, Michèle Mouton's belief that the FIA Women in Motorsport Commission is working in the right direction to integrate female racers into the sport from an early age remains resolute.

"As a Commission, we have the belief there are young female racers around the world with the talent to progress to the highest levels of the sport; they just need some support at a critical time in their development," she insists. "Maya, along with the three other finalists, showed us that potential and through our partnerships, she is now up against some of the world's best upcoming drivers in the FDA and on a long-term pathway to a professional career in the sport.

"I couldn't be more proud that FIA Girls on Track - Rising Stars has put her on that road, and that our partners, Ferrari and Pirelli, are committed long-term to our programme and the on-going support of equal opportunities and gender diversity. I sincerely thank them for all their commitment to our young talents." ◀

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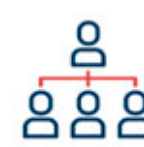
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Balancing Movement

05

Primarily designed by men and based around male-oriented mobility imperatives, global transport systems fail to cater for the needs of female travellers. And as new research by the FIA Foundation reveals, the negative impacts can be life-altering, especially for vulnerable passengers

TEXT / KATE TURNER

Transport systems are the beating hearts that keep communities alive. Employment, education, health and the very participation in society are all dependent on whether we can, or cannot, move freely and safely.

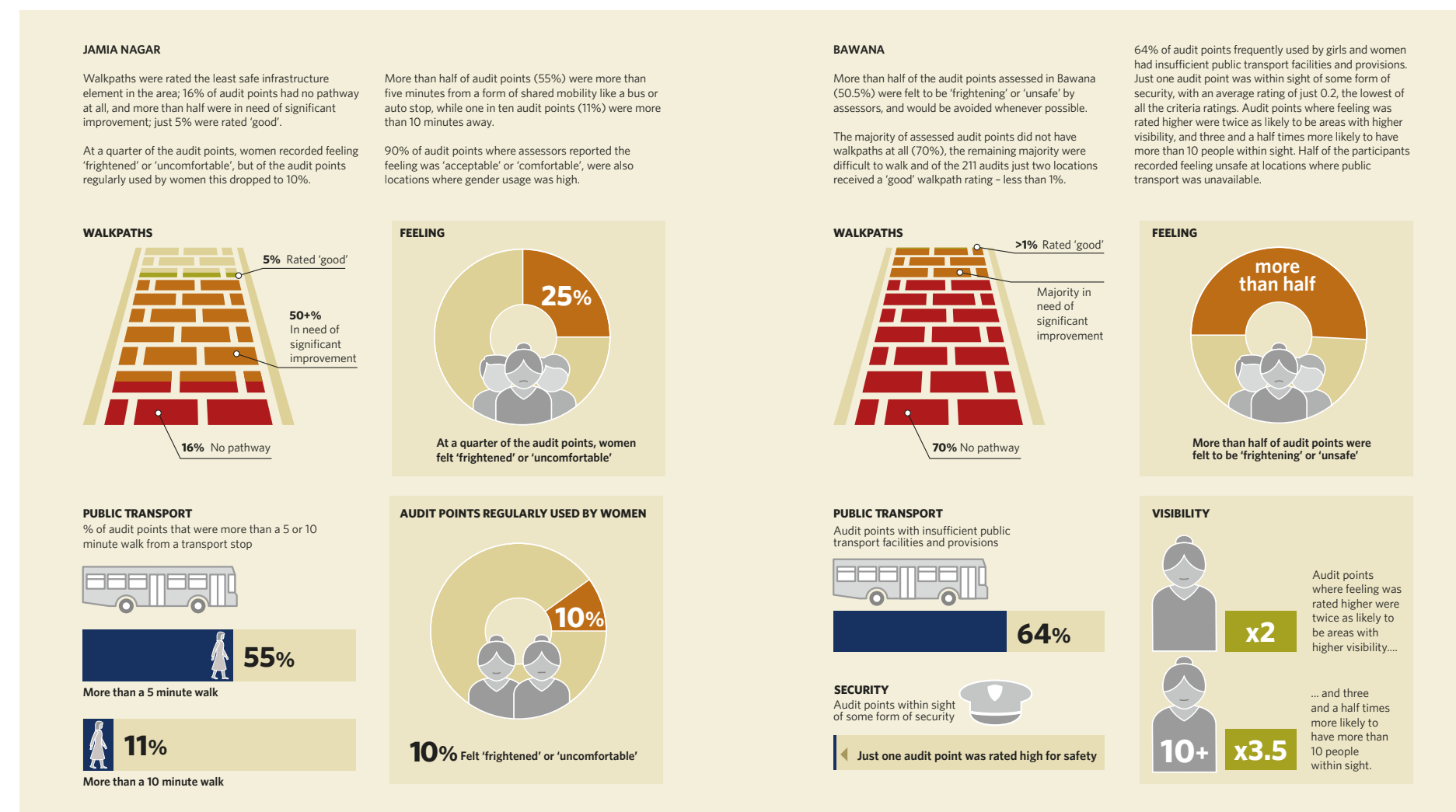
The design of these systems, however, has been based almost entirely on data about how men move, in systems designed by men, and delivered by men on the ground. There is little data about how women move, what they experience and how that shapes their lives. As a result, transport systems, vehicles, even timetables, are all designed with men in mind, failing to take women's needs into account in a systematic way.

Those failures are not only inconvenient but rather life-shaping. Designing women out of transport creates long-ranging impacts for women's lives and the shape of the wider society, as they are often forced out of education, out of the workplace and, in some cases, out of public spaces entirely. Two new studies from the FIA Foundation looked at the collection of gendered data from the perspective of the transport

community and one of the most marginalised groups in transport planning – adolescent girls.

The transport community is becoming more alive to the challenges and how to address them through strong and targeted data. The latest FIA Foundation research, titled 'Counting women so women count: a rapid international review on the state of transport data and women', analyses the perspectives of transport professionals across the globe, conducted to understand the role of gender in current transport data and if it was providing the best evidence on which to base inclusive transport policy development. The survey captured personal opinions about the methods and quality of data collection to give insights to develop solutions to meet the needs of women.

Almost two-thirds of transport professionals felt that gendered data collection was inadequate and needed to be significantly improved, while 88 per cent supported the modernisation of data collection. Better comparisons between regions, countries and cities can highlight successful



policies and how they can be replicated and scaled. Knowledge exchange on both gender-sensitive data collection and policy is missing, but if this was done more systematically, it could help to accelerate gender mainstreaming in the sector and also improve national commitments towards achieving the Sustainable Development Goals on equity, equality and women's empowerment.

HIGHLIGHTING RISKS

Engaging with, and giving voice to, overlooked participants of the transport system, then, is essential. The FIA Foundation partnered with NGO Safetipin for an innovative study to build a picture of how adolescent girls make their journeys in a variety of contexts around the greater Delhi region of India.

Understanding how gender impacts transport is vital, but equally important is understanding when these shifts in the experience of transport take place. For many, these experiences begin at the point of adolescence, when girls are able to, potentially, move more freely alone or in groups around their environment while also increasingly at risk of harassment and the threat of sexual violence. These experiences can prevent young women from using public spaces or making journeys to access education, employment and societal engagement based on their personal concerns or those of their family units.

From door-to-door this study used innovative mobile technology, supported by frank discussions with local girls and women to understand how their experiences and behaviours are shaped by the physical and social framework in which they live. The project specifically focused on adolescent girls' experiences to highlight the risks they in particular face as they move around their communities.

The report highlighted the significance of the built environment's role in influencing the safety and perceptions of safety for women, and how it can play a significant role in ensuring the visibility of women in public spaces and society as a whole. In the three areas where the study took place, infrastructure was identified as a significant barrier to mobility; poor road conditions not only make it difficult and uncomfortable for them while walking, but also had a significant impact on feelings of safety – 84 per cent of the sites assessed had non-existent or extremely poor walkpaths. "The streets in this area are narrow. There is no space for us to walk. This is a busy area and I do not feel safe walking here," said one

Left: The FIA Foundation found that teenage girls in India travel in groups for greater safety.

of the girls in the Jamia Nagar area when talking about her daily walk to school.

While the experiences of girls vary, there were many similarities in the ways they interact and move in their environments, for example adapting plans to avoid particularly busy or quiet periods of the day. They reported feeling that the onus was on them to prevent harassment, by travelling in groups, preferably at times when there is less traffic but still light, and to particularly avoid using buses – which carry a significant risk of sexual harassment – when forced to travel alone. "The street lights near the bus stops do not work. I feel scared to wait at the bus stop especially if I am alone," said another girl. These fears emerged as one of the significant barriers to girls' mobility both in public spaces as well as public transport – in one location, street harassment was cited as a major factor in abandoning education altogether and retiring to private family life.

