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**Leading nanostructured coating systems for components enable “Mobility for tomorrow”**

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The focus areas of future mobility are environmental drives, urban and interurban mobility and the corresponding energy chain. Environmental drives and their corresponding digitalization are one of the major factors that determine energy efficiency and mobility. The surface properties of engine components must be adjusted to more stringent environmental requirements while friction losses can be minimized by modern surface technology for improved fuel efficiency and reduced CO<sub>2</sub>-emissions. This includes measures for corrosion, functional friction and wear protection, and for optimum electrical or thermal conductivity for sensoric purposes. For all cases nanotechnology contributes significantly to the development and improvement of coated Schaeffler products in mass production. For example, Triondur® DLC coated engine and bearing components in mass production has been realized (about 100 million pieces/year). With the thin sensor coating Sensotect® Schaeffler now introduces intelligent surfaces through an integrated sensor coating system. It allows the measurement of load conditions in places where conventional sensors, such as laminated strain gauges can not be used. In terms of precise adjustment of the engine power to the resulting load, Sensotect® enables an accurate determination of the torque in drive shafts or vehicle transmissions for precise adjustment. This innovative measurement technology permits also an important contribution in reducing CO<sub>2</sub>-emissions. In the future, due to the special material properties of nanostructured coatings, there can be progress in completely new fields of applications. Here, integrated sensor coating systems will contribute high performance to the digitalization through new intelligent products. To use these opportunities, a high degree of interdisciplinary cooperation between designers, surface engineers and extern committees as well as with research organizations is required to realize customized products with added value.

**Keywords**

coating systems

mobility