

MiC 4.0: Construction machines-attachments – a unified and common digital language

A cross-machine and manufacturer-independent data interface between construction machines and attachments is a pioneering step on the way to the digital construction site.

In cluster 7 (attachments) of the Machines in Construction working group MiC 4.0, a standard is being developed for cross-manufacturer communication between attachments and construction machines. The aim here is not to standardize the existing mechanical, hydraulic or electrical interfaces between attachment and construction machine. The aim is to create a universal, uniform and manufacturer-independent data interface between construction machine and attachment. Through the intensive cooperation of over 25 users, machine and tool manufacturers, a data interface via CAN bus is being defined under the name MiC 4.0 BUS, which can map all relevant use cases for communication between tool and machine.

This includes the identification of the tool during coupling, so that information such as serial number, tool type and manufacturer are transmitted to the machine and are available for evaluations of the use of machine and tool. Subsequently, based on the information, such as the required hydraulic pressure, the construction machine can be automatically adjusted to the tool and the machine operator can be relieved and incorrect operation can be avoided. The MiC 4.0 BUS also provides for the transmission of control data so that operation is as simple and clear as possible. By transmitting geometry data, assistance systems, such as working area limitation, can automatically work with correct data and thus support the operator in their work.

Machine operators are relieved by the MiC 4.0 BUS, since the control of the tools is simplified and additional operating elements and displays, which are common today, can be omitted. The provision of tool information to assistance systems eliminates the need for time-consuming manual setup. In this way, the MiC 4.0 BUS contributes to the avoidance of incorrect operation and increases safety on the construction site.

Both customers and manufacturers benefit from the fact that with the MiC 4.0 BUS, even complex tools can be used via "plug-and-work" and time-consuming adaptations can be avoided. This means that the use of efficient, specialized tools becomes easier and more attractive, which has a positive effect on the profitability and efficiency of construction sites.

With the help of the MiC 4.0 BUS, information on the use of tools on the construction site also becomes available. This information can be used to draw conclusions for the customer about the load and operating hours of attachments, so that the MiC 4.0 BUS represents a step in the direction of "attachment as IoT device". On a higher level,

knowledge about tool use can also provide insights into the progress of the construction site, so that the MiC 4.0 BUS also contributes on the way to Construction Site 4.0.

As part of proof-of-concept tests, the MiC 4.0 BUS has already been tested with great success on prototype machines and attachments from different manufacturers in April 2022. The tests have shown the great potential resulting from the deployment of the MiC 4.0 BUS. At Bauma 2022, a demonstrator of the MIC 4.0 BUS will give visitors the chance to see the interface in action. We invite all interested parties to experience the MIC4.0 Bus themselves and meet our experts in LAB0.

Following Bauma, the MiC 4.0 BUS is to be published and thus made available to other companies, with the aim of becoming the standard in communication between tools and construction machines. This revolution in the operation of attachments will give further impetus to the digitization of construction sites and subsequently enable further innovations.

More information at mic40.org.

Kontakt

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