



ULTRASONIC METAL WELDING MACHINE

FOR SOLAR THERMAL COLLECTOR

In collaboration with **TELSONIC AG** Switzerland



WELDING HEAD

WELDED SAMPLES



DOUBLE-HEADED CONTINUOUS WELDING MACHINE FOR COMPLETE COLLECTOR WELDING OF SOLAR THERMAL SYSTEMS

Ultrasonic has been well accepted as a cold welding technique for continuous welding of solar thermal components. Without using any external solder or adhesive, the metallurgical bond between the two coppers is achieved by ultrasonic technique. This ensures a very high degree of thermal efficiency. The resultant weld is continuous and there are no dry spots. The ultrasonic bond is achieved at a molecular level and as there is no external material, even the small width of the weld provides good transfer of the heat.

For large production lines, a new double-headed ultrasonic metal welding machine is developed which yields extremely high throughputs. The copper tubes of the complete collector are welded separately with headers and this entire assembly is brought to the ultrasonic welding station. The pre-coated fin is welded by the two ultrasonic heads moving and welding simultaneously at two different locations.

The entire collector welding is completed in less than 10 minutes. By using different software and programs, it is possible to weld wide variety of solar collectors in different sizes.

The running cost is absolutely minimal and there are no consumables. A very low electrical power is required for the entire machine and, because of the cold welding process, the basic property of the copper tube and the copper sheet remain unchanged, unlike any other mechanical process where there is heating of the tube and the fins.

The complete machine is semi-automatic with PLC controlled operations. Only one operator is required for the entire collector welding. The system is designed to operate continuously for longer working hours and has improved the overall efficiency of the solar thermal systems significantly.

TECHNICAL SPECIFICATIONS

Technique : Ultrasonic Double-Headed

Maximum Welding Length : 2 M

Speed Of Welding : 20mm Per Second

Controlled Through : PLC

Power : 7 KW

Ultrasonic Generator : Amplitude, Frequency and Power Controlled