

Protection for Cap Tip Dressers

Turck's BL ident RFID system enables the electrode cap tip dressers of AEG SVS Schweisstechnik to reliably detect the correct cutting head for the electrode cap

In spite of all the progress made in bonding and joining technology, spot welding continues to be the most cost-efficient joining process for stressed connections, particularly in industrial mass production such as in the automotive industry. The welding tongs operating in the fully-automated assembly lines use electrodes to exert pressure and heat on the sheet metal parts to be connected.

After a specific amount of time, known as the tool life, the working surfaces of the electrodes widen and collect impurities. This prevents the reproducibility of the individual welding results, and the quality of the welded joint is impaired. In order to ensure absolute process reliability and the reproducibility of the welding result, the electrodes have to be reworked according to empirically calculated values by using a dresser to restore the original tip geometry of the electrode cap.

Challenging cutter identification

AEG SVS Schweisstechnik from Mülheim produces the electrode cap tip dressers required for this process, as

the challenge together with two fellow students as a final course project.

Bäker and his team first examined the possibility of optical barcode identification directly at the cutting head or cap tip dresser. However, the idea of optical identification was quickly discarded since metal swarf can cover or scratch the barcode and lubricant grease could restrict legibility. The team then focused instead on wireless identification using RFID.

Support from Turck

Supported by Turck, the budding engineers used the BL ident RFID system to develop a solution that detects the cutting head during fitting. A read/write head with an 18 millimeter diameter is fitted diagonally above the cutting head. It does not prevent the cutting process and is nevertheless close enough to the tag to ensure identification in spite of the fast rotation. The engineers have integrated the tag directly in the cutting head. The mini tags used are only 1 millimeter high and 7.5 millimeters in diameter. The 128 byte memory is entirely sufficient for basic identification tasks. It is only necessary to write the eight-digit identification number on the tag so that it can be identified uniquely.

The read/write head is connected to a BL ident I/O slice module on Turck's BL20 I/O system. The Codesys-programmable BL20 gateway implements the control of the entire application. In addition to identification