

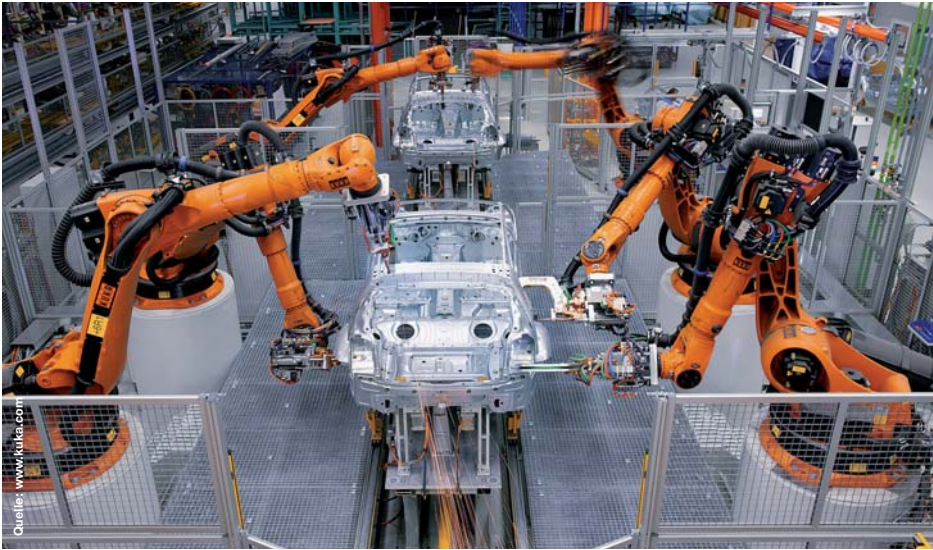
Harms & Wende relies on intelligent residual current measurement even on the primary side of welding inverters



## Electrical safety and high availability in welding systems

Metal processing production systems are becoming more powerful to increase efficiency, the integrated robots and welding system are becoming more complex. A loss of production or damage due to the unscheduled shutdown of sections of the plant signifies a definite loss of turnover. High availability in welding systems is therefore an important competitive factor and the protection of personnel a key prerequisite for the operation of the plant. At Harms & Wende, electrical safety and high availability have the highest priority, for this reason the organisation relies on residual current monitoring technology from the technology leader Bender. ▶▶

## TECHNICAL APPLICATION



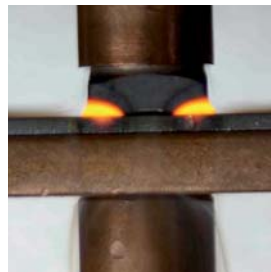
For more than 60 years Harms & Wendt has supplied welding system manufacturers with innovative and reliable product solutions, from control systems and switch cabinets, to complete custom systems. Particular attention is paid to welding control systems such as medium frequency inverters for resistance welding, which is widespread in highly automated plants; the Hanseatic business is also one of the world's leading manufacturers of solutions for friction welding.

Medium-frequency welding systems capable of straightforwardly setting several thousand spot welds are used in many production plants. These welds are mostly undertaken by welding robots equipped with the corresponding electrode holders. During medium-frequency welding the 3-phase 50 Hz AC voltage is converted into a pulsed AC voltage of up to 1,000 Hz by an inverter or frequency converter and rectified into DC after the welding transformer.

Frequency converters play an important role in welding systems. However, they can cause smooth DC fault currents in case of a fault. For this reason high requirements are placed on the operational safety of the inverters. To avoid unnecessary interruptions,

it is important to detect impending fault currents as early as possible and to be able to react proactively. On the usage of pulse current sensitive monitoring devices, the monitoring unit may be affected by smooth fault currents to the extent that the required protective effect is no longer ensured. As such, not least in accordance with DIN EN 26477-1 VDE 0558-477-1, it is imperative AC/DC sensitive residual current monitoring is used.

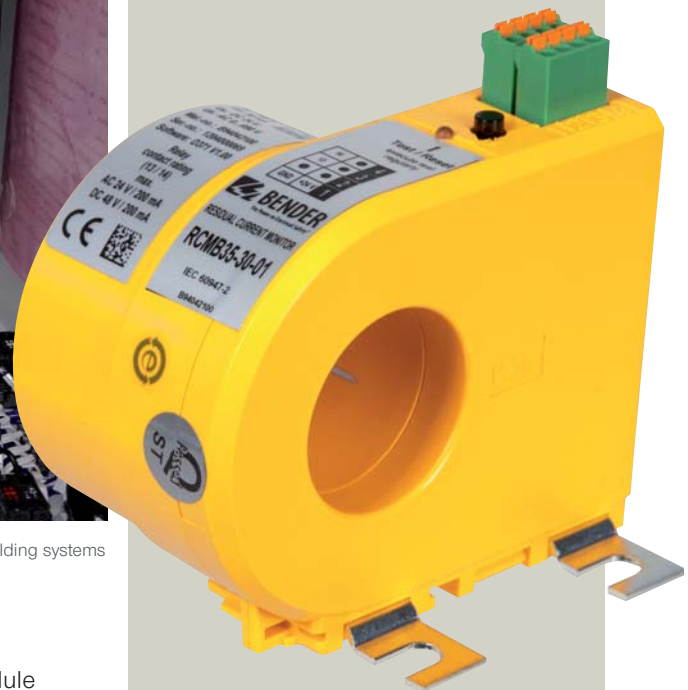
To comply with the requirements of this standard, Harms & Wendt relies on the best possible and therefore safest solution. They install, in the supply to the welding systems, AC/DC sensitive residual current monitors manufactured by Bender in Gruenberg.







COMPACT – EFFICIENT – SAFE



RCMB35-30 to enhance the electrical safety in welding systems

Since 2012 the AC/DC sensitive residual current monitoring module RCMB35-30-01 has been used at Harms & Wende in medium-frequency welding systems for monitoring the frequency converter. By using this device and a switching element with isolating characteristics, the device combination meets the requirements on an MRCD (Modular Residual Current Protective Device) in accordance with DIN EN 60947-2 Annex M.

This protective device, comprising an RCMB and a circuit breaker, is used in the medium-frequency welding area on the primary side for residual current monitoring. On reaching the fixed response value of 30 mA, the integrated switching contact is used to operate an undervoltage release. The switching element is designed so that the maximum shut-down time required in the standards is not exceeded.

Quite rightly, the welding systems from Harms & Wende protected using residual current monitoring technology enjoy an excellent reputation worldwide in relation to electrical safety and high availability. ■

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#### THE ADVANTAGES:

- Comprehensive electrical safety for man and machine
- Expanded area protected against indirect physical contact
- Prompt signalling and indication of the actual fault current
- Of universal application, independent of the power range