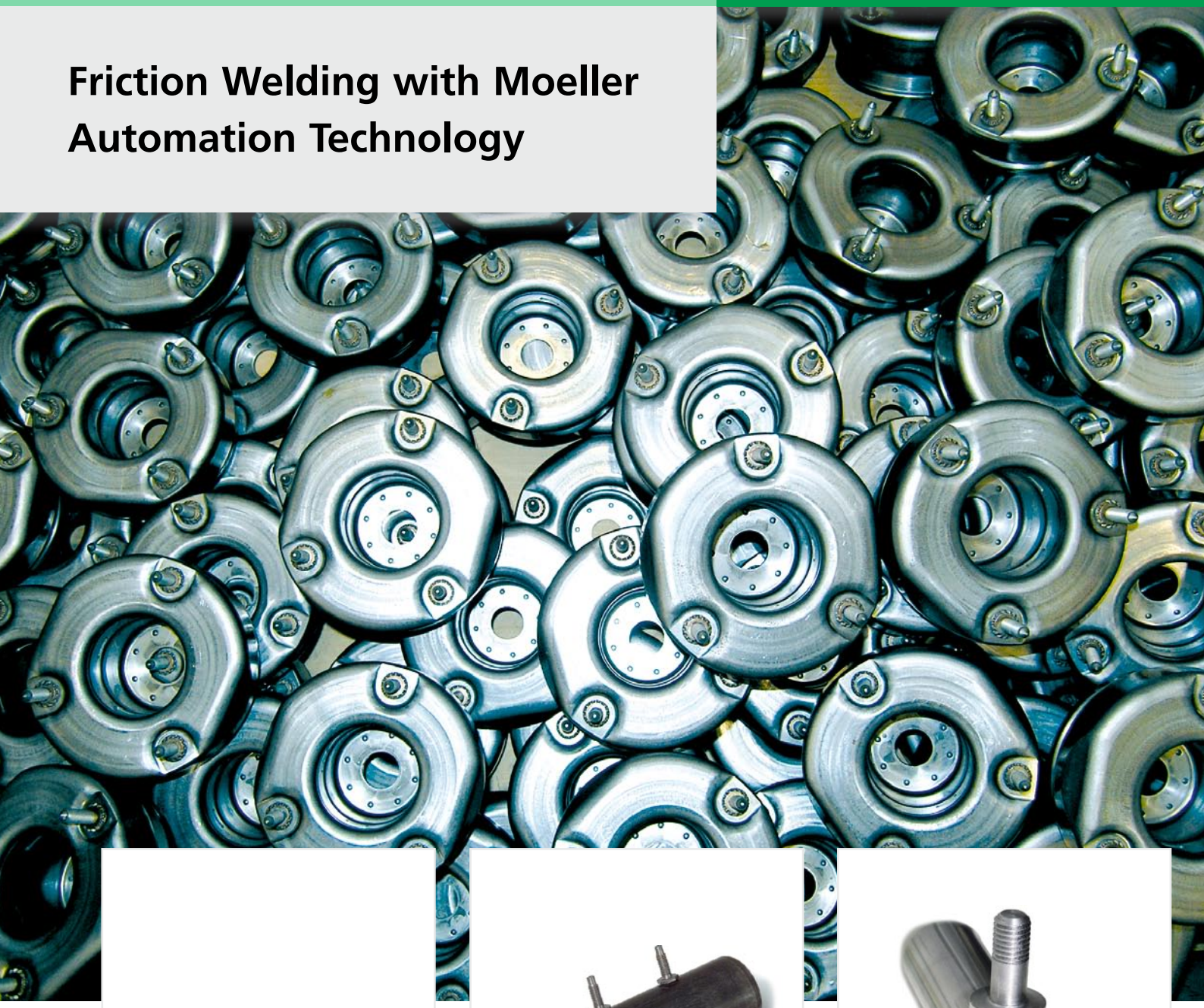
Friction Welding with Moeller Automation Technology