"These two studies show the interlinkages between transport, gender, and the life outcomes of women and girls around the world," says Sheila Watson, Deputy Director of the FIA Foundation. "It is heartening that the transport sector is increasingly attuned to its own blindspots, and that practitioners are ready to make changes. That enthusiasm, however, needs to be converted to meaningful action to be reflected in lived experience, especially of those who have been traditionally excluded from community discourses yet are deeply impacted by them." ◀

'It is heartening that the transport sector is ready to make changes'

JOHN ELKANN:

Consolidating success

At the end of last year, one of the largest mergers in recent history resulted in the quiet creation of the world's fourth largest automotive brand, Stellantis. And behind the new giant is one of the industry's quietest yet most effective major players – *John Elkann*

05

The days immediately prior to Christmas are a traditionally quiet time for news. Parliaments break for the festivities, quarterly earnings reporting for most companies is a month or more away and for a couple of weeks the world goes into brief, sleepy hibernation.

For John Elkann last year's holiday period was anything but peaceful. For the previous year the 44-year-old scion of the global industrialist Agnelli clan had been trying to stitch together one of the largest mergers in automotive history, uniting his Fiat Chrysler Automobiles group (FCA) with Groupe PSA. The marriage would create the world's fourth largest automotive brand by volume and in an era of enormous uncertainty as the industry struggles with the global pandemic and the transition to alternative energies. It would also help consolidate activity and provide a safer, less threatened future for both groups.

On December 21st Elkann's festive gift arrived in the shape of an approval from the EU that the merger could happen, even if the shape rather oddly seemed to be in the form of a small light goods vehicle.

"We can approve the merger of Fiat Chrysler and Peugeot SA because their commitments will facilitate entry and expansion in the market for small commercial vans," European Commission Vice President Margrethe Vestager said via a press release.

Approval for the reported \$52 billion merger facilitated the swift creation of the Stellantis holding company, which immediately became the second biggest automotive group in Europe and ultimately will lead to almost every second passenger car sold in Europe originating from either Stellantis or the market leader, the Volkswagen Group. Stellantis now sits ahead of Ford and GM and just behind Volkswagen Group, Toyota and the Renault-Nissan alliance in the global pecking order.

A month after the approval the newly-created automotive giant issued its mission statement,



John Elkann (right) is CEO of Ferrari as well as the man behind the creation of the mighty Stellantis group.

targeting "the agility, creativity and efficiency to capture the opportunities of the new era of mobility, offering innovative solutions that will help change the way society moves".

For Elkann the positioning of the company as a new-mobility innovator was obvious.

"It is no coincidence that Stellantis is born precisely when our world requires a new kind of automotive company that will champion clean and intelligent solutions to provide freedom of movement for all," he says. "Our global scale and reach provide us with the resources to invest in state-of-the-art technologies, distinctive excellence and unmatched choice for our customers."

Charged with delivering that shift to clean and intelligent solutions is an 11-member Board of Directors chaired by Elkann and with high-flying former PSA boss Carlos Tavares at the helm of the group as Chief Executive Officer. Former FCA CEO Mike Manley will head up Stellantis' US operations.

By building the merger with PSA, Elkann's already well-documented acumen has moved to a higher level and he has emerged as a forward-thinking new global automotive player. More personally, the creation of Stellantis is the

culmination of Elkann's extraordinary journey through his family business.

The grandson of Gianni Agnelli, the 'Avvocato' as the patriarch of the family was known, the young John Elkann graduated in engineering management from Turin Polytechnic in 2000. Whatever the graduate's personal vision of his future might have been, it was diverted wholly when Giovannino Agnelli, another of Gianni's grandsons who was due to take over the reins of the car company, died at the age of 33. The 'Avvocato' anointed Elkann as his successor and he joined the Fiat board in 1997, aged just 21.

What followed was a long period of bedding in, with the new board member despatched to a variety of businesses to learn how to be a director. "One of my first jobs was at the Magneti Marelli factory in Birmingham in 1996 and it was there that I began to understand the part played by technology in everyday life and, in the factory, I could see its practical application," he recalls.

MUCH-MISSED MENTOR

By the early 2000s his apprenticeship was complete and, in 2004, Elkann was appointed Vice President of the Fiat group, which at the time was struggling badly. He began working on restructuring the company with the new managing director, Sergio Marchionne, who would have a profound effect on Elkann's development. Together, they completely transformed Fiat, saving it from bankruptcy. "I remember Sergio Marchionne with great affection," says Elkann of his charismatic CEO. "When I started at Fiat we were working on the launch of the Fiat 500 and I was amazed at how pragmatic he was in how he went about his work."

The turning point came in 2009 when Marchionne and Elkann convinced the US government that the only thing that would save ailing automaker Chrysler from bankruptcy was a merger with Fiat. ▶

TEXT

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EDOARDO NASTRI





Elkann, with Italian President Sergio Mattarella, worked diligently to revive Fiat's fortunes.



Stellantis CEO Carlos Tavares with Elkann at the launch of the world's fourth largest automotive group.

That same year, Fiat Auto acquired a minority stake in the US car company. Chrysler was later shepherded through bankruptcy and Fiat SpA acquired all of its stock. Fiat Chrysler Automobiles was born and was listed on the New York Stock Exchange in 2014. In just three years FCA sold two million vehicles in the United States, more than double its sales in the dark days of 2009.

October 2015 saw further success when Ferrari split from FCA and was listed on the Stock Market in Milan and New York, just as its parent company had been the previous year. The Agnelli family gained the largest stake and Marchionne became chairman.

The hugely successful partnership between Elkann and Marchionne ended abruptly though in July 2018 when Marchionne died suddenly.

Elkann was left to steer the ship alone. He appointed Mike Manley as Marchionne's replacement at FCA and Louis Camilleri at Ferrari. The next step was to try to shore up the business for the future.

Pursuing Marchionne's philosophy that the solution to the automotive industry's "value-destroying" addiction to capital would be consolidation, Elkann targeted a merger with Renault as part of a strategy to realise cross-platforming vehicles and centralise purchasing to save the costs that would be eaten up by

the transition to new technologies.

It was a move that had been in the planning for some time, with Elkann telling Bloomberg in 2014 that "we are not sellers, but our family is ready to dilute its stake in FCA if the aim is to make FCA stronger".

The deal, however, never materialised and in June 2019, FCA withdrew its proposal after Renault delayed a second time, reportedly at the behest of the French government, which has a 15 per cent stake in the car firm and which was believed to be against the merger.

Elkann, though, had other irons in the fire and was having parallel discussions with Groupe PSA. The potential union was announced in October and little over a year later Elkann's wish was granted, first by shareholders and then by the EU.

In the meantime a smaller crisis brewed. In late 2020 Camilleri stepped down from his role as CEO of Ferrari for personal reasons. The departure was a shock and though Ferrari is not part of Stellantis, the Agnelli family still retained control and Elkann took over as interim CEO.

Although it's not an easy time to be in charge of a high-end, luxury supercar brand, earlier this year Elkann delivered solid Q4 results despite the adverse conditions created by the COVID-19 pandemic.

"We exceeded full year guidance on all metrics

'With the new Le Mans Hypercar programme, Ferrari once again asserts its sporting commitment'

in 2020," he told an investors meeting. "These results have been achieved factoring the impacts of COVID-19 on all of our activities. This environment gave us the opportunity to learn more about our strengths and weaknesses, which allowed us to further fortify our company for the future. 2020 has also been characterised by the successful digital unveiling of the Ferrari Portofino M, SF90 Spider and 488 GT Modificata. Today, we have the most beautiful, most innovative and widest product range in our history."

The sporting side of Ferrari has also expanded. Just last month the Gestione Sportiva division of the company announced that in 2023 it will return to the top level of sportscar competition, the new Hypercar class of the FIA World Endurance Championship, with its first such factory entry in 50 years.

"With the new Le Mans Hypercar programme, Ferrari once again asserts its sporting commitment and determination to be a protagonist in the major global motor sport events," says Elkann of the plans.

The Ferrari CEO has also been involved in Ferrari's Formula 1 team as it recovers from a poor 2020 in which it finished sixth in the Constructors' Championship. "The most important thing this season will be to demonstrate our will to win, through our commitment and dedication," he says. "We will have to pay attention to every little detail: it all adds up."

On the grander scale of Stellantis, which has industrial operations in more than 30 countries and exists in more than 130 markets, the details will be equally important. The new company has targeted \$6 billion in annual operating cost-cutting and Elkann and the wily Carlos Tavares – in some ways perhaps a new Marchionne to Elkann – must deliver the savings, while at the same time guiding the vast new entity towards a new mobility.

