

# Ultrasonic Plastic Welding System



## PLASTIC WELDING



It is hard to imagine how the requirement for quality and reliability of welds, economy and the ecological demand placed on today's production methods could be met without the modern production engineering of ultrasonic welding.

As a joining process for industrial thermoplastics, the ultrasonic method is very well proven in practice.

Particularly in the production of mass-produced parts, the process offers definite advantage over previous methods such as for instance high strength, clean weld seams, fast processing times, extremely low rejection rates and low energy consumption.

In addition to its main application which is welding of moulded thermoplastic parts, this technique can be used successfully for riveting, forming, stacking as well as embedding of metal parts into thermoplastic materials.

Each ultrasonic welding installation comprises the following main components:

Electronic Ultrasonic Generator, Converter, Booster, Sonotrode, Pneumatic Press and Control Unit. The Generator is the heart of every ultrasonic welding system, its function being to supply the converter with an alternating current of a given ultrasonic frequency. This is then converted by the transducer into mechanical / ultrasonic vibrations which are finally transmitted via, the booster and sonotrode to the part being welded.

**Roop Telsonic Ultrasonix Limited** offers wide selection of standard welding equipment and installation which with respect to generator performance, range of welding force, frequency of operation and possible uses, is well able to satisfy your specific application requirements.

## Components of the Machine



## Ultrasonic Generators

The latest development of Telsonic-Generators in the range of 500W to 4500W is based on sophisticated and most modern technology featuring:

- ★ Amplitude regulated power system (ARP)
- ★ Electronic booster by means of electronically selecting amplitude-ranges of 100/90/80/70%.
- ★ Fully automatic tuning and frequency control under all load conditions.
- ★ Built in circuit protection for all possible fault and load conditions.
- ★ Modular construction with built in process-interface.
- ★ Clearly arranged front panel with optical display of the operational conditions.

## Converter and Booster

- ★ Fully enclosed convertor with standard integrated cooling system and connection hood for full turning capacity of 360 Degree.
- ★ Novel Booster mounting system for maximum rigidity.
- ★ Five standard boosters with transformation ratio of: 0.5/1/1.5/2/2.5.
- ★ The whole assembly designed as a "snap-in-unit".
- ★ Ideally suited for installation in special and automatic machines.
- ★ Titanium Booster.

## Horn/Sonotrode

An acoustic tool designed to have a specific longitudinal natural resonant frequency which transfers sound energy to the plastic part. Every Plastic welding job needs the welding tool specially made to required specifications. So also the fixtures. RTUL designs horns of perfect profiles, machined out of the right alloy for longer life and for efficient transmission of ultrasonic power to the welding spot. Developing of custom made horn, is our speciality.

## AWC-6 (Control Unit)

- ★ 7" Colour touch screen.
- ★ Provides 4 different Trigger modes - Time, Force, Distance and Touch.
- ★ Provides 5 different weld modes - Time, energy, Weld Distance, Absolute Distance and Maximum Power.
- ★ Force Measurement.
- ★ Energy, Distance Measurement and control.
- ★ Variable pressure profile for more accurate Weld Results.
- ★ Amplitude Profile to weld Few Semi- Crystalline Materials.
- ★ Automatic Saving of last 99999 welding Results.
- ★ User can store 50 different Job Settings. (Data set management)
- ★ Selectable calibration pulse for Automatic Sonotrode Frequency Tuning.
- ★ 6 Types of different quality windows
- ★ In-built RTC.
- ★ Supports 7 different Generators and 5 different Presses.
- ★ RS-232/USB Interface for receiving Welding summary on PC.
- ★ In-built Rotary Table Interface with Two Sensor Support.
- ★ In-built cutting control controller system.
- ★ In-built Pick and Place System Interface.
- ★ Provides 4 User Programable Inputs and Outputs.
- ★ In-built diagnostic Mode.

## MPS-3.1 (Control Unit)

- ★ Energy Mode option in addition to time mode allowing precise setting of energy as per job requirements.
- ★ Precise time setting with least count of 0.001 second, thus avoiding over welding, deformation, reduction of production rate and excess consumption of power.
- ★ Self diagnosis-microprocessor of system helps in calibration and quality control and also acts as a fault finding tool allowing operator to rectify the system.
- ★ Automatic Turning of horn and horn life indication.
- ★ Modular design of system allows easy capacity up-gradation.
- ★ Calibration Pulse - ON/OFF.
- ★ Rotary Table - OFF/ON.
- ★ Amplitude Control- 50-100%.
- ★ Generator Power – 500 to 4500 W.

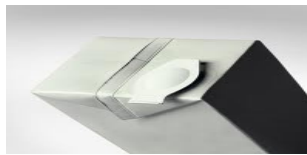


**Applications from A to Z :**

Automobile	Electronics equipments	Medical Equipments	Pump	Telecommunications	Zip fasteners
Clock / Watches	Energy Meters	Office Equipment	Radio-Tv	Textiles	& Many more .
Cosmetics	Furniture	Optics	Sound-Radio-TV	Teaching aids	
Domestic Appliances	Lighting Equipments	Photography	Sports goods	Toys	
Drawing Equipment	Mechanical Engg.	Precision mechanics	Surgical	Video	



