INDUSTRY WORKING GROUP

DECEMBER 2017 – ISSUE 2

INDUSTRY WORKING GROUP

RAISING THE RACE SUIT STANDARD

Race suits, head restraints and track furniture all face new challenges in our fast evolving sport P4

CONTACTS:
IF YOU HAVE ANY COMMENTS
ABOUT THIS NEWSLETTER OR
STORIES FOR THE NEXT ISSUE, WE
WOULD LOVE TO HEAR FROM YOU.
E-MAIL: IWG@FIA.COM

INDUSTRY WORKING GROUP

The past few months have been extremely busy for the Global Institute and FIA as it continues its work on motor sport safety.

Many of the projects have involved looking to affiliates of the Industry Working Group for assistance in their specialist field and this newsletter focuses on some of the key areas currently being prioritised.

In this issue therefore, you can read about how the race suit can do more than just protect against fire, why a common standard in barrier protection is the way forward and meet new members of our team.

Laurent Mekies
FIA Safety Director


Protection against heat and fire is the still the main concern of race suit manufacturers.

Race suits tailor-made for safety

Fire used to be the biggest fear for drivers in the early days of motor racing and fire suits were enthusiastically adopted at all levels of racing. Today, with hybrid and electric powered vehicles, the humble suit is having to adapt to also provide protection from electric shocks.

Clothing for racing drivers is evolving, but unlike other areas of safety in motor sport, changes are less visually evident. Fire is an ever-present risk in a sport built around the internal combustion engine burning fossil fuels, however, advances in other areas are equally important.

We spoke to Nuno Costa, head of the Safety Homologations Group about on-going projects in this field.

“When it comes to drivers’ clothing we have a standard that was published back in 2000, and we’re now having a look at that standard in order to improve the safety of the overalls,” he explains.

“That is one aspect, mainly focusing on heat transmission properties, to increase the protection that overalls give for heat transmission.”

Perhaps surprisingly, currently, there is no “sell-by” date for race suits and other items of clothing and this is an area currently being assessed by Costa and the team.

“In some products for example, there might be a validity of five years, however for clothing - overalls, underwear, shoes and gloves - we don’t have a validity date. At the moment, as long as the product looks to be in good condition and has no damage, we accept it. However, since around 2000, the products have changed so much, especially in terms of the type of materials used, that we want to have a close look at these new materials in order to understand their life.”

Another aspect of current research into clothing reflects the growing importance of clothing and equipment that offers electrical protection.

“The FIA now has three main championships using hybrid and electrical technology,” states Costa.

“That is going to increase in the future, including at international level. Therefore we are looking at different international standards and what is current state-of-the-art in relation to electrical protection. We are focusing on just two aspects - electric arc fault and electrical shock. At the moment, we are doing a risk management assessment, in order to then try to define some criteria for the clothing to protect the driver against these two risks. That is the biggest improvement we want to achieve with the new clothing.”

Naturally, this work is being carried out with the cooperation of IWG affiliates and laboratories who specialise in this field.

“Our target is to try to publish the new standard, I would say at the most optimistic by the end of the year, but the most realistic is by the middle of next year. As soon as the standard is published, then we will define which championships must use the new standard, then step by step, we will implement it also across other championships.”

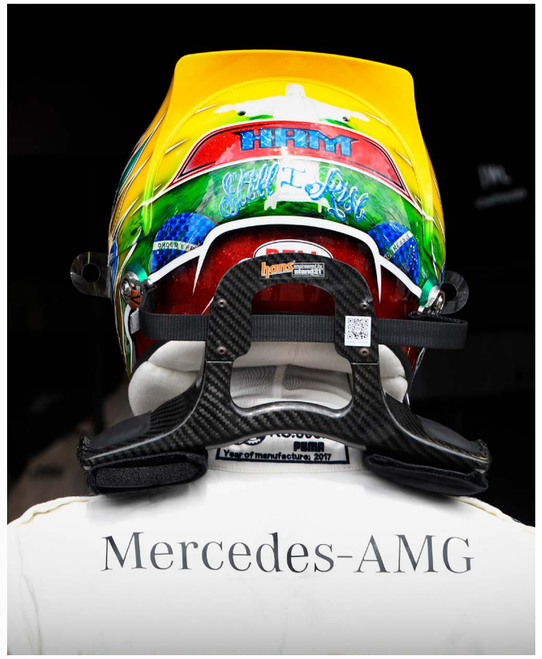
As is the norm with any safety equipment, the early adopters of any new items will be the top formulae, before the trickle-down effect takes it all the way to grass roots sports. “When we manage to get a standard that gives electrical protection, the first championships to use the new standard will be for sure Formula 1, LMP1 and Formula E,” confirms Costa.