For Elkann, success in that venture will come from resources already held by the company.

"It is the geographic and cultural diversity of Stellantis' people that from day one is our greatest competitive advantage," he says. "It is they, with their energy, their know-how and their constant commitment who make Stellantis what it is today. And it is they who day-by-day will build an even greater company for this new era of mobility." ◀



THE FUTURE OF MOBILITY:

WHAT WILL MOVE US TOMORROW?

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DR AMINA MOHAMED: Champion of the Safari

TEXT
/
JUSTIN HYNES

Kenya's Cabinet Secretary for Sports, Culture and Heritage *Dr Amina Mohamed* has been instrumental in bringing one of motor sport's most iconic events, the Safari Rally Kenya, back to the FIA World Rally Championship – and now she's helping to bring greater diversity to the FIA at the highest levels

Can you tell us about your involvement in motor sport and how you came to be so heavily involved in the bid to bring the Safari Rally back to Kenya?

Since His Excellency President Uhuru Kenyatta appointed me as Cabinet Secretary for Sports, Culture and Heritage in March 2019, I have laid great emphasis on the efforts to get the Safari Rally back to the World Rally Championship. Besides being an iconic sporting event, the Safari Rally is a core component of Kenya's heritage. With the first Safari Rally having taken place in our country in 1953, rallying has deep roots in Kenya's national psyche.

It is for this very reason that I was heavily involved in the organisation after we signed an agreement with the WRC Promoter to have the 2019 Safari Rally run as a WRC Candidate Event. I would like to thank President Kenyatta, who personally flagged off the cars at the start of the WRC Candidate Event, which attracted well over 5,000 fans at the Kasarani Super Special Stage. We were happy with the huge media presence and also the decision by WRC manufacturers to send representatives to assess our competition, accommodation and other technical facilities.

In August 2019, I led a delegation (that included then WRC Safari Rally Project CEO Phineas Kimathi and FIA Vice-President Surinder Thatthi) to Rally Finland where the 2019 Safari Rally was favourably reviewed. And in my capacity as Cabinet Secretary, I am also chairperson of the WRC Safari Rally Project Steering Committee.

How has your work on this project involved the FIA, especially in terms of event preparation?

As chairperson of the WRC Safari Rally Project Steering Committee, and a member of both the FIA's High-Level Panel on Road Safety and World Motor Sports Council, I have worked closely with the FIA to ensure the Safari Rally's journey back to the global circuit is well curated. I would like to thank FIA President Jean Todt with whom I've worked closely to launch a Legacy Project for the Safari Rally, anchored on the double themes of environmental conservation and road safety education. The FIA has over the past year sent high-level experts to Kenya to monitor every step of the preparations. It is for this reason that I am indeed indebted to President Todt for the invaluable support accorded to Kenya by himself and the entire FIA/WRC family as we journey towards the eagerly-awaited return of the Safari Rally to the WRC family. Most recently, in January this year, the WRC Promoter team of Iain Campbell and Joao Passos visited Kenya to check the route and other organisational aspects of the Safari Rally, offering invaluable assistance in key aspects of preparations and affirming that Kenya is ready for the world.

The rally was scheduled to make its WRC return last June but was cancelled due to the COVID-19 pandemic. How confident are you that this year's event will go ahead?

We highly regret the postponement of the rally last year, but Kenya is now better prepared to host the competition with intense medical and safety measures in place. We also have put in place the necessary personnel, infrastructure and operational manuals to guarantee the most successful event in our rallying history. The profile of this event will convene in excess of 825 million visitors in the form of spectators, online games participants on Safari PlayStation and global television viewership. We also expect to attract more than 1.5 billion online impressions making this event truly remarkable. His Excellency President Kenyatta made a strong commitment back in 2013 that the Kenyan Government would pursue and return the Safari Rally back to the World Rally Championship, and is pulling out all the stops to make sure that this valued Kenyan event is returned to its rightful place as one of the world's toughest and most scenic rallies. President Kenyatta has personally guided the realisation of this commitment. For the organising team and the country at large, there is no turning back.

In January you attended a presentation on safety and security measures being implemented for the Safari Rally. Can you explain some of the details and were you impressed by what you heard from the organisers?

Indeed, in January we were taken through a successful simulation display on safety by the

Safari Rally's medical and security departments at the Kenya Wildlife Training Institute in Naivasha, which will be home to the event's Service Park.

The medical team, headed by Dr Raj Jutley, demonstrated complex extrication drills to rescue injured individuals from a competition car and proper emergency medical attention, including the transfer of the patient via fully kitted state-of-the-art air ambulances to the hospital. The safety team also successfully demonstrated their capacity to deploy over 1,000 marshals during the rally to ensure the safety of spectators, besides demonstrating rescue and evacuation procedures using the latest technology cutting machines.

There was also a demonstration by the security forces that will operate in a multi-agency deployment model including the Paramilitary General Service Unit, Regular and Administration Police and Kenya Wildlife Service Rangers. I was most certainly impressed by the preparations the rally organisers have put in place despite challenges caused by the COVID-19 pandemic.

The Kenyan Government attaches a lot of significance to safety. As such, we will deploy the latest technology to successfully host the WRC Safari Rally, which will play a major role in promoting road safety.

Last November, His Excellency President Uhuru Kenyatta and FIA President Jean Todt agreed to establish an Action for Road Safety Programme in parallel with the event. How can the rally reinforce the message and how important is it to spread the message of road safety in Kenya?

President Todt in his capacity as the United Nations Secretary General's Special Envoy for Road Safety has highlighted the fact that the FIA's operational priority is Action for Road Safety. Kenya's global leadership in pursuing programmes centered on road safety led by His Excellency President Kenyatta have been incremental and phenomenal. To ensure that the Safari Rally reinforces these efforts, I was appointed to join the FIA High Level Panel for Road Safety.

From this vantage point, we will work closely with the Ministry of Transport, Infrastructure Housing, Urban Development and Public Works, the National Transport and Safety Authority (NTSA) in conjunction with the Kenya Automobile Association (AA), an affiliate of the FIA charged with the responsibility of handling mobility, to train the next generation of motorists on road safety and other initiatives. President Kenyatta has already announced that a road safety campaign will be rolled out extensively ahead of the Safari Rally.

As a government, we are also exploring a partnership between the FIA and the Kenyan private sector to manufacture certified motor sport gear, such as FIA safety assured helmets, for the growing motor sports fraternity across the African continent.

Can you outline how important the rally is to Kenya in terms of economic impact, marketing abroad and the encouragement of tourism?

The Safari Rally's return to the World Rally Championship is extremely important to Kenya, especially at this time when the country has re-opened following a temporary COVID-19 lockdown. The Ministry of Health has certified that Kenya is now safe for visitors having secured all the ports of entry with robust measures to contain the spread of COVID-19 from and into the country.

The FIA/WRC Safari Rally is expected to inject a substantial amount of money into the Kenyan economy, estimated to be between Kshs 9 billion (US\$ 82 million) to Kshs 10bn (US\$ 91m), through tourism, ground expenditure and international television exposure in 150 countries.

The WRC Promoter will produce live coverage of the Safari Rally and pre-event publicity, all valued at Kshs 4bn of free publicity and marketing for Kenya, with tourism being the biggest beneficiary as more than 70 million people will be reached.

Kenya will have an opportunity to be seen by over 10 million subscribers to the WRC+ TV channel, which will cumulatively reach over 800 million TV viewers worldwide. Such exposure will build investment confidence in Kenya and trigger tourist inflows.

How does the rally fit in with your wider plans as Minister for Sport, Culture and Heritage? Could it provide a foundation to attract other events, create more opportunity and encourage sport domestically?

The WRC Safari Rally is an integral part of the Ministry of Sports, Culture and Heritage, given its extremely important place as part of Kenya's rich national heritage.

Started in 1953 to commemorate the coronation of Queen Elizabeth, the Safari Rally is to Kenya more than just motor sport. It is part of a rich history which my ministry will jealously protect and extend, led by the State Department for Culture and Heritage whose mission is 'to promote, preserve, revitalise, and develop Kenya's diverse cultural heritage for appreciation, national cohesion and for sustainable development.'

Indeed, the Safari Rally has already moved towards expanding the scope of motor sport with the newly-launched Service Park at the Kenya Wildlife Training Institute, for instance, earmarked as a new venue for such growing genres of motor sport competition as drifting and karting, helping expand the offerings of Kenyan motor sports in general.

