Everything at your fingertips

Services for Takata steering wheel test stands

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A test stand for an electronic command center

Since Alfred Vacheron invented the steering wheel back in 1894, a lot of new options have been added: changing gears; braking, differential and fuel mixture adjustments; KERS and radio buttons – these are just some of the elements available at the fingertips of F1 drivers. However, the steering wheel has also transformed to an electronic command center for the average driver as well: airbags, radio adjustments, climate controls – these have all been integrated into the steering wheel.

In 2008, Takata-Petri, the global supplier of automotive safety systems, opened a new research and development center in Berlin. In the district of Wedding, the company is testing products such as steering wheels, airbags and seat belts for both passenger and commercial cars and trucks. For testing steering wheels, Takata currently has ten imc test stands in use. At the 6,500 square meter Berlin facility that is located on a 17,000 square meter piece of land, Takata employs around 120 personnel – mostly engineers and technicians. Worldwide, the company operates 47 manufacturing facilities and seven R & D centers. A total of around 37,000 employees currently work for the Takata Corporation.

Working together with imc

The beginning collaborations between Takata and imc started out quite modest. Takata rented an EC06 developmental test stand from imc to perform various tests verifying dynamic steering behavior. After working with imc for a short time and developing a trusting relationship, Takata was ready to order ten test stands worth about €1.2 million. These test stands are used to test innovative steering wheels with superimposed steering systems. With superimposed steering systems, the steering ratio is varied as a function of the vehicle's speed. That is, when required, the maximum steering angle can be reached by turning the steering wheel either more (indirect steering) or less (direct steering). Sensors are set up to detect both the steering angle and the vehicle speed (among other things). Subsequently, the information is then sent to the control unit. Signals are next sent to the electric motor in the superimposed steering system so that the appropriate steering angle is produced (at the actual steering box).

Because of this system design, a driver can park more conveniently, for example, with less turns of the steering wheel. On the contrary, at higher speeds, involuntary movements, which can lead to instability, are also reduced. In case of failure within the system, a mechanical lock within the superimposed steering will intervene that allows the vehicle to remain steerable through the conventional steering system.

Comprehensive support services from imc

After the order was placed, imc built the ten test stands in eight months – but the construction was only a part of the overall service package. In addition to commissioning the test stands, imc application engineers developed different test algorithms and implemented the testing procedures as specified by the customer. Takata employees have also received comprehensive training on specific testing topics from imc, as well as training on software products such as imc STUDIO and imc FAMOS.

Conversion to imc STUDIO und imc FAMOS

For previous testing projects, Takata had been using a competitor's software. However, after imc engineers had demonstrated to them the comprehensive control, automation and evaluation functionalities of imc STUDIO and imc FAMOS, Takata switched entirely to using imc software. This was a great success that emphasizes the productivity of imc systems.