With fuel prices on the rise and increasingly stricter emissions standards, the modern, economical and environmentally friendly diesel is the first choice for powertrains.

Bosch offers cost-efficient and performance-optimized solutions for reducing fuel consumption and consequently vehicle operating costs: the CRS2 Common Rail Systems series. Fast-switching solenoid injectors with short injection intervals are central parts of these systems.

The CRS2 series is suitable for diesel engines with up to eight cylinders and a wide power and torque range. The modular systems can be adapted to multiple engine types.

Bosch is experienced in series application of the CRS2: the 1,600 bar system CRS2-16 is already in use in millions of vehicles. Later system variants with pressures up to 2,200 bar are modularly based on the CRS2-16. With increased pressure and technical modifications, these systems help to fulfill today’s and future emission targets. In addition, higher injection pressures mean more flexibility for designing the basic engine and the exhaust-gas treatment.

Possible applications
The CRS2 is used in passenger-car engines with 2 to 8 cylinders. Additionally, applications in light-duty commercial vehicles are possible. With appropriate adaptation, the CRS2 can also be used for off-highway operation (please refer to the CRS2-OHW datasheet). This further development of the reliable passenger-car system for additional fields of application generates cost benefits. Featuring solutions for all diesel-fuel qualities, the established CRS2 series can be applied in all regions worldwide.
System design and function

The system can be configured with two different high-pressure pumps: with the fuel-lubricated CP4 or – in systems with 1,800 or 2,000 bar – also with the oil-lubricated CP4i.

The powerful second-generation solenoid injectors offer engine developers a high degree of flexibility for injection-rate shaping. Up to eight single injections per stroke are performed in a narrow time slot. This multiple-injection capability contributes to the reduction of fuel consumption and consequently improved CO₂ emission as well as further emissions and engine-noise reduction.

The improved magnet core of the CRI2-16 injector achieves high power when opening the solenoid valve. The split armature module enables higher dynamics in controlling the nozzle needle and a very short injection separation time.

The injectors for pressures above 1,800 bar have a pressure-balanced solenoid. This enables a further leap forward in system pressure.

In addition, the CRI2-20/-22 injectors feature an integrated high-pressure volume that reduces pressure oscillations. Hydraulic efficiency is increased due to a reduced return flow.

EDC Electronic Diesel Control by Bosch controls the entire injection process, the boost pressure and the exhaust-gas recirculation.

Outlook

CRS2 system technology will allow further pressure increases in the course of further development. Our proven modular system design will, of course, be maintained.