'The Safari Rally's return to the WRC is extremely important to Kenya'



The Safari Rally is viewed as part of Kenya's rich heritage – this is Colin McRae on the 2002 event.

Experience gained by officials trained by the FIA to handle the WRC Safari Rally will extend towards making local motor sport more vibrant and up to date.

The journey towards the return of the Safari Rally to Kenya brought many invaluable lessons; first, that we must prepare better than we have in the past by working in concert with experts and allowing ample time to test preparations before the actual event. Second, that we must synergise our operations as a government, to enhance efficiency and guarantee effective delivery. Third, that we must remain open to learning and improving our structures to continue the tradition of hosting the most challenging WRC course in the world. FIA officials have certified that these objectives have been met and surpassed.

Last December you were elected to the FIA World Motor Sport Council. At the same time the FIA committed to greater diversity on the World Motor Sport Council and in its Senate. How important is it to have female voices at such decision-making levels within a sports federation?

I have over the years been vocal in addressing issues of gender inequalities and lowering barriers to women's participation in productive activities, particularly in decision-making globally, so as to enhance their contribution to transformation and socio-economic processes. Important strides have been made in this direction globally, and while the 30 per cent affirmative action quota agreed upon in Beijing in 1995 remains a target for most countries, we encourage both national governments and sports federations to focus on attaining gender parity.

The creation of the FIA Women In Motorsport Commission in 2009 was quite significant in mainstreaming women into the global motor sport picture and encouraging greater participation of women in motor sport. Women are key drivers of socio-economic programmes, and having female voices at high decision-making positions will help in developing social and educational programmes that promote diversity in sport as envisaged in the key tenets of the FIA Women In Motorsport Commission. ◀



Dr Amina Mohamed has worked hard with the FIA and WRC to ensure the success of this year's Safari Rally.

Full Nelson

06

Mercurial, single-minded, sometimes controversial but always exceptionally fast and ferociously competitive, *Nelson Piquet's* three Formula 1 title wins put him in the pantheon of grand prix greats

Blue-and-white, neat, tidy and ultra-quick for Brabham. Then, blue, white and yellow; fast and a little bit loose but still supremely fast for Williams. And finally, the closing chapters in a rainbow-coloured Benetton. Possibly edging past his prime but still a winner.

And always on the edge, as evidenced by his flying fists at Hockenheim, the huge crash at Imola that almost certainly compromised the latter part of his career and by that incredible pass on Ayrton Senna in Hungary.

It's a heady recipe, and frequently flavoured to divide opinion, so could Nelson Piquet lay claim to being one of F1's true greats? A three-time world champion, a Brazilian motor sport legend... but with Piquet there are always intriguing nuances. He was good enough in his early-'80s pomp to set Frank Williams' heart a-flutter, so much so that the team boss lured Piquet to Grove with a lucrative contract that installed the Brazilian as lead driver at what would become Formula 1's dominant team.

But Piquet is also a driver whose place in the pantheon has been overshadowed by fellow triple champions Jack Brabham, Jackie Stewart, Niki Lauda and Ayrton Senna. Perhaps Piquet's struggles to quell his supposed number two at Williams, Nigel Mansell, during their turbulent seasons together in 1986 and '87 dulled the lustre of his reputation. Maybe, too, the debilitating legacy of a wild crash at the 1987 San Marino Grand Prix, from which his vision never fully recovered, raised questions as to his ultimate

speed. In truth, those doubts should never have surfaced, as those who worked with him attest.

"The best driver I worked with," says Frank Dernie, who engineered Piquet through his Williams years.

"You'd definitely call him a racer," recalls Herbie Blash, who worked on Piquet's cars from his early years in Brazil through to title triumphs with Brabham: "Very brave, very talented and technically excellent."

"The aura around Nelson when he came to F1 was the same as the aura around early Max Verstappen – he was absolutely the bright young star," adds Peter Windsor, who worked with Piquet at Williams.

A driver quick enough, indeed, as a near-rookie to nudge Lauda, his double world champion teammate, into retirement before the 1979 season had ended. Lauda later attributed his hasty exit to focusing energies on building an airline business. Doubtless the presence of this searing Latino on the other side of the Brabham garage made him re-assess the risk/reward ratio of pushing to the limit to remain competitive. "We knew how good he was," says Blash, "because we'd known Nelson since 1973 when he worked as a teenage gopher for us, cleaning wheels when we raced in Brazil. Then when he came to Europe to race in Formula 3, I befriended him."

That was 1977, Piquet's first season racing outside Brazil, and a year later he dominated one of the two British Formula 3 championships, winning eight times from 17 starts. His path to

F1 was set, and after relative false starts with Ensign and McLaren in 1978, by '79 his full-time place was secured in one of the sport's sassiest teams: Bernie Ecclestone's Brabham. This slick, sharp and lean operation was an archetype of the British 'garagiste' squad, alongside Tyrrell, Lotus and Williams, living on the wits of design ace Gordon Murray, a band-of-brothers work ethic and Ecclestone's commercial nous.

REPUTATIONS MADE

Even in a field of giddy innovators, Brabham had a reputation for regarding the technical rule book as advisory more than regulatory – "we were creative," Blash says with a wry smile – and in Murray, Piquet found a kindred spirit. Blash recalls how Piquet would loosen his belts racing in F3 to wiggle lower in the cockpit, out of the airflow, and gain speed. At Brabham, star driver and engineer would align in creative pursuit of performance.

"Nelson and Gordon were like Colin Chapman and Jim Clark a generation earlier at Lotus," says Blash. "Nelson was a thinker and he loved testing, to try anything that would help him win. He even used to come to the wind-tunnel in Southampton, just because he liked to watch and understand."

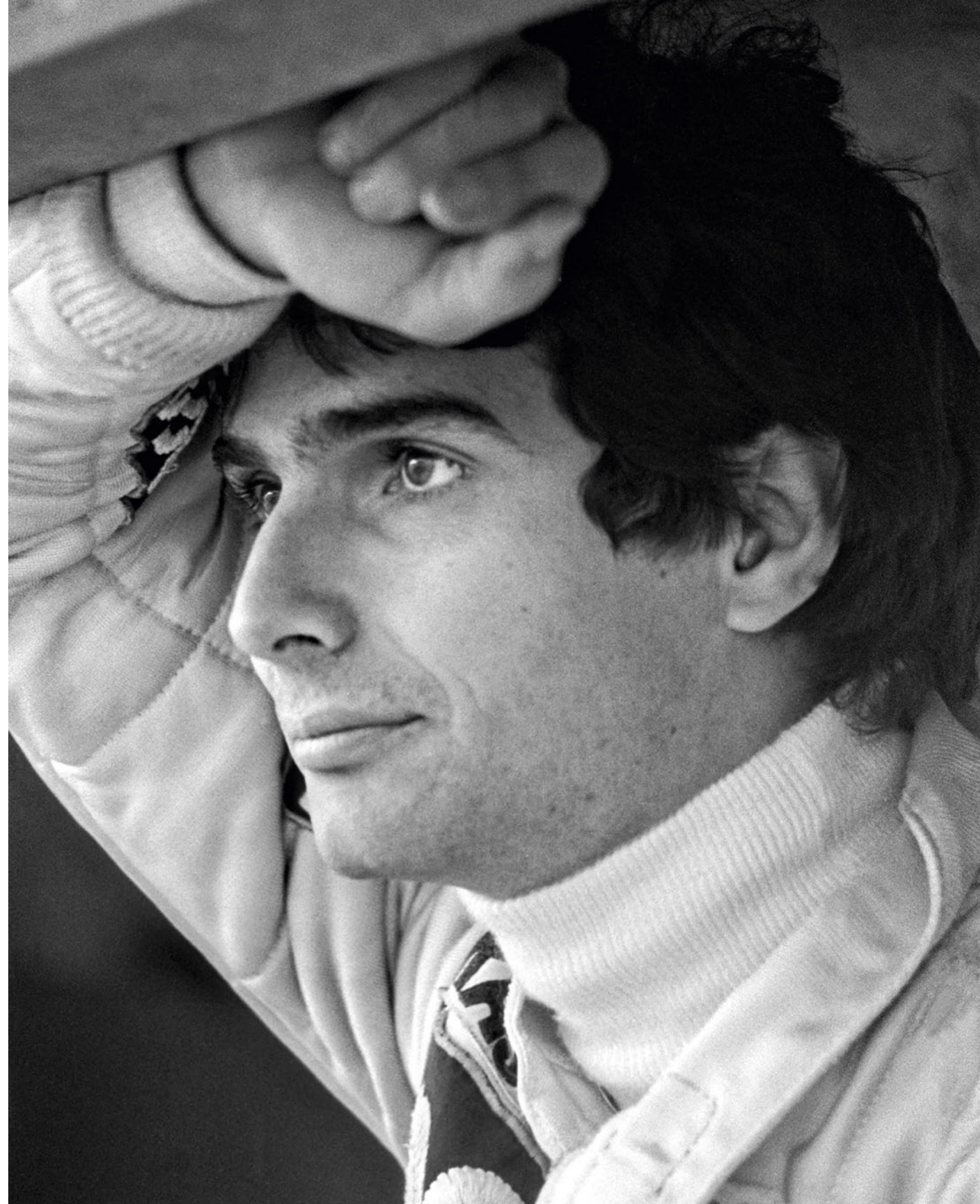
Hand-in-glove, Murray and Piquet developed the car that would cement their reputations: the ground-effect BT49. Built around the compact and ubiquitous Cosworth DFV V8 engine, in place of its too-heavy Alfa V12 predecessor, the BT49 was instantly quick from its debut at the end of '79. ▶

He had his critics, but Nelson Piquet was also considered by some to be first among his peers.

