CAR INDUSTRY: safety system protects

Did you know that BENDER safety systems are also used on resistance welding equipment in the car industry? In cooperation with Bosch-Rexroth we have made a significant contribution to the high standard of safety during welding in stationary systems and robot applications.

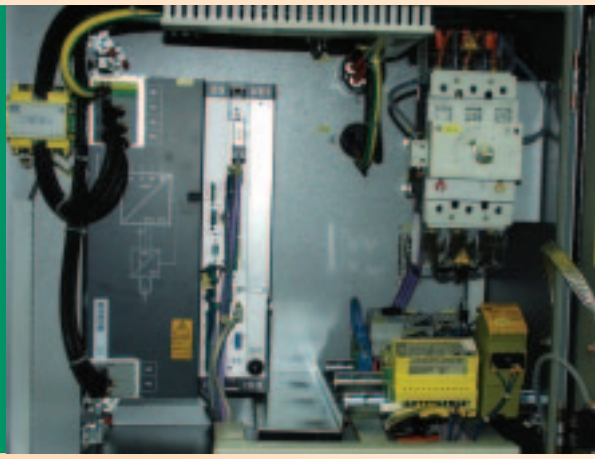
An old problem in need of a new solution

Normally resistance welding equipment has two separate circuits. The input circuit (primary circuit) supplies the welding converter with 3-phase 50 Hz AC voltage that is converted to DC voltage by a bridge rectifier. A transistorised H bridge in the welding current controller alternately switches this DC voltage to the welding transformer at 1000 Hz. This switched voltage is then rectified on the secondary side of the welding transformer for the output circuit (secondary circuit).

Electrical safety systems are to be found in almost all areas of our daily lives. And often enough when the issue is the protection of people, BENDER systems are to be found. Our editorial team visited the car industry and, of course, found an example …

The most common type of personnel protection is a direct earth connection on the output circuit. This safety measure has the significant disadvantage of reducing the quality of the welding due to the production of "shunt currents". A solution using a voltage-operated earth leakage protection system can avoid this disadvantage, however it only acts on the secondary circuit.

against unpleasant surprises



Both circuits are protected by residual current monitor RCMA472LY

Solution using residual current monitoring

All measures to guarantee the protection of persons used up to now can only provide protection for the secondary circuit, the input circuit is however, as before, not protected against indirect contact. The BENDER protection system fills a significant gap in the safety of resistance welding equipment as particularly the primary circuits on welding robots or suspended system installations are moved either automatically or by workers when the system is in use. On the use of the earth leakage protection system, the area protected against indirect contact is expanded to all components installed after the current transformer, that is also to the input circuit. The residual current monitor works both with medium frequency systems and with AC systems.

Indirect contact with live parts results in the triggering of the main switch. Primary and secondary circuit are protected against indirect contact; the installation of an isolating contactor is no longer necessary with the BENDER RCMA472LY AC/DC sensitive residual current monitor.

The fact that manufacturers of high-quality cars rely on resistance welding equipment from Bosch-Rexroth incorporating a BENDER safety system is for us a compliment and an incentive for further innovative developments in the safety area. ■

Helmut Muhm