



Press release

Formula 1-Team partnership with MERCEDES AMG PETRONAS

ebm-papst entered into new partnership with the Formula 1 team

Formula 1 motor racing is currently experiencing its greatest technical revolution since 1950 with its new focus on efficiency. This shift in focus encouraged ebm-papst to enter into a partnership with the MERCEDES AMG PETRONAS Formula 1 team. Their team partnership involves developing and designing cooling solutions to fit onto the latest generation of racing cars, as well as innovative, specially manufactured cooling and heat dissipation systems for the pits, and improving energy performance at the MERCEDES AMG PETRONAS plant in Brackley. Another aspect of this partnership is the transfer of expertise in the fields of energy efficiency and aerodynamics. Both sides are convinced that the project will yield significant technical progress. The partnership agreement is scheduled to run for an initial period of three years.



Figure 1: MERCEDES AMG PETRONAS race car with ebm-papst off-board cooling fan

By signing with MERCEDES AMG PETRONAS, ebm-papst becomes the first major partner to enter Formula One as a direct consequence of the new efficiency based rules introduced for the 2014 season and beyond.

Head of Mercedes-Benz Motorsport, Toto Wolff, commented: "Formula One is the pinnacle of automotive innovation. As such, it has a duty to push the boundaries of technology. The new regulations not only encourage this innovation but also make the sport more relevant to the direction in which the motoring industry is heading. Our partnership with ebm-papst not only provides the team with the best solutions available to operate our racing cars but it also demonstrates the significance of new and innovative technologies within the sport. To welcome a new partner as a direct consequence of the new 2014 rules is proof that we are heading in the right direction. Our research and development for the race track is now increasingly relevant not only to our road car activities but also wider fields of technology."

Press contact:

Caroline Bommès

Marketing Consultant

ebm-papst A&NZ Pty Ltd
10 Oxford Road
Laverton North VIC 3026
Australia

Phone: +61 3 9360 6400

Fax: +61 3 9360 6464

caroline.bommès@au.ebmpapst.com

<http://www.ebmpapst.com.au>

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The technology: off-board cooling

In conjunction with the MERCEDES AMG PETRONAS Formula One™ team, ebm-papst has developed a highly specialised off-board cooling solution optimised for the sidepod radiators and roll-hoop of the F1 W05 race cars which will be deployed when the car is on the grid and in the garage at all Grands Prix and test sessions.

Ambient temperatures at Formula One races can reach up to 40°C with ambient on-car temperatures up to 75°C and an operating temperature of over 120°C for the sidepod radiators.

In order to achieve the optimal performance for the cars, ebm-papst has used their latest in fan technology. For grid and parc ferme the sidepods and roll-hoop will be cooled with the new 'S Force' axial fans (4114N/2H8P) whose performance curve match the high back-pressure characteristics of the Mercedes system and provide a 518% improvement in delivered airflow. This high performance contained within a small packaging size meets the requirements for a small portable powerful system.

When the car is in the garage, the sidepods and roll-hoop will be cooled via a larger low-noise forward-curved centrifugal solution where the motor and impeller have been integrated into a bespoke designed scroll housing to fit perfectly on to the car for maximum performance and low noise in the garage environment.

The New Era of F1 in 2014 – Efficiency and Performance

2014 introduces what is widely recognised as the biggest technical revolution in Formula One season since its inaugural season in 1950. However, while probably the most far-reaching, this is far from being the first major upheaval in the history of the sport. For decades, engineers have been pushing the boundaries of performance, extracting the absolute maximum from the technology at their disposal and exploring every avenue of development in the pursuit of automotive perfection, only to have their creations cast into the annals of racing history. Increasingly complex regulations always force fresh innovations to suit constantly evolving sporting and technical requirements.

The revolution of 2014 has subtly different roots, with rules written to encourage rather than restrict new technology. As the automotive industry increasingly demands more from less, efficiency and hybrid technologies become all the more relevant. As the pinnacle of automotive technology and performance, Formula One has a significant role to play in driving these technologies forward.

From an aerodynamic perspective too, innovation has been stretched to the limit. Fundamentally, there are two key elements to a fast Formula One car: having the most power possible to accelerate down the straight, plus good mechanical and aerodynamic performance to allow for quick cornering. The 2014 regulations bring with them a new set of challenges not only relating to the more visually obvious elements of the car, but more fundamentally in terms of packaging.

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Marketing Consultant

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Hidden from view, the integration of the Power Unit and related systems into the chassis provides a significant aerodynamic challenge. The Power Unit itself takes a completely different shape to its predecessor, while more hybrid systems, a more complex exhaust system, plus an intercooler required for the pressure charging system are all contributing factors to the cooling requirements of the car. Managing heat is not only necessary in terms of car integrity but also performance and efficiency. Two opposing influences thereby exist: one focused on ensuring that each of these components operates within an optimal temperature range, the other on packaging the related cooling systems in such a way as not to detract from the aerodynamic efficiency of the car.

It becomes clear that Formula One in 2014 presents a fresh set of challenges to designers, engineers, drivers and spectators alike. As has been the case throughout generations of the sport, the introduction of new rules serves to encourage innovation and showcase Formula One as the cutting-edge of new technology: adding a level of intrigue which is relevant not only for the interest of spectators, but the automotive industry as a whole. As the latest phase of an evolutionary process that continues to position Formula One at the heart of contemporary technology, 2014 truly puts the 'motor' back into 'motorsport'.

Your contact persons:

Nicola Armstrong: Tel. +44 7793 844549

E: narmstrong@mercedesamgf1.com

Bradley Lord: M. +44 7785 682893

E. blord@mercedesamgf1.com

Wolfgang Schattling: Tel. +49 160 862 4864

E: wolfgang.schattling@daimler.com

www.mercedesamgf1.com

About ebm-papst

The ebm-papst Group is the world's leading manufacturer of fans and motors and is a pioneer and pacesetter for ultra-efficient EC technology. ebm-papst fans and motors are represented in many industries, including ventilation, air-conditioning and refrigeration technology, household appliances, heating engineering, in IT/telecommunications, in medical technology and in applications in automotive and commercial vehicles engineering. ebm-papst EC motor technology, and the market leader's engineering and logistics expertise will add value to your business.

Find out more about ebm-papst A&NZ on www.ebmpapst.com.au.

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