TEXT

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TONY THOMAS



It provided the platform for Piquet's 1980 title head-to-head with Williams' Alan Jones (that year's champion), before another shoot-out with Jones' mercurial team-mate Carlos Reutemann a year later.

That Piquet prevailed by a single point to take the '81 title is ammunition for detractors who contest Piquet's claim to greatness. They overlook the fraught nature of early-'80s F1 competition: seven drivers won races that season and only Renault's Alain Prost matched Piquet's tally.

For '82 there was another roll of the technical dice: turbo power. The early '80s were a period of fevered experimentation in F1, nowhere more so than in engine development. And though Piquet's first title had just been won in a chassis shoved by the 3.0-litre Cosworth V8, huge gains were being made by Renault and Ferrari with 1.5-litre turbocharged V6 motors, capable of producing around 200bhp more than the best 'Cossies'.

TURBO-POWERED TITLE

The future was clear and Brabham found BMW as a willing partner to develop a 1.5-litre four-cylinder turbo motor. In time it would become reputedly F1's most powerful engine, with outputs topping 1500bhp. But 1982 was very much its development year, as Piquet managed only a single win, in Canada, from four points finishes. A second, seemingly nailed-on victory was scuppered on lap 18 of the German GP when Piquet and Eliseo Salazar, about to be lapped, collided under braking for Hockenheim's Ostkurve chicane. Damage was light, but forced immediate retirement for both men. Piquet, raging, leapt from his BT50 and strode towards Salazar and hit him three times around the head, following up with a wayward karate kick. The eruption shed light on Piquet's competitive intensity, often belied by superficial *sprezzatura*. Whether or not the motor would have held to the flag remains unknown...

"We came so close to finishing with BMW that year," says Blash, recalling the tribulations of hothouse development in a competitive, public arena. "But Canada was the turning point. That just showed that Nelson was determined to make it work – and of course it did."

Blash is referring to Piquet's '83 season, which brought him a second title and the first for a turbo-powered driver.

It was yet another close-run contest, from which Piquet emerged as the two-point victor over Renault duellist Prost. Once again it was a campaign built on defiance of convention. That year's deft BT52 was packaged with a quick-change rear end, allowing Brabham's mechanics the luxury of swiftly swapping engine, gearbox and rear suspension, virtually as a single component, whenever necessitated by mechanical failure or chassis set-up tweaks. The easing of mechanics' toil in a small team taking on the factory-backed heft of F1's turbo pioneers, Renault, was the kind of marginal gain that helped Piquet and Brabham conquer notionally



Piquet's first F1 podium at the start of 1980 aboard the brilliant Brabham BT49. Right: Alfa power didn't get him far through his first full season in '79.



Piquet and Brabham design ace Gordon Murray were seen as kindred spirits. Below: Title success came in 1981, by a single point from Reutemann.

'Nelson and Gordon were like Chapman and Clark a generation earlier at Lotus'



stronger opposition. Another was the pioneering use of scheduled mid-race pit-stops for refuelling. The ever-astute Murray had figured that by crafting the BT52 around a minimal fuel tank – too small for a race-distance fill – a lighter, nimbler, more efficient car could be built, designed to complete two sprints per grand prix rather than a lights-to-flag haul. What Murray envisioned, Piquet executed to title-winning perfection.

As a two-time champion in an era of unprecedented engineering advance, Piquet briefly stood supreme as F1's Most Wanted. Erstwhile rivals Jones and Reutemann had retired; Ferrari's Gilles Villeneuve had been killed and team-mate Didier Pironi injured out of the sport; Prost had yet to break his championship duck; Lauda was feeling his way back into racing after un-retiring; Mansell, at Lotus, was budding not blooming, while Ayrton Senna was graduating from F3. Piquet was The Man.

Yet his 1984 season was hamstrung by the dominance of McLaren, Prost and Lauda (champion by half a point) – though Piquet's nine pole positions and two wins showed speed and hunger present and correct. And 1985's return was more meagre still – just a single win, as Brabham's Pirelli tyres proved largely uncompetitive, except at Paul Ricard where their durability in a heatwave delivered a French GP victory.

These competitive travails had done nothing to dim the ardour of one notable long-time Piquet suitor, however: Frank Williams. His team, Williams Grand Prix, had been arch-rivals to Brabham since their first win in 1979. And just like Brabham, they'd had to make a transition to turbo power, choosing Honda as partner. A relationship which started shakily in 1984 had come on ever stronger through '85 and it was clear Williams would be a major force in '86. ▶





A second season with Williams in '87 brought title number three, but also intense rivalry with team-mate Mansell, which resulted in a lucrative move to Lotus (below).



Wooded by the prospect of driving F1's quickest car, with unequivocal number-one status and a multi-million dollar salary, Piquet left his 'family' team to begin a relationship that seemed fated only for success.

"He came to Williams as a double world champion who had never had an issue with anything, really, in his life," recalls Peter Windsor, then Williams' commercial director. "His contract stipulated number-one status, a spare car that was always set up for him, the choice of best Honda engine if there was ever a discrepancy between units and first call on any performance-enhancing parts. But he never insisted on the team being obliged to pull his team-mate over and let him past, if his team-mate was ahead. He didn't insist, because he had never considered it happening."

Piquet had reckoned, in fact, without the ferocity of Mansell - his supposed number two - who had joined Williams for '85 and won his first two grands prix late that season.

"Frank never imagined this happening, either," says Windsor, "because he was starry-eyed about Nelson. He loved his urbaneness, his general approach to life, his girlfriend... how he lived on a boat in Monaco... Frank just loved it all, because he was the perfect counter-point to Mansell's cheese-and-pickle sandwiches. He was on top of the world to sign this amazingly cool, lovely guy."

Stage set for one of the most titanic in-team squabbles ever seen. The rivalry - feud - that raged between Mansell and Piquet is among F1's most storied: in '86 each had peaks, such as Piquet's dazzling round-the-outside pass of Senna at the Hungaroring's Turn 1; or Mansell's home win at Brands Hatch that brought down the house. But so consuming was their squabble that by season's end Prost, in a lesser McLaren, was still in title contention and slipped through to win both the Australian GP finale and the '86 crown. The Piquet-Mansell re-match in '87 was held at even higher speed, thanks to their sledgehammer FW14B cars, though this time Piquet prevailed

after Mansell's season-ending crash during practice for the Japanese GP at Suzuka.

The manner of Piquet's third title win - Mansell sidelined from a final-race showdown by a crash in practice, Piquet scoring three wins to Mansell's six - was fuel for critics, content to ignore the after-effects of Piquet's own huge accident earlier that season.

His crash in practice for the San Marino GP, round two, was massive: by various estimates Piquet was travelling at between 170-190mph when he hit the concrete retaining wall on the outside of the Tamburello corner. He was fortunate that his Williams FW14B took the hit rear-first, dissipating most of the impact energy. Senna's front-on hit at the same corner, seven years later, was fatal.

Piquet had to sit out the remainder of the weekend owing to concussion, but was back at the wheel for round three in Belgium, where he started from P2 behind Mansell, though with a time deficit of 1.39 seconds...

"Prior to that accident, I never saw Nigel as being as quick as Nelson, not once," recalls Frank Dernie. "Nigel took more risks and was more aggressive, but he wasn't quicker. I saw Nigel do things that Nelson wouldn't have done - like the famous overtake at Silverstone in '87, after which Nelson said 'I had a choice between being dead or being second' - but Nelson didn't want to take those risks by that stage of his career."

