

Cleaner environment through pure exhaust gases



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Valves and dosing systems for exhaust treatment



Cleaner environment through pure exhaust gases Bürkert's contribution for the clean use of diesel engines

Diesel aggregates have revolutionised the world and at the end of the 20th were made even more efficient. Today diesel engines are used in many areas. Whether in the air or on water, passenger car or ship, stationary for power generation or for propulsion of vehicles. The diesel engine shows its advantages in a wide variety of situations.

However, with the increasing number of diesel engines the emission values increase drastically. The nitrogen oxides that occur in the combustion of diesel fuel represent problems for our environment that are as significant as the problems associated with carbon dioxide or soot particles. For example, nitrogen oxides, NO or NO₂, produce high concentrations of ozone on streets with heavy traffic.

A remedy is provided by a substance that reacts with the nitrogen oxides to form nitrogen and water - ammonia. This scientific reaction, selective catalytic reduction, points the way to a technology that ensures a cleaner environment. Only SCR catalytic converters reduce the nitrogen oxides to the degree now required by standards and directives. Ammonia (gaseous or liquid) is injected into the catalytic converter either in pure form as gas or in the form of a liquid urea solution (AdBlue).

The SCR technology is not new, it has been used for some time in power plants. The limit values for emissions that must be complied with in the future now ensure that this technology will also be used in construction machines, ships, power generators, transport vehicles and passenger vehicles. The important fact in this regard is that the reaction medium can be safely dosed with repeat accuracy. It is also important to keep dosing modules durable, compact and light. Bürkert is your single source for all technologies that enable these characteristics: Valves and sensors as well as plastics technology and system engineering.

Valve assembly with plastic parts in the SCR aggregate

Reduction of pollutants in diesel engines

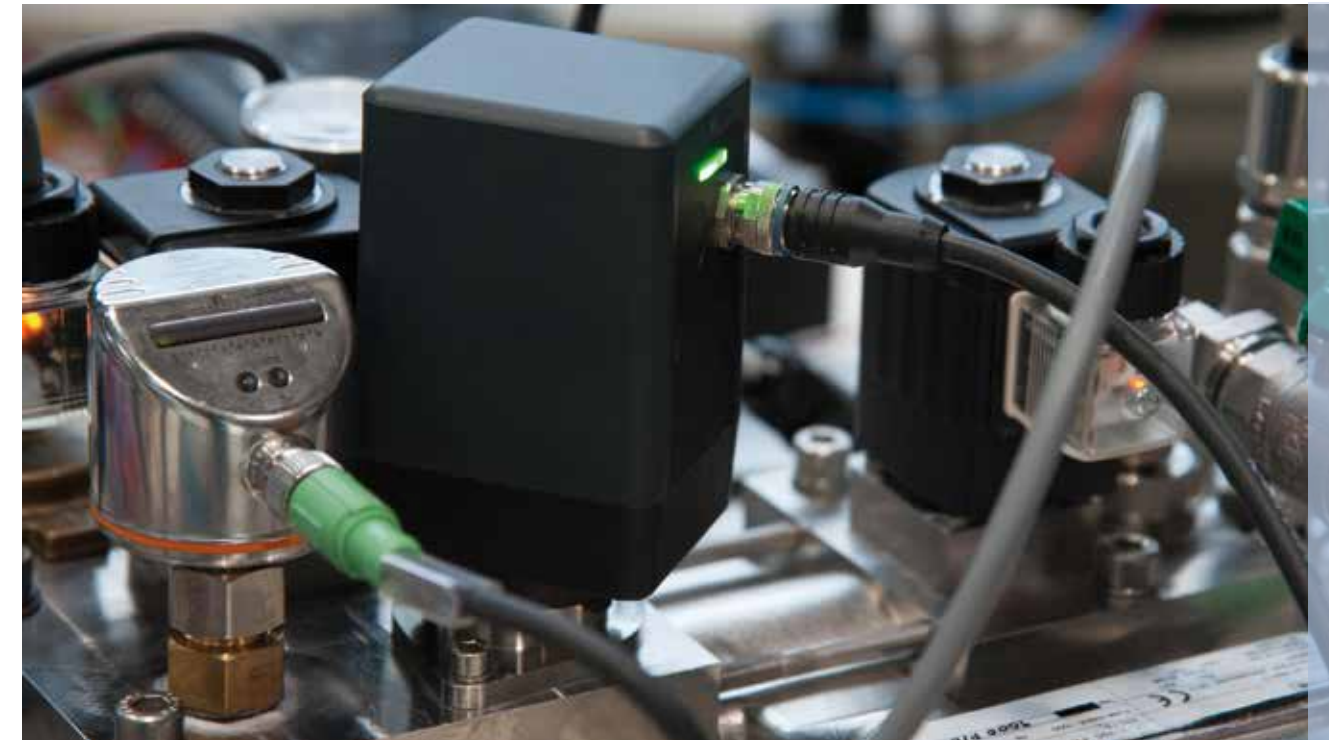
Diesel engines are powerful, reliable and efficient. Mobile commercial vehicles such as trucks, buses, forklifts, excavators, ships, and stationary combined heat and power stations for example are usually powered with diesel aggregates. Exhaust after-treatment measures that significantly reduce pollutants such as soot and nitrogen oxide emissions, in particular, through an optimised inner-engine combustion as well as in the exhaust, have contributed in this regard.

However the statutory regulations (EU, EPA, IMO, UIC, etc.) for further reduction of NO_x gases and particles, can only be achieved through additional emission reduction systems, uncoupled from engine operation. In this case, low-emission engines no longer conflict with general fuel savings.

Components, such as valves, sensors, or complete dosing modules in emission reduction systems with SCR technology, require a higher level of material resistance chemically and thermally, and a high level of physical leak tightness. Consequently, electromagnetic shut-off and control valves from Bürkert use specially encapsulated coils manufactured in-house. Bürkert engineers integrate these coils in dosing units of different capacity classes in a manner appropriate for the application. This guarantees an optimised, cost-efficient overall size, in addition to a significantly reduced variety of interfaces. Dosing modules increase the integrity and reduce installation and test complexity.



Typical Applications



ON-ROAD	Transportation (Coaches)	Components or small dosing modules
	Light and heavy duty vehicles (Trucks)	
NON-ROAD	Construction and land machines	Components or large dosing units (typically in cabinet)
	Transportation (Railroad locomotive)	
	Water vehicles (Boats and ships)	
	Power generation (CHP, UPS)	

Compact dosing modules generally contain components such as a solenoid control valve, an on/off valve, a temperature sensor, a pressure sensor and a heating element and are constructed using on-demand plastics technology.

Non-road applications use dosing units mounted in control cabinets. The number of components is larger, including for example flow meters. While these control cabinet solutions are custom tailored, they are based on a platform concept. This allows fast and efficient adaptation of systems to different performance classes.

Adding value with Bürkert systems in exhaust treatment applications

Bürkert's broad product portfolio is the basis for SCR dosing units from a single source. All valve and sensor specific core components are qualified for the area of application and are time-proven. Product diversity, experience with SCR system technology and the platform concept keep development times short.

Having all the necessary in-house production technologies such as metalworking, plastics technology and control cabinet construction boosts efficiency in the development and production process. All this allows for quick testing and compliance with statutory limit values.

