

## The interview: Frank van Meel



**Creative thinking** BMW M's president explains how the high-performance brand will balance contrasting demands by developing more complex traditional powertrains, electrification and innovative materials



**The days of large vee engines are coming to an end** as stricter emissions controls bite. But thankfully, while you are less likely to see a V10 in a mass-produced vehicle these days, clever engineers are continuing to find inventive ways to sate the driver's appetite for high-speed thrills.

BMW turns 100 this year and for M, the performance arm of the group, it is a significant period, says M president, Frank van Meel.

"Without BMW, M would not exist. We've had 30 years of the M3, and it is an important time because this year the M2, X4, 4Ti, M760i and the M4 GTS come to market. So we have got quite a broad product portfolio coming up."

The last of those vehicles, the M4 GTS, is of particular interest. Much like the non-GTS M4 coupé and the M3, the vehicle has a twin-turbo 3-litre V6 engine that replaced the naturally aspirated 4-litre V8.

What sets the GTS model's engine apart, however, is that it incorporates water injection technology, first tested in the M4 MotoGP safety car. Injecting water improves the combustion process in the six-cylinder gasoline engine by reducing temperatures by 25°C.

The system adds a further 51kW of power and an additional 50Nm of torque to the 317kW/550Nm already developed by the unit.

Providing a top speed of 305km/h and capable of reaching 100km/h from standing in 3.8 seconds, it makes the M4 GTS the fastest road vehicle ever produced by the OEM.

Weighing in at 1,510kg, the vehicle is 30kg lighter than the standard M4, owing to the extensive lightweighting measures taken.

"Carbon fibre, for us, is still a very important material," says van Meel, adding: "The M4 GTS shows it very strongly with a carbon-fibre hood, roof, front splitter, trunk lid, spoiler, diffuser and also a lot of the material in the interior as well – I think it is the first time in the automotive industry that someone made the dashboard bar out of carbon fibre.

"There is also a driveshaft and the

transferral supports underneath the roof made of the same material."

The M3 was the first vehicle from the group to have a carbon-fibre roof more than 10 years ago, and since then BMW's understanding of and expertise in the lightweight material has grown considerably.

Apart from carbon fibre, there are of course other materials that can help engineers to shed weight from their vehicles. On the M4 GTS, there is a titanium exhaust, which alone saves 6kg, and there is a 10kg saving from using ceramic brakes.

Van Meel says: "We have a lot of different carbon-fibre parts but we are not dogmatic about it. I think titanium and aluminium are still very popular materials to bring down weight. It is all about finding the right kind of material for the right place in the car, depending on the stress placed on the material.

"Carbon fibre is going to play a stronger role in the future, but I think that very strong steel with very thin thickness will have a part to play too. The steel business is not over yet – they are fighting back."

### Material advantage

Use of carbon fibre was important to both the vehicles released so far by BMW under the i badge, with the i3 proving that the material is beginning to extend to wider, more accessible applications.

As well as lightweighting possibilities, however, the plug-in hybrid i8 and the battery-electric i3 underlined the OEM's capabilities regarding electrification of the powertrain.

The M division is yet to branch out into alternative power sources and van Meel explains that there are adequate reasons for this. "We are always asked if we have a dogma on this or a belief that we do not want to integrate electrification but we do not have a dogma regarding technology.

"The M3 is a good example of this. It has had a four-cylinder, a six-cylinder turbo and

an eight-cylinder engine, and each was the right engine for the right time regarding fulfilling our philosophy on agility, precision, dynamics and innovation.

"Hybrid powertrains are just a matter of time because it depends on the progress in electrification.

"So electrification will come but currently, looking at the power-to-weight ratio, we still have not figured out a way of making a pure M while integrating it – but we are looking into it."

So battery weight continues to be a stumbling block for the wider use of the technology. That's why, particularly in the case of the i3, carbon fibre was in part used to offset the load that the electric motor and lithium-ion battery provided.

### Performance demanded

For van Meel, the simple fact is that the technology is not yet sufficiently capable of delivering the high performance required at the end of the market that M caters to. But that is not to say that we won't see a pure electric, M-badged vehicle in years to come.

He says: "I would not like to say that there is something we rule out because in the future that might change. Pure electric technology is not able to keep up performance for longer than five minutes without degrading due to temperature reasons – that is the current state of the technology. It therefore makes no sense to make a pure electric car because then it is not a motorsport car.

"That does not mean that it cannot be achieved in the future, as there is development and predevelopment work going on in the industry regarding different ways of cooling batteries and different chemistries. So we will not rule it out but currently it does not seem to work."

Such an open-minded approach should enable the subsidiary to continue long into the future.

James Allen

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