Post-Imola, indeed, he wasn't quite the same. The shunt had left Piquet with impaired vision that he kept secret even from close team aides:

"He didn't tell me this until later," says Dernie,



Piquet saw out his grand prix days with Benetton, scoring a trio of wins for the team between 1990-91.

"but he couldn't read his instrument cluster after Imola, because his short-distance vision had been affected." Piquet's eyesight trouble also impaired his ability to judge braking distance. Even more remarkable, then, that he retained sufficiently deep reserves of talent and competitiveness to secure his third title.

But two years of head-banging with Mansell had drained Piquet, so an offer to join Lotus as outright number one for 1988 was both welcome and lucrative. The switch marked the end of Piquet's days as a true competitive force in F1, as he began a gentle glide out of grand prix racing, happily punctuated by three wins for Benetton over 1990-91 - his last two seasons. Third in the '90 drivers' title showed that even in the autumn of a long career, he was anything but a spent force.

As he headed for a racing coda in the USA, Piquet could reflect on a Formula 1 legacy of gilded speed, savage wit, intelligence and a commitment to finding any competitive edge. His haul of three titles is as fair a measure of his talent as is his longevity at the pinnacle of F1 during its most cut-throat era.

"When we signed him at Williams," Dernie reflects, "he was reckoned to be the best driver in the field. And I think he was." ◀

'Frank was on top of the world to sign this amazingly cool, lovely guy'

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06

Beautiful revolutionary

TEXT
/
JUSTIN HYNES

Regularly recognised as one of the most beautiful cars ever – particularly in the eyes of Enzo Ferrari – the Jaguar E-Type, launched 60 years ago this month, also ushered in a new era of affordable performance in which race-bred technology transferred to the roads of the Swinging Sixties



Aeronautical engineer Malcolm Sayer put his design skills to good use on the E-Type.

The old adage insists that beauty is in the eye of the beholder and that aesthetic appreciation is entirely subjective. That is never truer than in the arena of automotive styling where one man's Miura is often another's Multipla. But there's one car that is universally agreed upon as among the most beautiful to ever hit the road – the Jaguar E-Type.

Sixty years old this year, the E-Type began life as a replacement for the XK150, with the new car's design team, essentially the company's competition division named as its experimental or prototype department, being told to take the thinking behind the Le Mans-winning D-Type to a new generation of road-going grand tourers.

But while the styling would ultimately prove to be a radical departure from standard sports car design, the technology underpinning the new car was altogether more prosaic – the DOHC in-line six-cylinder XK engine that had powered Jaguar machinery dating back to the XK120 launched in 1948.

When it first appeared the engine developed around 160bhp, but with each iteration more power was extracted until eventually the version that would sit at the heart of the E-Type was a bored out 3.8-litre unit, delivering between 220 and 265bhp depending on the option purchased.

It was on the surface, though, that the biggest changes were wrought.

Jaguar technical director, William Heynes, who had been at the manufacturer's Browns Lane, Coventry base since 1935, was appointed project leader but it was a relatively new recruit who was handed responsibility for the design – Malcolm Sayer.

Sayer, from Norfolk in the UK, was a prodigiously talented engineer who at the age of 17 won the prestigious Empire Scholarship and studied at the Department of Aeronautical and Automotive Engineering at Loughborough College (later Loughborough University), earning first class honours.

And it was in aeronautics that his career first took off. He worked for the Bristol Aeroplane Company during the Second World War where his aerodynamic design skills were honed.

Sayer joined Jaguar in 1951 and immediately put his knowledge to good use, working on elements of the C-Type that won Le Mans in 1951 and '53. He was handed a prominent role in the development of the D-Type, defining the aerodynamic profile of the three-time Le Mans winner.

For Sayer, automotive design was not about 'styling' – he reportedly loathed the term 'stylist' – but about carefully calculated performance and it was this scientific approach to design that Sayer brought to the E-Type project, as legendary Jaguar test driver Norman Dewis recalled: "He would have a foolscap sheet the full length of his wall. All across that sheet were coloured curves and lines. Every six inches were vertical lines with figures. I used to say to him, 'I can't even see a car'."

The results of Sayer's cold calculation, ▶

however, were stunning to behold. The first fruit of his labour on what would become the E-Type was completed in May 1957, and had the official title of E-type 1 Aluminium, or E1A. As well as Sayer's evolving design, the project featured a new independent rear suspension set-up, delivered in under a month by engineer Bob Knight who had been bet by Jaguar boss Sir William Lyons that the timeframe was impossible. Knight's winnings for a design concept that was to remain in use by Jaguar for the next three decades totalled a whopping £5.

Heynes lent the prototype to Christopher Jennings, editor of Britain's *The Motor* magazine, for an independent appraisal and the journalist's approval of its performance led to a second iteration, the E2A.

This second prototype now featured a front end with the headlights E1A lacked and was far closer to the eventual production E-Type. The E2A was also used in anger, though on the track rather than the road.

RACE INFLUENCE

Former racer, Jaguar enthusiast and US distributor Briggs Cunningham was a regular customer of D-Type racing cars in the 1950s and in 1960 wanted to compete at Le Mans. After discussing his ambition with Lyons it was decided to provide the American with the E2A for the race.

After intensive testing and the addition of a D-Type style fin, the prototype was painted in Cunningham's US racing colours of white and blue and taken to Le Mans.

Cunningham's lead driver for the event was Walter Hansgen, with the multiple SCCA champion initially being partnered by fellow American Ed Crawford. However, for the race Crawford was replaced by Formula 1 star Dan Gurney, a major coup.

"That drive in the Jaguar was a big pearl for me, and it was a privilege to be sharing it with Walt Hansgen, one of my heroes," said Gurney of the race. "But we'd had some difficulty with the car's handling. The least disturbance would send it into a series of tank slappers. Hansgen was a faithful Jaguar man and didn't criticise, but I guess I was only interested in trying to win. I felt that if we left the car the way it was and it rained, we'd be in real trouble. So I made myself unpopular by tenaciously asking 'Can't we find why it is doing this?'"

Gurney's improvements saw Hansgen power the E2A to third place after the start, but he had to make a pit-stop after the third lap and could not get back with the race leaders. After 89 laps the E2A retired with head gasket failure and a burnt piston.

The missing link between the D-Type and the next generation of Jaguar sports cars had proven its worth, however, and over the following months the finishing touches to the E-Type were made, with the final versions featuring a monocoque with a front subframe, powered by the bored out 3.8-litre version of the XK engine. Top speed was set at a (for the time) staggering 150mph. A

global unveiling of the radical new car was planned for the 1961 Geneva Motor Show.

One example, the fixed-head coupé registered as 9600HP, was driven to Geneva by Jaguar PR chief Bob Berry, who then began to give journalists a taste of the E-Type on a nearby hillclimb course. However, demand to get close to a vehicle which on its unveiling at the show Enzo Ferrari famously called "the most beautiful car ever made" was so high that Berry told Lyons that he couldn't keep up. Lyons promptly called the Coventry factory and said: "Get Dewis, wherever he is, to drop everything and bring the open-top E-Type over."

Dewis was at the MIRA test track working on improvements to the E-Type's brakes when he received the urgent summons to Browns Lane. "I got back about 2pm and my boss William Heynes was there with Bob Knight. I asked what was going on, and they said I had to get the car to Geneva as soon as possible," recalled Dewis. "I suggested I should go home for a rest while they take out the testing equipment, then pick the car up in the morning, but they said: 'You go when it's ready. Here's a ticket for a 10pm ferry at Dover.'"

Dewis left Browns Lane in the English Midlands in E-Type 77RW at 7:45pm and by 10pm had covered the 180 miles (289km) to the ferry port.

"I was flat-out all the way," he said of a Britain that had only opened its first motorway, the M1, two years earlier. "In those days, there wasn't the traffic you have today. You'd go mile after mile without seeing anyone, so you could cruise at 80mph (128kph). If the police did pull you over, they'd just give you a talking to: 'Watch your speed. You were a bit quick back there.'"

Barely making the ferry, Dewis arrived at Ostend in the early hours of the morning. In thick mist, the test driver set off as fast as he could



The E-Type was launched to admiring journalists at the 1961 Geneva Motor Show. Left: An earlier version, the E2A, raced at Le Mans in 1960.

'I was flat-out all the way – in those days there wasn't the traffic, so you could cruise at 80mph'

go, through Belgium and Germany and on towards Switzerland.

"Every so often I'd look at the map for the next 30 miles, then put the map down and crack on," he said. "I was used to driving for hours while testing at MIRA, and I only needed to stop once for fuel. I just kept going, which is how you get good average speeds."

In the end, Dewis completed the 600-mile journey (965km) in just 11 hours, with an average speed of 68mph (110kph).

