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Pierburg GmbH

## **Electrical wastegate actuator positions more dynamically**

**“Downsizing” – the reduction of engine displacement while maintaining steady engine performance – has been a constant engine development trend in the last several years. No wonder: small turbocharged engines have lower fuel consumption without having to sacrifice performance. Less usage of fossil fuels also means reduced emissions. Exhaust turbocharging technology is continually advancing, not least because of the ambitious CO<sub>2</sub> reductions mandated by the EU.**

**In order to cope with all driving conditions, modern supercharging systems require comprehensive control engineering technology for which Pierburg GmbH has been developing and producing products for many years. With a newly developed electrical wastegate actuator, the company has extended its portfolio by another component with innovative functionality. The development in B-sample status is currently drawing strong interest from customers.**

In automotive technology “wastegate” denotes the bypass around the turbine wheel of a turbocharger. After achieving the desired turbo boost turbine speed is limited by directly “venting“ the exhaust in the exhaust system using this bypass. In practice, however, it has recently been shown that the previous practice of adjustment control by means of vacuum or pressure actuators is no longer adequate, given the continually increasing efficiency demands for modern vehicles. Pierburg has therefore developed a finely adjustable electric actuator for rapid and non-pressure-dependent control of the turbocharger pressure.

Besides improved positioning, the newly applied technology allows integration into the on-board diagnostic system of the individual vehicle. Among other things, a linear sensor is measuring the linear movement directly on the rod thus avoiding falsifications of the calculated position.

In order to ensure secure and (most importantly) sensitive control even in the case of low bypass rates, great value was placed on the formation of a distinct ‘force plateau’ especially at the start of the movement – here the wastegate is still closed. This is a basic condition in order to achieve the necessary force even if possible wear occurs.