



ELASTOMERIC COMPONENTS FOR SCR SYSTEMS

NO MATTER WHAT
THE FUTURE HOLDS



Custom-designed product solutions

Datwyler is a leading global partner for the automotive industry and the preferred choice for reliable high-quality products while having excellent engineering experience. The components produced provide maximum reliability and long service life in advanced automotive applications. The automotive division offers customers the expertise for materials and processes by supporting them already in the development stage of new products.

Datwyler is the preferred supplier for elastomer components for the SCR (selective catalytic reduction) technology – one of the most effective and reliable technologies available to reduce diesel engine emissions. Datwyler enables the automotive industry to meet increasingly tighter environmental regulations. The company has long-lasting experience in supplying components for SCR systems and provides customised precision rubber components from the very early development to the serial production stage. Datwyler has a high level of expertise and offers capabilities such as compounding, tool making, prototyping, FEM analysis, and process development. Thanks to modern mixing facilities in Asia and Europe, Datwyler always meets the highest quality standards and product requirements.

Datwyler is already well positioned in this market due to a long supply history that began in 2008 and close engineering relationships with SCR system market leaders. Since SCR technology components are very demanding and sophisticated with regard to tolerances, media resistance and durability, Datwyler's expertise makes the company a preferred supplier for existing customers while constantly creating new business opportunities.

Growing demand for SCR systems

In the face of new environmental legislation and increasing air pollution, exhaust gas treatment for diesel engines is continuously gaining importance. Due to rapidly increasing traffic, experts predict a worldwide growing demand for exhaust gas treatment products, such as SCR systems, especially in emerging markets.

Stricter nitrogen oxide (NOx) limits according to the Euro 6 standard, even stricter super ultra-low emission vehicle (SULEV) limits for California, as well as the upcoming real driving emissions (RDE) tests are further posing a major challenge to car manufacturers. RDE tests examine the exhaust gas emissions of vehicles under realistic driving conditions, meaning that low emission values under laboratory conditions will no longer be sufficient. In October 2015, the European Union decided to introduce RDE tests on a mandatory basis. They will come into force in September 2017 for new vehicle types and in September 2019 for all new vehicles.

These stricter regulations require more than optimised diesel engines, making additional exhaust gas treatment absolutely necessary. Key technologies for the reduction of nitrogen oxides are NOx traps (storage catalysts) and selective catalytic reduction (SCR) systems.

SCR technology is considered the best way to reduce toxic tailpipe emissions. A major part of diesel vehicles complying with the Euro 6 exhaust standard are already fitted with a SCR system.





Specialised EPDM and HNBR materials for AdBlue® applications – Datwyler has the solution

SCR systems use water-based urea solutions (AdBlue®) as an ammonia source to neutralise the nitrogen oxides in exhaust emissions of diesel engines. In SCR systems, ammonia (NH₃) reacts selectively with nitrogen oxides to result in nitrogen and water. To guarantee the safe transport of these chemicals from their storage tank to the exhaust system, the latest technology requires parts that are based on specially designed rubber materials. These materials can be attacked by AdBlue®, which contains urea. Choosing suitable elastomer materials that withstand contact with the urea solution poses a considerable technical challenge. This applies equally to the rubber-to-metal bonding that is often required for AdBlue® applications. With its superior technology and top-quality rubber materials based on EPDM and HNBR, Datwyler more than meets this challenge.

Datwyler product portfolio for AdBlue® application materials

EPDM: 70ShA (plus internal lubrication properties)

HNBR: 60 ShA, 70ShA, 80ShA, also in fiber-reinforced variants, low temperature variants and with internal lubrication properties.

SCR systems use complex components with rubber to metal/plastic parts, tight tolerances, and sophisticated geometries. Elastomer material is available in

different hardnesses, covering specific requirements (e.g. temperature flexibility, internal lubricant or fiber reinforcements).

Datwyler offers EPDM and HNBR compounds that are specially designed for AdBlue® applications and have been successfully tested in extreme environments at peak temperatures of 120°C and 150°C, clearly demonstrating the robustness of Datwyler's compounds.

Advanced low temperature properties of EPDM (–53°C) and HNBR (down to –35°C) allow performance reliability without loss of needed properties.

The demand for and complexity of SCR technology will substantially increase due to the following:

- The spray rate of AdBlue® will increase, which will have an impact on durability, the performance of pumps and dosing modules.
- Due to continuous and accurate concentration measurement, wrong fluid detecting will be added to the system features.
- Production volumes of SCR systems will increase due to expected stronger legislation.
- Due to increasing requirements and additional system features, the number of elastomer components within the SCR system is expected to increase in the next years.



Key products

Datwyler offers customised precision molded rubber parts (rubber and rubber bonded to metal/plastic) which meet high requirements regarding tolerances, media resistance, and product life.

Components for SCR systems include parts of pumps, dosing modules, pipes, and the AdBlue® tank system.

Typical parts are flutter valves, membranes, anchor groups, O-rings, sealings, and equalizing elements. Materials are mostly HNBR, but also EPDM and VMQ.

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