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Construction Machines – Smart at Work, Economic in Consumption

In many segments of the construction machinery industry, the markets are expected to recover at least in a medium term. The demand situation in China, for example, is already showing positive trends. There is also a positive development in the rest of the Asian regions, and the market in Europe is currently generally stable. As well as the economic development, both manufacturers and users are addressing the increased complexity of legal requirements worldwide. Emission regulations, such as the Stage IV in Europe or the Tier 4 final in the USA set the scene for future developments. The decisive factor here is that the usual power and agility of the hydraulic systems are continuously increasing.

Working hydraulics and hydraulics for travel drive already contribute significantly to reducing the diesel consumption and exhaust emissions from construction machinery. But this challenge cannot be overcome solely with energy-efficient components. Their interaction is much more important. For this, diesel engines, hydrostatic travel drive and working hydraulics should be operated at their optimum operation point. Systems often

need to be completely redeveloped to comply with future requirements.

The exhaust gas aftertreatment is also important here, as it requires an increasing amount of space in the construction machine. Assembly space will soon become a scarce commodity. Finely graded sizes as well as intelligent designs, e.g. integrated brakes in transmission units, help to optimise the assembly space available.

With regard to energy-efficient construction machines of the future, users also expect a machine that is as flexible as it is convenient, that can be customised to the conditions and customer requirements on-site. The requirements for controllability and networkability have increased in this respect. This can only be achieved by an increasing electrification of hydraulics. Sensors, such as those required for position, pressure and temperature, are integrated into the hydraulics and form the basis for recording and forwarding data. They provide the requirements for the functional diagnosis of drive solutions and make condition-orientated maintenance possible. This way, the availability of construction machines can continue to increase.