Clean machine

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Le Mans 24 Hours race organiser, the Automobile Club de l'Ouest, has joined forces with Swiss engineering firm GreenGT to launch the MissionH24 project, fast-tracking the development of hydrogen power through racing

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'The future is racing', a slogan used by the Automobile Club de l'Ouest in promoting the Le Mans 24 Hours, is particularly relevant today. "It's been a theme of our race ever since it was first held in 1923," says Pierre Fillon, the club President. "We help to develop future technologies for transport to ensure that mobility is available to everyone. Today, our main concern is environmental, as we want to leave a clean world for our children. Carbon-free mobility is the goal of MissionH24."

Launched at the Spa-Francorchamps round of the European Le Mans Series in September 2018, MissionH24 is being run as a partnership between the ACO and GreenGT, a high-tech company working in the field of high-powered electric-hydrogen power units (fuel cells). And the project's goal is deceptively straightforward – to introduce hydrogen-powered racing cars to the Le Mans 24 Hours in 2024, when a special hydrogen class will be created, and thus to help speed up track-to-road development of the hydrogen technology.

GreenGT President Christophe Ricard sums up the benefits of hydrogen power. "The principle is simple: two elements, hydrogen and oxygen, are combined to produce energy and water, without producing any emissions other than water vapour," he explains.

Bernard Niclot, hydrogen consultant to the ACO and director of innovation for MissionH24, adds: "Hydrogen makes 'multi-mobility' possible in the sense that it can be applied to all modes of public transport such as buses, trains, planes and ships, as well as trucks and private cars." ▸

But while the science is simple, taking it to the track in a competitive environment is less so. GreenGT Technologies Marketing Director Jean-Michel Bouresche is convinced the company is the right one for the task.

"Being part of MissionH24 with the ACO was a no-brainer for us," he says. "For several years now, we have believed in hydrogen and have established ourselves as experts in the field. Speeding up the research process through racing is a challenge we are taking on with enthusiasm but also a sense of realism."

GENERATING A BUZZ

MissionH24 has set itself several ambitious targets, culminating in a category for electric-hydrogen prototype cars racing at Le Mans, and it is already attracting the attention of several constructors. "The aim is to show that this technology is safe, simple and efficient," says Fillon.

The first step for the project is the development of the LMPH2G, a prototype car based on an LMP3 which turned a wheel for the first time in a demonstration run at the Spa-Francorchamps launch of the project, where the unusual car drew a big crowd of interested onlookers.

Among that crowd was Henrik Hololei, managing director of Transport and Mobility for the EU, and he was impressed with what he saw.

"MissionH24 has started something," he says. "This is an important event and I was keen to see the prototype. We need to have zero-emissions mobility for a sustainable future and that means developing new solutions. It's a real challenge."

According to GreenGT managing director Jean-François Weber, who heads up R&D on the project, the Belgian launch generated "some excitement, not too many worries, several questions and, with three laps under the car's belt, answers to those questions. It was the first time our car had run at such a long track with so many contour changes."

At the wheel on September 22, 2018 was endurance specialist and four-times Le Mans winner Yannick Dalmas. "It was a privilege to drive this electric-hydrogen car and I can tell you I didn't feel at all apprehensive," he says. "Everything was under control and all the usual safety elements were in place. The lack of noise as I drove out of the pits was amazing. It's a glimpse into the racing of the future, with high-performance prototype cars that can be competitive against other power sources and whose only emission is water."

Clockwise from top left: the LMPH2G has had successful test runs at two Michelin Le Mans Cup rounds; ACO President Pierre Fillon fully supports the project; MissionH24 director of innovation for Bernard Niclot with GreenGT MD Jean-François Weber.

Since then the H24Racing team has been set up, with Bouresche at the helm, to develop the laboratory car and also run one in the Michelin Le Mans Cup, while the ACO has formulated a detailed and precise set of safety, sporting and technical regulations governing this type of car.

Homologated by the FIA, the LMPH2G was thus able to run for the first time at a race weekend when it took part in free practice for the Michelin Le Mans Cup at Spa-Francorchamps and then again at Portimao in the autumn of 2019. As a result the hydrogen prototype has been able to run alongside 20 other cars on two circuits with very different characteristics.

The car ran trouble-free over the course of a number of practice runs and the test also provided the first opportunity to try out the car's refuelling system, aided by energy supplier Total, which came up with the first-ever compact mobile hydrogen refuelling unit.

"This pioneering project seemed very interesting to us and is in step with Total's philosophy," explains Total Competition's boss Pierre-Gautier Caloni. "As this prototype evolves and progresses we will also be able to improve on the time needed to refuel the car. This current rig is not the definitive one. At the moment, we have to refuel at 350 bar pressure, but we are aiming for somewhere in the seven hundreds. The idea is to be able to refuel as quickly as a car with a combustion engine."

As well as attracting the involvement of Total, the success of the LMPH2G prototype has garnered significant interest from other areas of industry, including the automotive world and the environmental sector. It has also piqued the interest of drivers keen to try an altogether different kind of track experience.

One driver has already made an official request to the ACO to take part in the 2024 Le Mans 24 Hours at the wheel of a hydrogen prototype car. That man is Swiss scientist, explorer and staunch defender of the environment, Bertrand Piccard.

Piccard came to prominence in 1999 as a member of the first crew – alongside Brian Jones – to complete a non-stop balloon flight around the globe in Breitling Orbiter 3. He was also the initiator, chairman and co-pilot, with André Borschberg, of Solar Impulse, the first successful round-the-world solar-powered flight in 2010. A firm believer in the potential of hydrogen, Piccard got his first taste of MissionH24 power at Le Mans in March this year as a passenger in the LMPH2G hydrogen prototype driven by Emmanuel Collard.

Clockwise from top left: MissionH24 hopes to have a hydrogen car racing at Le Mans by 2024; in the pits at Portimao; Bertrand Piccard enjoyed his ride in the LMPH2G, which produces clean water from its exhaust.

'It was a great pleasure to drive the car. They even asked if I wanted to drink the water from the exhaust!'

"That was the first time I have ridden in a car on the Le Mans track and my first time in a hydrogen racing prototype," he says of the experience. "I am absolutely thrilled because the future is already here, clean mobility, it exists now and it works. Until very recently, motor sport has been focused on progress in terms of performance levels, and now it has proven to be looking toward low-carbon mobility as well.

"By refusing to develop these alternative power sources, such as electricity and electric-hydrogen, some constructors risk seeing their names join those like Kodak, which are no longer with us as they did not keep up with technical innovation," he adds. "It was a great pleasure to be able to drive MissionH24's hydrogen prototype at the Le Mans circuit. They even asked me if I wanted to drink the water that came out of the car's exhaust! It's fantastic that the Le Mans 24 Hours wants to run hydrogen cars. That will be a good thing for mankind, because racing is a fantastic vector for technical development."