“Depending on where the research takes us, we may have two grades - one part of the standard that takes care of fire, heat transmission and electrical protection - everything in the same overall. And then another version where we put to one side the electrical protection, because in some championships if there is no electrical risk, it would be illogical to ask the drivers to use these overalls which most probably will be more expensive than the other ones.”

Another current area of research is looking into Frontal Head Restraints (FHR.) The current HANS device, that sits on the driver’s chest and collarbones or the newer Hybrid and Hybrid Pro, that are worn on the back and shoulders, prevent the head from moving independently of the torso, thus avoiding elongation of the neck and large forces on the neck, which can be fatal.

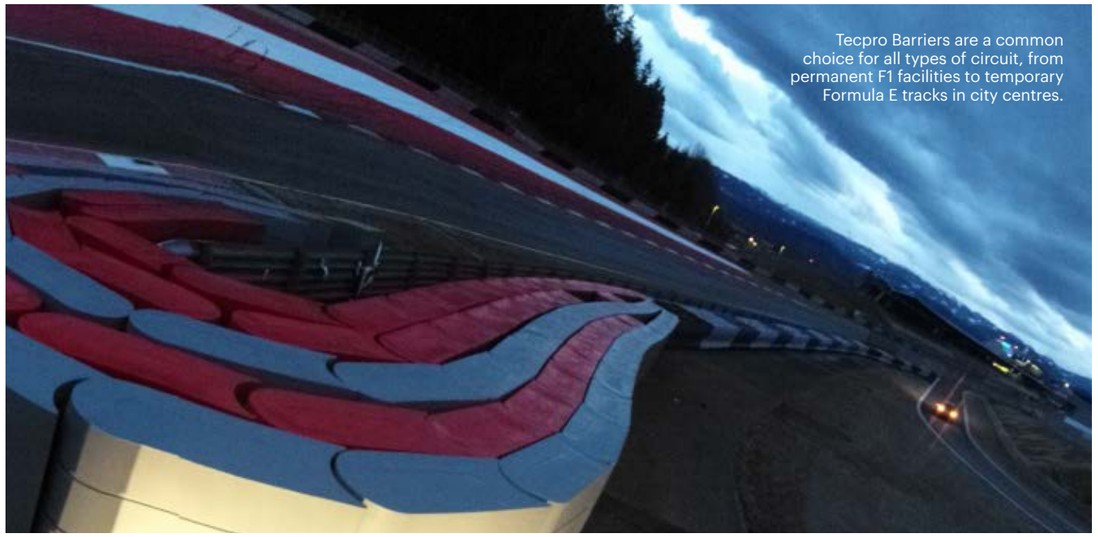
“Basically, the frontal head restraint device is designed to protect the drivers during a frontal crash or a frontal crash with an angle of around 30 degrees,” says Costa.

“At the moment, the HANS, Hybrid and Hybrid Pro are the only ones which are recognised by the FIA. If there’s a manufacturer who has a clever idea and wants to approve it, today, the FIA does not have a clear procedure for them to do so. So last year, the FIA together with Global Institute decided to create a group of experts, doctors, biomedics and engineers, to analyse new devices that are not a HANS device or a Hybrid device. What we are currently working on is the definition of a clear procedure which will help new ideas to be evaluated by the FIA. The target is to have a process whereby anyone that has an idea for the design of an FHR device will know exactly what the process is and what tests the FIA is going to request and what is the pass-fail criteria in order for their device to be accepted. Currently, we just have guidelines but they are quite subjective and that makes life difficult for someone who wants to develop a new device, so that is currently the work for this group - to define clear test procedures and pass-fail criteria for new inventions.”