**TUBE SEALING**



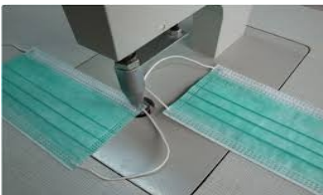
**PACKAGING**



**LIGHTINGS**



**TOYS**



**SURGICAL**



**ENERGY METER**



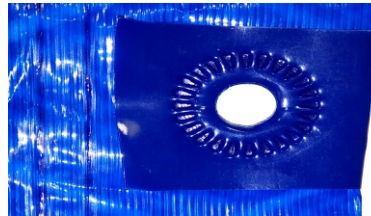
**METAL INSERTION**



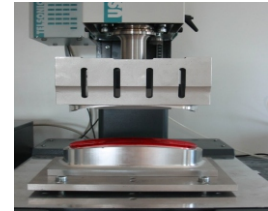
**DOOR TRIM**



**TELECOMMUNICATION**



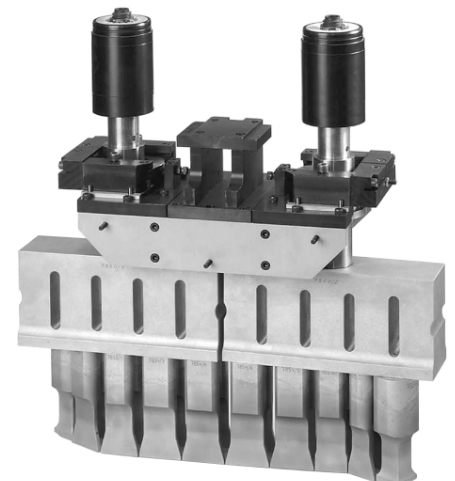
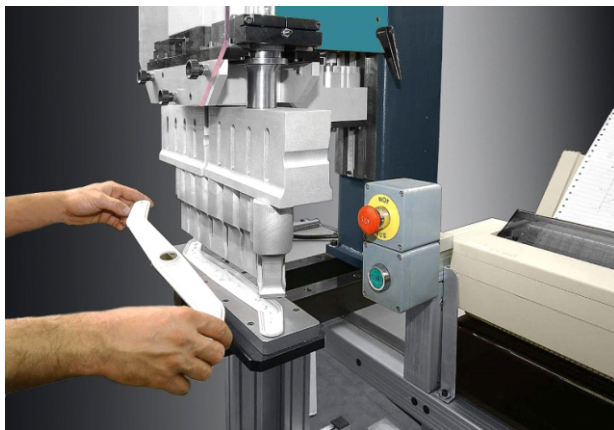
**TARPAULIN EYELET**



**AUTOMOTIVE**

**Multiple welding Head with complex compound sonotrodes:**

The robust construction of the USP3000 welding press and maximum clamping force of 3000 N allows the use of up to three 20kHz oscillating systems with large, complex mother/ daughter sonotrodes. The double-head version shown, for welding of dishwasher sprays arms, is fed by two 5000 W ultrasonic generators (total output 10kW) and contains two mother sonotrodes each with nine insert sonostrodes, constructed as a quick-change welding head for an other spray arm type.



**Special Purpose machines to meet specific costumers requirement is one of our strong points.**

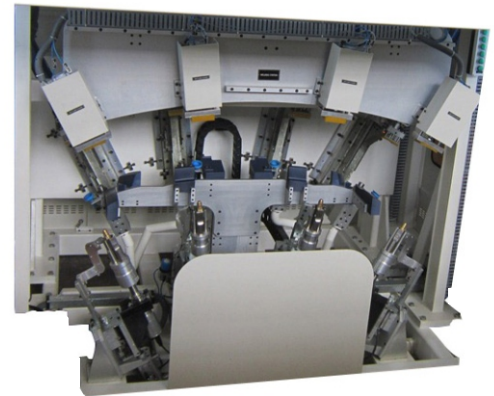
**Building of special purpose machine is a RTUL speciality.**

**For many years, we have designed and built systems, which cater to the precise demands of the costumers.**

**Proven multiconverter technology:**

**Customized Solution for complex Projects**

For Large/Complex components, system with multi converter design (with mother / daughter horns) are available as per specific requirements. Multi-converter units are frequently used in the welding of large area, asymmetrical parts, for example in automobile and apparatus engineering or with toys. The advantage of multi-converter system lies in the construction of small, simple sonotrodes which facilitates to optimise the weld quality along the whole weld contour due to local targeting.



**TECHNICAL SPECIFICATIONS**

	UHG-500/1000	USP10-500/1000	USP 750	USP3000-1000/1500/2000/3000/4500	USP3000/6000-3000/4500
Pneumatic Press		USP 10	USP 750	USP3000	USP3000
Closing Force Max.	-	400 N	750 N	3000N	3000N/6000N
Generator	SG22-1000	SG25-500/1000/M	SG25-1000/1500	SG22-1000/1500/2000/3000/4500	SG22-3000/4500
Ultrasonic O/p Power (W)	500/1000	500/1000	1000/1500	1000/1500/2000/3000/4500	3000/4500
O/p Frequency (KHz)	35	35	20	20	15
Dimension- Press (WxDxH)mm	Dia 54x220	300x500x490	360x575x1000	410x685x960	410x685x960
Generator	500x350x220	93x365x278	510x440x220	510x440x220	510x440x220
Weight - Press (Kg)	0.6/1.2	22	60	100	100
Generator	15	7.2	35	35	35
Max. Stroke (mm)	-	50	100	100	100
Throat Depth (mm)	-	80	150	275	275
Working Table (WxD)mm		200x300	300x325	465x410	465x410

**Newly Launched Servo Press- No Pneumatics.**

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