DTM cooperates with experts from AVL RACING for vehicle balancing

- **Balance of performance: formula for maximum equality of chances among GT3 race cars**
- **For over 70 years: AVL global automotive service provider with over 11,000 employees**
- **Decades of experience: AVL engineers involved in 15 race series**

Munich/Graz (30 March 2021). For the balancing of the GT3 race cars in DTM, the series' organiser ITR is relying on the experience from the globally operating automotive service provider AVL. The company with over 11,000 employees and headquarters in Graz in Austria is currently involved in 15 race series including Formula 1 and the NASCAR stock car race series in the US.

The GT3 race cars, currently from Audi, BMW, Mercedes, Ferrari and McLaren, will be categorised by a DTM-specific 'balance of performance' or BoP for short, ensuring maximum equality of chances and therefore exciting racing. In the process, different vehicle configurations like front, mid and rear engine as well as engine concepts with eight or ten cylinders and turbocharged or atmospheric engines are primarily taken into account. The performance balancing is implemented, among others, by modifications of the vehice weight, the ride height, the air intake or the boost pressure.

Between two practice sessions: computer simulation of up to 100,000 laps

For its vehicle simulation and BoP calculations, AVL is relying on decades of experience in motorsport, particularly in the areas of drivetrain development, vehicle simulation, test beds and prototyping. Core element of the BoP calculations is the VSM™ Race (Vehicle Simulation Model) software, developed by AVL over the years. For instance, the versatile VSM™ Race software is giving the AVL engineers the opportunity to simulate up to 100,000 laps in a minimum of time by means of cloud computing between two practice sessions.

"Meanwhile, AVL has been working with the VSM™ Race software for 20 years to compare different vehicle and drive systems with each other," Ellen Lohr explains. The only female DTM race winner to date took on the position of AVL's motorsport director at the beginning of the year. "It is our aim to generate an effective BoP with our engineers and together with ITR as a basis for exciting motorsport."

In contrast to other vehicle balancing procedures that, among others, integrate the insights from a real test driver, ITR and AVL RACING, in their close cooperation, are relying on state-of-the-art virtual laboratory conditions, taking into account a huge database as well as specific data sources from test sessions, practice sessions and races throughout the DTM season. In the process of creating a BoP model in a virtual enviroment, exclusion of external factors or temperature differences depending on the time of day is elementary. On the other hand, to determine the circuit-specific BoP ratings, weather and track conditions are very much taken into account as temperature and ambient air pressure have a relevant effect on the engine performance, just like the actual grip levels of different cars can be used in disparate ways.

“We have opted for AVL because the company has decades of experience as well as systems that have been optimised over the years and experienced staff, also from GT3 racing,” Michael Resl, DTM Director Competition & Technology, underlines. “Together, we are breaking the moulds by means of a technically coherent, comprehensive simulation with virtual race cars and virtual drivers that leads to maximum coherency in the performance of the DTM cars.”