The HANS (head and neck support) has been mandatory in F1 since 2003. Today, the Global Institute is researching new forms of head restraint.


OMP supplies all forms of motorsport: 2017 FIA World Rallycross Champion, Johann Kristofferson is congratulated by team-mate and multiple World Champion, Petter Solberg.



Tecpro Barriers are a common choice for all types of circuit, from permanent F1 facilities to temporary Formula E tracks in city centres.

Tracking Safety Standards

All circuits that host FIA-sanctioned events have to be passed as fit for purpose in terms of safety, offering a reasonable level of protection for drivers, track workers and spectators. The FIA now aims to standardise circuit equipment through a homologation process to allow circuits all around the world to equip their facilities to an appropriate level.

“The development of a homologation procedure for safety barriers was built upon the in-depth research work that was conducted throughout 2016 by the Global Institute for Motorsport Safety in collaboration with Tecpro,” explains FIA Circuit Engineer, Alessandra Ciliberti.

While research into safety at race tracks is always ongoing, this particular project was born out of a study relating to one specific accident, sustained by Carlos Sainz Jnr. when the young Spaniard crashed head-on into the barriers at high speed, at the Sochi circuit during Saturday practice for the 2015 Russian Formula 1 Grand Prix.

Fortunately, Sainz suffered no serious injuries and was actually passed fit to race on the following day.

“Throughout 2016, our work with Tecpro was aimed at delivering a new specification of barrier that resulted in a step forward in terms of impact management, basing the work on data from actual accidents. The end goal was to define a test procedure to be integrated into an FIA standard that will hopefully encourage safety barrier manufacturers all around the world to achieve these targets.” reveals Ciliberti.

“Several other factors needed to be taken into account on top of the safety performance when drafting a homologation procedure for safety barriers. In fact, barriers should be designed to meet specific requirements in terms of dimensions, weight and shape, but also other aspects, such as ease of installation, repair after collision and maintenance requirements.”

How easy it is to repair the barrier after an incident is particularly important when it comes to ensuring a race meeting runs on time. Nowhere, is that clearer than in the FIA Formula E Championship, where an entire temporary track has to be built up, usually in a city centre and where timings are crucial, given that all the track action takes place over a single day.

One of the challenges of delivering a homologation standard for barriers is related to the actual implementation, as Ciliberti elaborates: “Our first target is to make the homologated products compulsory for newly built high-level circuits, mainly destined for use in Formula 1, as from 2018. However, all circuits at all grades will be able to benefit from this work and decide to upgrade their existing facilities by choosing from a list of FIA homologated products.”

Barriers are not the only items coming under scrutiny: among others, race track paints and debris fences are also being investigated. In the case of the former, there is one main constraint: working with paint manufacturers and FIM to develop a homologation standard that meets the anti-skid performance requirements. As for debris fences, the driving purpose is preventing a car as well as any debris from travelling further beyond the fence after an accident, thus protecting spectators and track workers.

“We are currently focusing on a wide spectrum of circuit equipment products and we see further growth potential here,” concludes Ciliberti.

“This will lead to improving the safety performance of existing equipment and encourage the development of new equipment for circuits, thus enhancing the safety of motorsport events worldwide”.

Even on a straight section of track, debris fencing plays an important role in protecting spectators and marshals.

Painting trackside areas adds to the spectacle, but the paint must conform to standards to provide adequate grip.

The affiliate view

Once again in this edition of our newsletter, we spoke to two of our affiliates, to get their views on the Industry Working Group.

Thanks to Magneti Marelli, all cars competing in the Le Mans 24 Hours are interconnected through a real-time digital network.

Magneti Marelli is one of those companies regarded as a permanent fixture in motor sport at all levels. The Italian firm has literally provided the spark that has powered the legendary names of the automobile industry for almost a century.

But electrical management of powertrains is just one area where Magneti Marelli Motorsport is involved, as its Head of Development, Riccardo de Filippi explains.

"Apart from that, we are also active in the areas of electronics, looking at solutions to improve both performance, safety and connectivity. In fact, we are dealing with ECUs/VCUs, engine components such as fuel injectors, pumps, ignition coils and sensors."

