

Application example

## Electrical connections on IGBT modules (Insulated-gate bipolar transistor)

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SCREENING



### Task

The Cu-plated ceramic printed assembly board in IGBT modules have to be contacted with copper connections so that electricity is conducted as best as possible. The numerous connection points change with the various types of IGBT. The sensitive ceramic must not be damaged during the contacting process and the process data must be able to be analysed statistically if necessary.

### Solution

The application was successfully resolved with torsional SONIQTWIST® ultrasonic welding technology as an economical method for connection. The relevant components, like the SONIQTWIST® weld head, MAG generator and TCS5 controller, are integrated into an x/y coordinates system and the individual welding positions can be accessed and welded by the servo motor using pre-defined coordinates.

### Configuration advantages

Thanks to the high ultrasonic frequency of 20 kHz, the oxide layer is broken open at the connection points and a firmly bonded weld is created with very low electrical contact resistance. When it comes to accessing welding points, torsional technology offers the best conditions for integrating components into a special x/y system. The MAG generator automatically adapts its oscillating behaviour to the individual weld points in order to ensure consistent and high quality standards when combined with the quality monitoring options offered by the TCS5 process controller.



The application was produced on a torsional TSP750 SONIQTWIST® welding system, as well as with corresponding components integrated into an x/y coordinate special system.

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