**Drill spindle unit DBE 24 “Industry 4.0 ready” now**

**Ligna 2019 – the stage début for the Grotefeld project “power unit digitalisation”**

**The system supplier Grotefeld GmbH from Espelkamp is a highly specialised producer of premium power unit technology. The range of high-performance components can be used in a wide variety of applications – from wood, plastic and metal to gypsum and cement through to composites. The company is carrying out real pioneering work in the comprehensive digitalisation of production processes with the initial development of digitalised drilling and milling units – including the drilling spindle unit DBE 24 with extensive sensor technology and evaluation software.**

At the leading trade show “Ligna 2019”, Grotefeld presenting its concepts and products for Industry 4.0 with innovative developments at its stand D72 in hall 12, and will be setting trends in digital power unit technology going far beyond the lumber and furniture industry.

**Digitally determined predictive maintenance for DBE24**

The focus of Grote and its development partners lies in predictive maintenance. With its drill spindle unit DBE 24 the power unit pioneer from East Westphalia will be showcasing a first-time product that collects data itself for predictive maintenance and feeds it into the IT systems of a manufacturing company in real time.

Drill spindle units of the DBE 24 series are intended for programme-controlled application in CNC machines. Virtually any drill patterns can be realised – various vertical drill spindles can be combined with horizontal drill spindles and vertical drilling gears with drilling distances from 16 mm. The individual spindles are optionally freely accessible and are preadapted at 50 mm. The maximum rotational speed is 8,600 1/min.

**High-quality sensor technology for a large number of power unit parameters**

In order to digitalise power units like the DBE 24, various sensors for diverse parameters are required in and on the power unit. For this purpose, various recording channels will also be drilled into the bearing housing as a serial feature in the future and then the sensors will be positioned or fixed. The complete wiring will be carried out on the power unit itself so that only a few wires need to lead away from the unit. By doing so, the assembly group can be exchanged more swiftly as only one plug has to be removed in order to decouple the sensor technology.

Thanks to the wiring, it is also possible to place the SPC (stored program control) outside of the power unit, for instance in a separate control cabinet – a step which definitely makes sense. On the one hand, the SPC acts as a collecting point for the sensor data and, on the other, as a gateway. The various measured values of the operating condition of the DBE 24 are initially scaled, then converted into logic values, packed into data packages and uploaded to a Cloud.

**Cloud-based big data to predict precisely scheduled maintenance work**

The data is stored and analysed in the Cloud. The Cloud makes it possible to access the power units at any time and from any location, to call up their current status, to have the real-time values displayed in various graphic representations, and even to derive value trends therefrom. Here, several sensors of the same type are compared with each other and it is possible to identify the behaviour of the individual power units of the entire system.

It is already possible to get the evaluation software to learn. The algorithms compare various sensor data with each other, create logical connections and attempt to draw conclusions on the condition of the power unit. In this way, it is possible for the first time to make accurate, cost-saving predictions as to when the next maintenance work is really necessary or which individual parts need to be exchanged during such work. The drill spindle unit DBE 24 from Grotefeld is the first available digital power unit to meet the demands of Industry 4.0.