While all these areas can be regarded as the "classics" for a company working in this field, Magneti Marelli is in the vanguard of new technologies, encompassing data acquisition and display systems, accident data recorders, fast cameras and telemetry, while the move to sustainable mobility is also on its radar.

"For sure, this is one of the most important areas for us," confirms De Filippi.

"For instance, on top of F1, we are deeply involved in Formula E, where the key factor for success is to maximize the efficiency of the electric powertrain, reducing both the electric losses and the mechanical ones. But sustainable mobility also needs a reliable and powerful "V2X" connectivity (the passing of information from a vehicle to any entity that may affect it and vice versa) to improve overall safety. That's why Magneti Marelli Motorsport has invested so much in advanced telecoms technologies. As an example, this has been applied to the latest generation of telemetry systems which has allowed us to go racing in the Le Mans 24 Hours event with 65 cars fully inter-connected in a real time digital network."

It is a motor racing application but the implications of this technology are very interesting, as it can be seen as the prototype of a Smart District of a city of the future.

According to De Filippi, a spirit of innovation is part of Magneti Marelli's raison d'être and motorsport safety is one area where that innovation process is being applied.

"We have been working actively to improve safety by introducing an enhanced data logger combined with a high speed camera which together are capable of accurately monitoring the operation of the car in normal situations and also in the case of an accident. Our next challenge is to introduce biometric systems so that we can put the driver at the centre of the monitoring capabilities."

And the Industry Working Group plays its part in dealing with these challenges.

"Being part of the Industry Working Group means being in the place where the Motorsport regulations and standards of the future are defined," maintains De Filippi.

"It represents a unique opportunity to cooperate with other specialists, despite the fact that they might be competitors, in an open and trusting way to improve safety in motorsport. Sharing problems, defining the way to overcome them and operating together to solve them, is a great opportunity for every company involved to widen its understanding of the motorsport world, including outside of one's normal perimeter of activity."

Magneti Marelli's Formula E electrical powertrain.

Today, the name OMP is synonymous with fireproof race suits and safety harnesses, but when the company was set up in the early Seventies, by the three Percivale brothers in Genoa, Italy, it began by producing rollover bars for competition cars. Safety racewear came a decade later and today it continues in this field while also producing safety harnesses, with its Dyneema belts used in everything from kart racing to Formula 1. Thanks to advances in competition car technology, with improved safety standards for fuel cells, serious fires are fortunately far less common than in the past.

"Their occurrence has been reduced but not eliminated," confirms OMP spokesperson Paolo Bertuccio.

"For example, this year at the 24 Hours of Spa, a driver was trapped in the cockpit on fire and had to wait several minutes before the safety crew managed to pull him out. He suffered only minor burns thanks to the fire retardant racewear. So, while making fire retardant suits today takes into account comfort, lightness and giving the driver the best possible driving conditions, the main goal is always protection and saving lives."

At a casual glance, a modern race suit does not look very different from those pioneered in the Sixties, but underneath the surface it's a different story.

"The new technologies for race suits, and indeed all racewear, are developed with the multinationals that make the fibres and the fabrics," says Bertuccio.

"As I mentioned, it's a quest for lightness and comfort combined with safety. However, our constant work on technology and research has led to us to fundamentally change the design concepts, including the ability to produce printed fire retardant racewear, which is truly revolutionary because it gives you infinite possibilities of colours and design."

Apart from the look and feel of the garments, the most exciting new advances are in the area of getting data from a driver's clothing. "It's definitely a very busy new area," confirms Bertuccio.

"It's full of possibilities, and OMP is involved in some projects that will increase the safety of drivers through biometric measurements." In this and other projects, close links with the FIA have proved invaluable.

"OMP has been working with the FIA for over 40 years, but we must say that in the last few years the Federation has become much more open and this attitude is absolutely appreciated because sharing knowledge and experiences is a boost for research and development. And as manufacturers, we are working closely with the FIA to define new standards aimed at increasing safety."

Being part of the IWG is also a positive experience for the Italian firm.

