

**STATEMENT**

21.10.2021

## Digitalization of industrial hydraulics creates added value along the entire process chain

**Dr. Mark Krieg, Head of Development within the Industrial Hydraulics Business Unit, Bosch Rexroth AG**

Both the manufacturers of machines and systems and end users face increasingly stiff global competition. Investment decisions are made on a more short-term basis and OEMs need to come up with individually tailored machine and system concepts more quickly. Product variance and thus the requirements as regards the adaptability of production systems are increasing. At the same time, system availability is a key factor when it comes to productivity. In addition to all these technical issues, the mechanical and plant engineering sectors – especially hydraulics – are faced with a worsening lack of specialist staff.

The digitalization of hydraulics is the key to coping with these challenges. But it is not an end in itself. Digitalization must either create added value or reduce costs. And it must do so along the entire process chain – from engineering, commissioning and producing the machines and systems to maintenance and repairs.

As soon as engineering begins, Bosch Rexroth provides design engineers with data models for hydraulic components for all marketable engineering suites. Hydraulic systems can be designed quickly and easily with online configurators and the time to market can be significantly reduced as a result.

During commissioning, so-called wizards assist employees with little specialist knowledge of hydraulics. As in the consumer sector, these software assistants guide technicians logically through the commissioning process. What in the past took hours and man days can now be achieved by technicians and even non-specialists in just a few minutes. The CytroBox unit or the autonomous CytroForce axis for example are ready for use in less than 20 minutes. Rexroth is also working on virtual commissioning. Settings parameters obtained using the digital twin can be transferred to the real system which is then ready for use immediately.

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When operating hydraulic systems on a daily basis, end users face the challenge of increasing variance in production down to a batch size of 1. They have to change their processes more frequently than ever before. Here too, Bosch Rexroth can provide support with digital aids. Just like in a private setting, technicians can connect to valves and linear axes using Bluetooth. The products can then be adapted according to individual requirements using a mobile phone and the dynamics of a valve for example can be set using a virtual slider.

If tools or materials need to be changed, control parameters can be determined in next to no time with the help of model-based engineering. The operator requires no in-depth knowledge of hydraulic or control systems and non-productive times in production are reduced.

System availability is another lever for increasing productivity. Each machine downtime – especially unplanned downtimes – wastes time and costs money. With the Digital Service Assistant app, maintenance personnel can scan QR codes or, in the case of older products without a QR code, can read the name plate digitally and thus identify the product. This opens up a gateway to the virtual world even for non-connected hardware components and a wide range of information can be retrieved online. In the case of connected systems, the CytroConnect digital service provides assistance: Depending on the development stage, the system status is captured live or anomalies are identified using machine learning algorithms and recommendations for status-based maintenance are given. In addition, remote services can be provided on location without specialists and service engineers can enjoy the benefits of augmented reality. Both of these possibilities are currently being developed.

The digitalization of industrial hydraulics helps OEMs and end users to cope with the challenges of global competition. It creates added value and reduces costs along the entire process chain.

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