



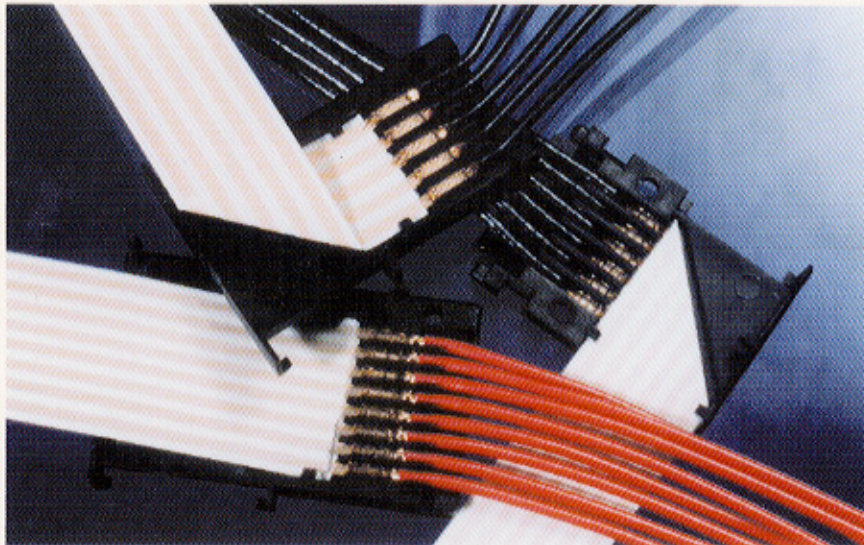
**AMTECH**<sup>®</sup>  
WORLD LEADER IN  
ULTRASONIC METAL WELDING

## APPLICATIONS

APPLICATION BRIEF #1  
AIR BAG - 4/96

American Technology, Inc. is the world leader in the development and application of ultrasonic metal welding equipment and processes. We apply our broad base of experience to help manufacturers make the highest quality, lowest cost welds in non ferrous metals. The application described here is an example of how the many benefits of ultrasonic welding; excellent process control, no consumables, long tool life, low temperature, simple operation and no surface preparation, have been applied to improve productivity and quality.

### *Gang Welding of Stranded Wire to Ribbon Cable*



*View Showing Finished Ultrasonic Gang Welds*

**END USE:** Circuitry used in clock spring assemblies of air bag safety equipment installed in domestic and foreign vehicles. (Chrysler, Ford, Hyundai, Mazda, Mitsubishi, Nissan, Saturn)

**MATERIALS:** Five 20 AWG stranded copper wires and brass terminal or flex circuit.

**EQUIPMENT:** AmTech Ultraweld 20<sup>®</sup> with patented gang weld tooling.

**PROCEDURE:** Wires to be joined are placed into the welding tool. The weld cycle is initiated, surface oxides and contaminants are disbursed and multiple, high quality electrical connections are made in a single operation of 0.2 seconds duration.

**ADVANTAGES:** Simultaneous welds are possible because no electrical current passes

through the workpiece and no melting occurs. Ultrasonic welding is a mechanical process and, therefore, is ideal for welding highly conductive alloys since the resistivity of the materials to be joined is not a factor. Electrical and thermal properties of an ultrasonic weld are unrivaled by any other process. Compared to fusion methods for joining metals, ultrasonic metal welding provides the lowest cost per weld. This is achieved through lower power consumption (1/30th that of a comparable resistance welder), superior tool life and lower labor cost (because ultrasonic welders can be operated by unskilled labor.) Compared to non welded connections, expensive crimps are eliminated. Finally, the welding variables are precisely monitored and controlled providing consistent results and SPC capabilities.

### AMERICAN TECHNOLOGY, INC.