"When I pulled in, [Lyons] was waiting," Dewis recalled. "He walked over, looked at his watch, and just said: 'Thought you'd do it, Dewis.' That was about as much of a compliment as you got!"

The launch frenzy and the tales of Dewis' epic run to Geneva were just the start of the E-Type's seismic impact on motoring and popular culture. In an era when the average family car topped out at 70mph (112kph), the claimed top speed for the E-Type of 150mph made it a headline-grabbing object of desire. And the pace did not come at a premium, as the list price of £2097 for the Roadster and £2196 for the Coupe put its exotic styling and outrageous performance in the hands of a whole new sector of post-war populations who were newly affluent in the Swinging Sixties. In fact, the E-Type was less than half the price of cars from its rivals, with Ferrari's 250 GT coming in at £6,500 and the Aston Martin DB4 at £4,000. Keen pricing and extravagant performance soon had racing drivers and celebrities flocking to buy an E-Type.

Over time more performance was added. In 1964 a 4.2-litre XK engine arrived, adding more torque to the 265bhp on tap. The following year, a 2+2 model joined the range for the sporting family driver.

In 1968 the Series 2 debuted – minus the headlight fairings of the original – and in 1971 the E-Type was expanded further, gaining a longer wheelbase and wider track as well as a 5.3-litre V12. But while by the 1970s the E-Type had become smoother, it was also bloated and nowhere near as nimble as its progenitor.

Tastes had changed, particularly in the US, and Lyons targeted an even more refined GT experience and began development of an E-Type replacement. In 1975 the XJS arrived and 15 years after its breakthrough as a luminous debutant, the by now weathered and somewhat blousy E-Type bowed out. But while it fell from grace, as all cars do, the E-Type remains a paragon of the virtues of pure design, race-bred performance and jaw-dropping style. In Series 1 guise it surely remains the most beautiful car in the world. ◀



Today, E-Type prices can top £100,000 depending on the model...



...But in the '60s the E-Type offered luxurious motoring at an affordable price.



Thierry Bolloré: The E-Type's enduring appeal



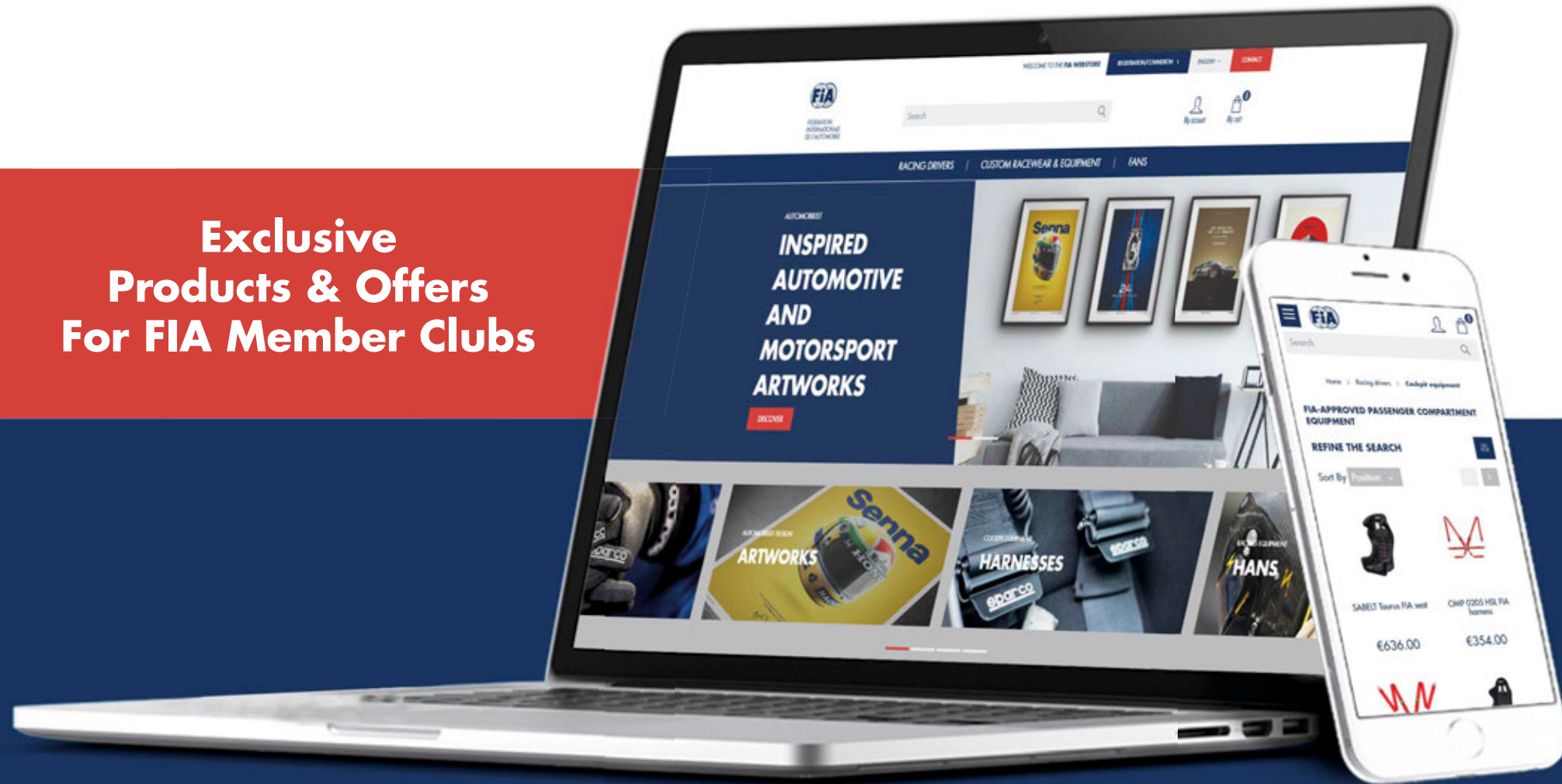
Appointed CEO of Jaguar last autumn, Thierry Bolloré has taken the helm at the company just in time for the celebrations surrounding the E-Type. And the Frenchman says he totally understands the lure of the big cat. "This month sees the Jaguar E-Type celebrate its diamond anniversary, securing its position as Jaguar's most enduring and unrivalled symbol. This striking iconic vehicle inspires customers across the globe having created generations of lifelong Jaguar enthusiasts." And the new CEO explained that to mark the occasion the company's Jaguar Classic division has created an ultra-exclusive limited edition of the legendary sports car. "Sixty years after its unveiling at the Geneva motor show in March

1961, the talented team at Jaguar Classic are releasing the ultimate birthday present to the E-Type, the E-Type 60 collection. Six matched pairs in an exclusive anniversary specification, inspired by the two famous launch vehicles. Such is the iconic appeal of the E-Type. I'm confident we will be celebrating it for years to come." Concluding, Bolloré added that the E-Type remains the embodiment of the company's current push to innovate and move towards electric powertrains. "The future will see Jaguar as an all-electric brand leading the way in modern luxury by design. We are incredibly proud of Jaguar's deep heritage as well as its strong and established brand equity to allow us to realise its unique potential."



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07

Fuelling a Kingdom's passion for sport

TEXT / GAIA PELLICCIOLI

With Formula E, the Dakar Rally and now Formula 1 all staging events there, Saudi Arabia is rapidly becoming a major international motor sports hub and helping to accelerate that growth is the Saudi Automobile and Motorcycle Federation (SAMF)

Saudi Arabia has a long history of off-road competition, but its motor sport appetite is growing.





The popularity of sport in Saudi Arabia has exploded in recent years, with iconic events taking place on the football pitch, the tennis court and in the boxing ring. But nowhere has the acceleration been more rapid than at the wheel of a racing car. From hosting the Middle East's first Formula E races – including Saudi female drivers competing for the first time on home soil – to successfully staging the iconic Dakar Rally, and now preparing for the first Formula 1 Saudi Arabia Grand Prix, large-scale international motor sport events have become synonymous with the country. One of the key players behind the huge upswing in motor sport growth is the Saudi Automobile and Motorcycle Federation (SAMF),

which serves as the sporting body in charge of developing, supervising, and launching motor sport activities in the Kingdom of Saudi Arabia. Since its establishment in 2006, SAMF's mission has been to lead and expand a safe and socially responsible motor sport landscape in the country – an ambition closely aligned with the new national ambition and vision for sport to act as a tool to inspire and connect people across the country. "We look to embrace sport as a tool for bringing about a positive change and contribute to the national economy," says SAMF Chairman HRH Prince Khalid Bin Sultan Al-Abdullah Al-Faisal. "We understand our responsibility towards the wider Saudi community,

Jeddah is the setting for Saudi Arabia's first-ever F1 Grand Prix this December.



