

**Mechatronics leads to added functions and savings**

Mechatronics found its way into automobiles already many years ago with anti-lock braking systems and power steering. More recently, this young discipline also conquered the engine compartment. Novel and improved functions may be achieved using mechatronic engine management systems. This leads to cost advantages, and the environment is conserved due to optimized engine functions.

When it comes to mechatronics, the automotive supplier MAHLE focuses above all on electronic controls, actuators and engine-relevant heating systems. The qualifications that employees – primarily engineers – have to demonstrate are extremely diverse. They range from plastic engineering and plastics joining technology to small transmission design through to hardware and software electronics. Conception, design and testing are performed at MAHLE in Stuttgart. Additionally, a mechatronics competence center is being established in the new MAHLE plant in Wolfsberg/Austria. In the future, mechatronic components will be built there, and corresponding testing facilities will be installed as well.

MAHLE employees are extremely conscientious when performing functional tests. For example, a resonance flap actuator is expected to perform a maximum of 200,000 cycles during the life of an automobile. The MAHLE mechatronics team tests this product, which is used for example in the BMW six-cylinder engine – with 1.2 million switching cycles! By operating the resonance flap actuator, which is used in the intake module, high torque may be achieved across the entire speed range. Additional components in the actuator category include control elements for variable length intake modules. In the future, engineers also envisage the use of electro-pneumatic actuators.

Engine-relevant heating systems are used for example in the feed area of the blow-by gas so as to prevent condensation water from freezing during the winter. Diesel fuels and oil mist separators are heated as well in order to guarantee full function under all operating conditions.

The MAHLE Group is the worldwide leading manufacturer of pistons, engine components and filter systems. MAHLE, which has more than 38,000 employees in 70 production locations, expects sales of about EUR 4.0 billion for the year 2005.

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