New Development KR 709-3G
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The development of a drilling rig today is more complex than ever. Exhaust and noise legislations around the world, as well as the new European drilling rig safety standard, need to be reconciled with the highest levels of productivity and performance. The development of the new Klemm KR 709-3G reflects these endeavours.

A comprehensive relaunch of the KR 709 series was scheduled to coincide with the introduction of the US exhaust emission standard EPA 4final in 2014 and with the 2014 enactment of the new European safety standard EN 16228. It turned out that the new safety operating modes, including automatically reduced safety speeds could no longer be fully implemented with the conventional hydraulic pilot technology and hydraulic logic elements. Moreover, increased customer requirements also influenced the development. Today, the focus is continuous flight auger (CFA) drill holes with up to 24 in (610 mm) flighting and 26 in (660 mm) casing.

Engine and Exhaust System
When selecting the diesel engine, Klemm pursued a new concept, in order to provide the highest possible availability of the rig. During drilling, both full-load and partial-load operations can be encountered in an undefined relation to one another, strongly being influenced by ground conditions and by the working method of the operator. Recently, the regeneration of exhaust treatment systems of the EU standard 3B, in particular DPFs, had under certain conditions shown to be prone to malfunctions. A great emphasis was put on an exhaust treatment system that was as simple as possible.

The diesel engine TAD 572 VE from Volvo Penta has an output of 160 kW at 2,000 rpm and meets emissions values according to US TIER 4f (or EU Stage 4) with the so-called ‘SCR-only’ technology. The rig has a 45 L tank for DEF-fluid for operating the SCR catalyst. The exhaust gas treatment runs continually and at the same time as its application. The diesel tank is now 380 L.

The engine drives the cooling system via a viscous coupling with a temperature controlled fan speed. Adjusting the speed to the respectively necessary level reduces noise emissions, likewise the newly developed oil cooling system, which also has a thermally regulated ventilator drive. The effort towards low sound emissions coincides with the EU’s objectives to tighten the so-called Outdoor Noise Directive (2000/14/EC) in the next few years.

Machine Controls
Two 260 L/min (gross) LS pumps at a constant pressure of 320 bar are provided for the best possible power exploitation. The oil tank is 900 L (previously 600 L). To increase efficiency the machine comprises a newly-developed, highly dynamic engine speed adjustment together with the power-sharing technology for pump control. The new “EEP-assist” feature (EEP=energy efficient power) is preselected and can be deactivated at the wish of the operator.

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