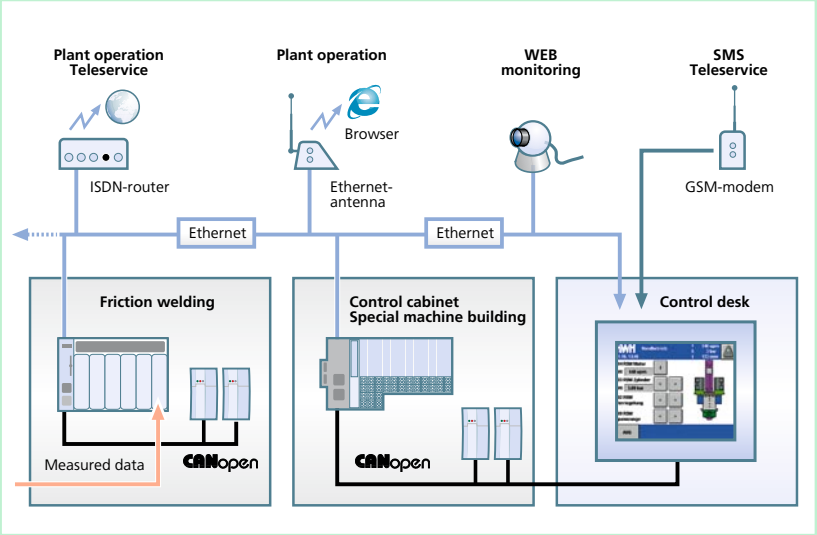


HWH
HARMS+WENDE

Friction welding has been a tried and tested joining process for around 30 years, and is used when parts need to be joined together. Unlike fusion welding, the low welding temperatures, short welding times and pressure jointing technique used in this method allow a much higher quality to be achieved with materials and material combinations.

MOELLER

We keep power under control.



THE COMPANY

Harms + Wende Schweißtechnik is active in meeting the high quality and safety requirements for friction welding in the automotive industry. The company develops customised systems, plans, produces and programs welding plants as well as machine and robot systems, which it also commissions and provides service and training for. Over 100 employees work with the shared aim of providing the "optimum solution for the customer". The Harms + Wende product range covers resistance welding, friction welding as well as machine and plant controls.

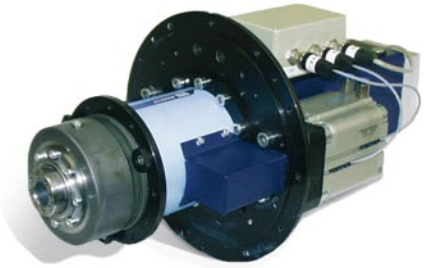
Rotary friction welding

With rotary friction welding the parts to be butt jointed are clamped in a fixed chuck and a rotating chuck and then joined together under pressure without any additional materials.

A relative motion is produced in the contact area between the components thus resulting in friction and the heating of the parts concerned. The relative motion is removed after sufficient heat is applied and the parts are thus joined and compressed together under increased pressure. The high spindle speed achieved by Harms + Wende friction welding machines enable the compression forces to be considerably reduced and the implementation of small high-performance machines.

Automation concept

A compact XC200 Moeller PLC is used in the control cabinet. Its CAN bus integrated on board allows the PLC to communicate with the frequency and servo inverters. A high-speed analog module is used to collect and initially store the measured values at a scan rate of 1 kHz. The Moeller TCP/IP module communicates between the XC200 and the RQ Fuzzy parameter monitoring system via a standard Ethernet interface.



Moeller's PC-based XVC600 with infra-red touch display is implemented with the closed RQ Fuzzy system, the EPAM (EasyPageMachine) visualization tool for graphical HMI tasks and the XSoft (IEC 61131-3-compliant) already installed.

The visualization systems for the friction welding machine and for the frequently modified special machines are designed with EPAM in Microsoft Excel. XSoft enables application programs to be created easily and reduces the time required for project design. Moeller's XI/ON system is used for the remote I/O and acts at the same time as an intelligent terminal. The signals are sent there directly and then relayed via the fieldbus to the PLC.

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CONCLUSION

Udo Menck, project manager at Harms + Wende made the following summary: "Thanks to the data acquisition features of the Moeller XC200 we are able to replace cumbersome measurement cable installations on the machine and expensive input and output modules." As Fritz Luidhardt, product manager for friction welding concluded, "The friction welding machines and special machines are clearly separated in the software and combined in the XVC600 PLC." The entire machine functions for the machine operator as a user-friendly unit." As Heinz-Peter Bardenhagen, friction welding specialist at Harms + Wende, added: "XSoft with the CoDeSys runtime system is easy to use. The Debug function and Trace plot function for analog and digital values allow us to analyse any faults quickly. The interfaces are also easy to access via the software modules. The visualization system accesses the PLC variables directly using the CoDeSys SymArti high-speed protocol. Communication software is no longer contained in the application program because all the variables are known in the network. Last but not least: EPAM allows us to integrate customer requirements quickly in the visualization system."

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