"There's a never-ending sharing of knowledge, and this is the best environment for productive cooperation," concludes Bertuccio. "It's through the IWG that OMP got in touch with a very important group, and this contact is leading to the development of an extremely innovative product that you'll see soon."

Not just race suits: OMP also provides crash helmets for the FIA safety and medical crews.

Say hello to... **Stuart Robertson**

As the work of the IWG expands, so too does its headcount. Meet Stuart Robertson, the FIA's new Head of Circuit and Rally Safety.

Stuart is from Scotland and grew up in a motor sport family. When still a teenager, Stuart won the Scottish Autotest Championship and was also Scottish Junior Formula Ford Champion. Robertson has a Masters Degree in Mechanical Engineering with Aerodynamics and another in Motorsport Engineering and Management, acquired in the very first year of the prestigious Cranfield University Motorsport Msc course, when he won the BRDC Trophy for best student.

Race engineering was the next step and Stuart has engineered title wins in GP2 and DTM as well as racing four times at the Le Mans 24 Hours in an illustrious 15 year career. Looking for a change, the position within the FIA came up and Robertson is delighted with the move: "It is one of the most challenging and yet satisfying jobs I could imagine – every day is different, with the impetus of improving driver and spectator safety a constant throughout everything that we do."

As part of the IWG you can help spell out FIA safety policy.

2018 FIA Sport Conference Manila

The Philippines capital, Manila, will host next year's Sport Conference in the first week of June and if the positive comments relating to this year's edition in Geneva are anything to go by, it should be another successful event.

The survey we conducted in the wake of this year's conference showed that, not only did the Sport Conference and Motor Ex provide a platform for an exchange of ideas, it also delivered concrete business benefits. As one survey respondent commented, "the single opportunity to meet with a worldwide network of significant motor sport personnel and delegates at one single venue is invaluable."

85% of delegates attending reckoned it had paved the way for interesting commercial projects and over half felt there was a good chance of this leading to enduring business partnerships. Over 50% of the companies who attended felt that these meetings would lead to business worth between 100 and 250 thousand Euros, while a smaller number reckoned that figure might actually be nearer to half a million!

Manila in the Philippines hosts the next FIA Sport Conference.

Keep in touch

If you want to make contact with any of your fellow IWG members, here's a handy contact list.