The Kingdom added Formula E to its growing roster of motor sport events in 2018.



and we are in the process of introducing several corporate social responsibility programmes to promote and enhance our commitment to the Kingdom beyond the sport." In a bid to build an ongoing legacy for motor sport in Saudi Arabia, one of the areas SAMF is invested in is the uptake of clean transportation on a global scale. For the Saudi Automobile and Motorcycle Federation, the ABB FIA Formula E Championship, which last month was welcomed to the country for the third consecutive year, provides the ideal platform to test and develop road-relevant technologies.

"Formula E has been the perfect series for the Kingdom to partner with. It's exciting, has a growing fan base, together with international popularity and reach," explains the SAMF Chairman. "The length of our partnership will give us the platform to race into the future, and create a lasting legacy for sustainable sport over the course of a decade and beyond." While promoting new motor sport disciplines among young drivers and fans, and developing the infrastructure to host such categories, the Federation continues to embrace off-roading and desert races – two forms of motor sport that have a deep heritage in Saudi Arabia and which remain hugely popular among enthusiasts. "Off-roading is a big part of our culture, which is why we have organised some of the biggest rallies in the Middle East," says HRH Prince Khalid Bin Sultan Al-Abdullah Al-Faisal. "When we had the chance

to host the Dakar Rally, the world's most challenging desert race, we did not hesitate. [The Dakar] is the perfect stage for us to demonstrate our capability to host one of the largest and most challenging international events, and to showcase to the world what Saudi Arabia has to offer as a tourist destination, in terms of unique terrain and natural beauty. I'm very happy with the outcome of the two editions we have hosted and the success they have garnered." So far, Saudi Arabia has done well in handling the COVID-19 pandemic. As a result, the country was one of the few regions where the final two rounds of the FIA World Cup for Cross-Country Bajas could be staged in 2020.

"The World Cup for Cross-Country Bajas is one of the biggest events in the sport, and we are proud to be part of its calendar and to continue this partnership with the FIA in the foreseeable future," says the SAMF Chairman. The Federation will continue its desert competition odyssey next month when it hosts the inaugural event of the Extreme E electric off road series, with FIA President Jean Todt expected to attend. **NEW OPPORTUNITIES** The Federation's history with desert motor sport events makes them the most developed in the country. However, the Federation has also recently embraced track racing. The confirmation last November that Formula 1, will visit Jeddah for the first Saudi Arabian Grand Prix in December is the ultimate expression of the Federation's expansion.



(Left) SAMF Chairman HRH Prince Khalid Bin Sultan Al-Abdullah Al-Faisal and (right) HRH Prince Khalid, FIA President Jean Todt and HRH Prince Saud Bin Turki Al Faisal at this year's Dakar Rally closing ceremony.



The FIA World Cup Cross-Country for Bajas was able to complete its 2020 season thanks to events being staged in Saudi Arabia.

'The Grand Prix will be a street race by the Red Sea – the plans are stunning'

"It's another exciting step in the sporting transformation of our country," says Prince Khalid. "A new country, a new venue for F1, a new opportunity for all. It is a long-term partnership that enables us to really grow the event and maximise its impact. It will be a street race on the Corniche alongside the Red Sea. The plans are stunning and it will look incredible. The city already hosts a variety of international sports including the Spanish Super Cup, WWE and the final stage of Dakar Rally, so F1 is the next chapter."

Saudi Arabia is changing and women's participation in motor sport is at the heart of SAMF's plans. Two years after a decision by the Saudi leadership to allow women to drive, and two years on from the symbolic lap in an F12 car by Aseel Al Hamad at Le Castellet circuit, Saudi Arabia has made important steps towards greater gender equality in motor sport and sport in general. As part of the Kingdom's Vision 2030 plan, women's participation in sport grew by 149 per cent between 2015-19. ▶



'Our goal is to be a global player and an international hub for motor sport'

representative of Saudi motor sport and an inspiration to Saudi girls. She was the first Saudi woman to compete in an international racing series in Saudi Arabia, and we look forward to seeing more of her on the track in our country, as well as in international events."

EDUCATION PLAN

Besides building a more diverse and inclusive motor sport, SAMF is committed to promoting home-grown young athletes. In 2020 the Federation, supported by the FIA Sport Grant Programme, started a Young Drivers Programme to improve the level of drivers and increase motor sport awareness and education across the country.

"Part of our plan as a Federation is to sponsor local talents and support them on the international scene. We also want to introduce promising motor sport enthusiasts to industry-recognised training programmes, so as to build a

professional and successful generation of Saudis in motor sport. As the parent and governing body of the sport in Saudi Arabia, SAMF aims to grow the local motor sport community, strengthen its ties and keep on welcoming new fans and introducing younger generations to the sport."

As well as inspiring younger generations, major motor sport series such as Formula E, Dakar Rally and now F1 are transforming Saudi Arabia into a regional and international motor sport hub. Looking to the future, the SAMF Chairman says the Saudi Automobile and Motorcycle Federation will continue to maximise its efforts to become a global player and consolidate its leadership position in motor sport safety and sustainability.

"We laid the foundation to expose Saudi Arabia and the region to the varied streams of motor sport, and we will continue to develop our local talents, equipping them with the tools to participate in these events at a competitive level.

"Our goal is to become a global player and an international hub for all motor sport disciplines. We believe that we have the right mindset, talent, passion and resources to get there." ❖

Saudi F4 driver Reema al Juffali. Below: Reem Al-Aboud became the first Saudi woman to test in Formula E last year.

In December 2018, Formula E hosted tests for female drivers on the streets of Ad Diriyah, near Riyadh, and the following November the FIA Girls on Track (GOT) initiative took place around the Diriyah E-Prix as part of the 2019/2020 season opener. The GOT event offered a unique opportunity to inspire and encourage girls between the ages of eight and 18 years old, as well as educate the general public on gender equality in motor sport.

"We want to inspire and encourage Saudi girls and women who have a passion for motor sport to pursue their dream and discover their talents, whether as drivers or in other mechanical and managerial capacities," says the SAMF Chairman. "This will undoubtedly open great horizons to promote motor sport and establish a solid foundation of a female motor sporting community.

"Reema al Juffali is one of the many success stories of Saudi women in motor sport, and we are very proud of the work she is doing on and off the track. She is a great



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HANNU MIKKOLA: King of the North

AUTO remembers *Hannu Mikkola*, 1983 World Champion and seven-time winner of Finland's legendary 1000 Lakes Rally



08

The world of motor sport was mourning the loss of one of its rallying greats at the end of February, with the passing of Hannu Mikkola at the age of 78.

Finnish legend Mikkola claimed the World Rally Championship in 1983 at the wheel of an Audi Quattro having missed out on the coveted title by a single point in 1979 driving a Ford Escort Mk2.

He was runner-up on another two occasions and also won his home event, the 1000 Lakes Rally, a record seven times.

Mikkola scored his first major win on the Pohjala Ralli in 1966 and took his first 1000 Lakes success two years later in an Ford Escort Mk1.

While his 1000 Lakes triumph underlined his speed, he demonstrated his mechanical sympathy and tactical nous when he scored a famous victory on the London to Mexico World Cup Rally in 1970 alongside Gunnar Palm.

Two years later, Mikkola and Palm became the first overseas winners of the East African Safari Rally.

When the WRC visited his homeland for the second time in 1974, Mikkola took the win, his first of 18 in the top flight.

Although he represented several makes during his career, it was at Ford in the mid-1970s when he first made his name. Partnered by Arne Hertz, Mikkola helped the Blue Oval win the Manufacturers' title in 1979.

However, a move to Audi transformed Mikkola's career. He piloted a Quattro to two WRC wins in both 1981 and '82 before clinching

the Drivers' title the following season with four victories in a Group B Quattro A2.

Mikkola achieved his final world rally win in Kenya in 1987, after which he moved to Mazda before departing the WRC on a full-time basis in 1991.

He made 123 WRC starts, the last coming, fittingly, on the 1000 Lakes Rally in 1993, but continued to compete as a guest driver on a variety of events until 2017.

FIA President Jean Todt, who once co-drove Mikkola and led a minute of silence in his memory at Arctic Rally Finland, said: "It's a very sad day for the rally family. Hannu was just an outstanding driver and a lifelong friend.

It was a pleasure to share a car with Hannu."

Hannu Mikkola was 1983 World Rally Champion in an Audi Quattro – his four wins that year included the 1000 Lakes.



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