For diesel engines, direct diesel injection technology has developed to the point where it can nearly be called the standard technology. The very tough legislation now in place to regulate diesel engine exhaust emissions makes exhaust aftertreatment technology a must. That is why many of today’s passenger car diesel engines are equipped with oxidation catalytic converters. Further exhaust aftertreatment systems will be needed for at least the heavier vehicles in the passenger car and light commercial vehicle categories in order to comply with the latest emissions regulations.

A range of different systems are currently in development, and in some cases already in use, for reducing NOx emissions. In heavy commercial vehicles, NOx catalytic converters employing urea as the reduction agent provide a system for the highly selective reduction of nitrogen oxide emissions. There is selective catalytic NOx reduction in the presence of ammonia here.

The urea/water solution introduced into the exhaust train is first converted into ammonia via an upstream reaction stage. In the subsequent catalytic reduction process, the ammonia breaks down most of the NOx to nitrogen and water.

The urea-SCR process for exhaust aftertreatment is state of the art. A detailed description of the quality of the reducing agent must form the basis for the universal, manufacturer-independent introduction of this technology and is essential for ensuring the long-term operation of the exhaust aftertreatment system. The reducing agent requirements have been published in standards DIN 70070 (requirements) and DIN V 70071 (test procedure).

Standardization on international level has been completed and can be found in the international standard ISO 22241.

An urea/water solution must be used for Mercedes vehicles based on the requirements of ISO 22241 In Europe, the brand name "AdBlue®" is frequently used for this quality. When using qualities not conforming to the specification, damages to the Bluetec system cannot be ruled out.