COMPANY	CONTACT	E-MAIL	WEBSITE
Aero Tec Laboratories Ltd	Giles Dawson, Managing Director	gdawson@atlltd.com	www.atlltd.com
Al Kamel Systems, S.l.	José Luis Garcia Molina, General Manager	joseluisgarcia@alkamelsystems.com	www.alkamelsystems.com
Alpinestars	Doriana Pellizzari, Laboratory Technician	testlab3@alpinestars.com	www.alpinestars.com
ARAI Helmet Ltd	Hiro Kimura, Operating Officer	kimura@arai.co.jp	www.arai.co.jp
BELL Racing Helmets International	Stephane Cohen, Chairman & Executive Director	sc@bellhelmets.eu	www.bellracing.com
Bosch Engineering GmbH	Vincent Parvaud, Customer projects group leader - France	vincent.parvaud@fr.bosch.com	www.bosch-motorsport.com
BTTG Shirley Technologies Limited Trading	Chris Dean, Laboratory Manager	chris.dean@bttg.co.uk	www.bttg.co.uk
Centro Tessile Cotoniero & Abbigliamento - CENTROCOT	Marco Colli, PPE Testing and Certification Manager	marco.colli@centrocot.it	www.centrocot.it
Cosworth	James Slade, Key Account Manager	james.slade@cosworth.com	www.cosworth.co.uk
CRANFIELD Impact Centre	Jim Watson, CIC Manager	j.w.watson@cranfield.ac.uk	www.cranfieldimpactcentre.com
CSI	Simone Oberti, Automotive Division -PA&V - Full Scale	simoneoberti@csi-spa.com, FrancescoBallabio@csi-spa.com	www.csi-spa.com
DEKRA Automobil GMBH	Wolfgang Dammert, Coordinator Motorsport	wolfgang.dammert@dekra.com	www.dekra.com
EM Motorsport	Giles Cooper, Business Development Manager	gcooper@emmotorsport.com	www.emmotorsport.com
Geobrugg AG - Security Engineering	Jochen Braunwarth, Director Motorsport	jochen.braunwarth@geobrugg.com	www.geobrugg.com
Harmon Racing Cells	James E. Harmon, Manager	james@harmonracingcells.com	www.harmonracingcells.com
Hermann Spengler GmbH	Bernd Spengler, CEO	b.spengler@spengler.de	www.spengler.de
HJS Emission Technology GmbH & Co. KG	Klaus Osterhaus, Head of Motorsport & Tuning dpt	klaus.osterhaus@hjs.com	www.hjs-motorsport.de
HWA	Jessica Mueller, Executive Assistant	j.mueller@hwaag.com	www.hwaag.com
LIFELINE Fire + Safety Systems	James Morris, Managing Director	jim@lifeline-fire.co.uk	www.lifeline-fire.co.uk
Magneti Marelli SpA	Riccardo De Filippi, Head of Engineering	riccardo.defilippi@magnetimarelli.com	www.magnetimarelli.com
Marina Race S.L.	Cesc Ginestà Mujal, Manager	cesc@marinaracewear.com	www.marinaracewear.com
McLaren Applied Technologies	Richard Hull, Business Development	richard.hull@mclaren.com	www.mclaren.com/appliedtechnologies/
MyLaps Sports Timing	Alessandro Bianchi, Business Development Motorsport	alessandro.bianchi@mylaps.com	www.mylaps.com
NEWTON - Dynamic Testing Center S.R.L.	Luca Cenedese, Director	luca.cenedese@newtonlab.it	www.newtonlab.it
NORDBETON GmbH	Christov Ploetner, CEO	cploetner@nordbeton.com	www.nordbeton-race.com www.nordbeton.com
OMP Racing SpA	Matteo Repetto, Technical Manager	matteo.repetto@ompracing.it	www.ompracing.com
Porsche AG	Roberto Kübel, Manager Regulations and Homologation	robert.kuebel@porsche.de	www.porsche.com
Premier Fuel Systems	Richard E. Fletcher, Managing Director	richardfletcher@premier-fuel-systems.com	www.premier-fuel-systems-com
Puma SE	Maurizio Sicco, Team head Racewear	maurizio.sicco@puma.com	www.puma.com
Racetech	David Black, Managing Director	david@racetech.co.nz	www.racetech.co.nz
Riedel Communications GmbH & Co. KG	Kai O. Houben, Director Rental Division	kai.houben@riedel.net	www.riedel.net
Sabelt	Roberto Gastaldi, Testing & Prototyping Manager	gastaldi@sabelt.com	www.sabelt.com
Safecraft Restraints Systems	Charles Espenlaub, President	espenlaub@hotmail.com	www.safecraftracing.com
Schroth Safety Products GmbH	Tom Myers, Head of Motorsport Programs	tom.myers@schroth.com	www.schroth.com
Schubert	Kai Rehländer, Head of Business Unit Car Racing	Kai.Rehlaender@schuberth.com	www.schubert.de
Simpson Performing Products	Patrick Lynch, European Manager	patrick@teamsimpson.com	www.teamsimpson.com
Sparco SpA	Paolo Donadei, Supervisor R&D Racing Technical Equipment	l.cucia@sparco.it; p.donadei@sparco.it	www.sparco.it
Stand 21	Gérard Bonnet, R&D Manager	gbonnet@stand21.fr	www.stand21.com
Stilo S.r.l.	Paolo Bonetalli, R&D Manager	bonetalli@stilo.it	www.stilo.it
T.ESS GmbH	Ann-Kristin Essers, General Managers	info@tessmunich.com	www.tessmunich.com
TAG Heuer	Marcus Maierhofer, Timekeeping Director	marcus.maierhofer@tagheuer.com	www.tagheuer-timing.com
Tanida Co. Ltd	Yukishige Tanida, President	yukishige@tanida-web.co.jp	www.tanida-web.co.jp
TRL ltd	Vincent St Clair, Motorsport technical head	vstclair@trl.co.uk	www.trl.co.uk