

PRESS RELEASE **(long version)**

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2018 Bauma China: DEUTZ presents superior 'China 4 ready' engine technology

- **DEUTZ diesel and gas engines ready for the new China 4 emissions standard**
- **New emissions requirements in China present DEUTZ with opportunities for growth**
- **Powerful E-DEUTZ drives in live testing**

From 27 to 30 November, DEUTZ will present its latest developments in electric drives and its innovative diesel and gas engines – meeting the China 4 emissions standard set to come into force in 2020 – at the 2018 Bauma China in Shanghai. In an outdoor area, DEUTZ will also offer its customers the opportunity to test two operational telescopic handlers, one with a hybrid and the other with a fully electric prototype drive.

China 4 ready

Effective exhaust aftertreatment for its engines is one of DEUTZ's core competencies. The Company is the first manufacturer in the world to be certified for the EU Stage V emissions standard, which will come into force in Europe in 2019. The necessary technology, including SCR catalytic converters and diesel particulate filters, is already a standard feature of production models, which means that DEUTZ is also ready for the pending and comparable China 4 emissions standard. Marketed as 'China 4 ready', DEUTZ delivers safe and proven solutions for the effective reduction of nitrogen oxide and particulate emissions.

New heavy-duty engines for off-highway applications

From 2019, DEUTZ will also be making further significant additions to its higher output range portfolio, with four new in-line engines of between 9 and 18 litres capacity. The TCD 9.0 four-cylinder engine and the TCD 12.0 / 13.5 and 18.0 six-cylinder models deliver power output of between 300 and 620 kW and will be aimed in particular at heavy-duty off-highway applications. The models in the TCD 9.0 to 13.5 product range are part of a family platform concept with a standardised customer interface and identical front and rear sides, which make it considerably easier to install and service the engines. The DEUTZ TCD 9.0 has already won two awards: DIESEL magazine named it DIESEL OF THE YEAR and it was included among OEM Off-Highway magazine's Top Ten New Products of 2017.

Compact engine platform in diesel and LPG variants

DEUTZ is extending its product offering in the lower power output range, too. From 2019, based on the successful four-cylinder TCD 2.9 (30 to 75 kW), there will be a three-cylinder variant, the TCD 2.2, ranging in output from 22 to 56 kW. Both these diesel engines will also be available as liquefied petroleum gas (LPG) versions, named G 2.2 and G 2.9. All the variants will be based on the same engine platform, generating extensive synergy effects. These drives will represent a further option, in particular for low-load applications in the material handling and compact construction equipment field.

E-DEUTZ is lowering both emissions and operating costs

The Company will also present its E-DEUTZ solutions for hybrid and fully electric off-highway drives at Bauma China, the first time these have been on show in Asia. E-DEUTZ is a modular system that allows customers to put together the optimal combination of conventional and electric drive components to suit their applications. To showcase the system, DEUTZ has equipped two prototype telehandlers, which are usually powered by a DEUTZ TCD 3.6 diesel engine, with a hybrid drive and a fully electric drive.

To produce the battery-electric hybrid, the E-DEUTZ team first 'downsized' the combustion engine to a 56 kW DEUTZ TCD 2.2, supplementing it with a 48 volt 20 kW electric motor,

thus giving the system a power output of 76 kW. The mechanical connection between the e-motor and the diesel engine is achieved by means of a transmission with integrated decoupler, which allows the diesel engine to be disconnected from the electrical system and provides the option of powering the vehicle purely by electricity. The energy required is generated by raising the diesel engine's load point and storing the energy in a 10 kWh capacity battery.

The fully electric demonstrator's drive is powered by a 360 volt system voltage, its diesel engine being completely replaced by a 60 kW electric motor. To ensure that the drive is constantly supplied with sufficient energy, the E-DEUTZ experts have equipped the telescopic handler with a correspondingly powerful battery; with its 30.5 kWh capacity, even lengthy periods of use at high load present no problems. The fully electric E-DEUTZ drive operates with zero local emissions, making it particularly attractive in major conurbations where air pollution is often a major issue. In addition to the complete elimination of exhaust gases, it also significantly reduces noise pollution.

Customers can test these prototype machines in Shanghai and experience for themselves the impressive power that is typical of electric drives. The potential savings essentially depend on the load cycle and on the length of time during which the equipment is operated in the particular application. The E-DEUTZ hybrid on show achieves fuel savings of around 15 per cent, which means that the cost of investment is typically recouped after just one year.

Dr Frank Hiller, Chairman of the DEUTZ Board of Management: "Our sophisticated diesel and gas engines are mature technologies that enable us to serve the Chinese market in the best possible way. With these and our E-DEUTZ solutions, we already meet China's new emissions standards. As a result, we have excellent opportunities for growth over the coming years."

DEUTZ hydrogen engine powered by sustainable fuel

DEUTZ is not just working on electrified solutions in its efforts to pioneer alternative drive concepts. Adapting the traditional combustion engine so it can use alternative and sustainable fuels – such as hydrogen – is currently a promising area of research. The Munich start-up Keyou recently unveiled a DEUTZ prototype engine that has been converted to utilise hydrogen, for example. Keyou has developed a conversion kit that can turn a conventional combustion engine into a drive based on state-of-the-art hydrogen technology. DEUTZ offered its support as a development partner, supplying one of its standard 6-cylinder diesel engine with 7.8 litre capacity that was converted into a hydrogen engine using Keyou components. Visitors to the DEUTZ stand at the trade fair in Shanghai can take a look at the resulting engine for themselves.

DEUTZ will be present at the 2018 Bauma China in hall N5 (stand 130) and the F50 outdoor area

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Caption: 'China 4 ready' DEUTZ engines feature sophisticated exhaust aftertreatment that effectively reduces nitrogen oxide and particulate emissions



Caption: DEUTZ will present two telescopic handler prototypes, one with a hybrid drive and the other fully electric, at Bauma China in 2018