

Ultrasonic High Tech Equipments



For Industrial Cleaning, Welding, NDT, Textile, Sieving, Sono Chemistry



www.rtulgroup.com

POWERHOUSE OF ULTRASONIC TECHNOLOGY®



Overview

RTUL, a joint venture with Telsonic AG Switzerland is a leader in design, development, manufacture and marketing of a wide range of ultrasonic machines for ultrasonic welding, ultrasonic cleaning, ultrasonic sieving, ultrasonic non-destructive testing, ultrasonic sonochemistry, ultrasonic Fabric cut and seal, and specialized applications. The company has established itself as a high-tech firm, specializing in production, research and developments in the area of ultrasonic.

We understand the importance of quality. Hence our prime priority is to take the utmost care when developing, designing and manufacturing our products. We have most modern manufacturing facilities at Gandhinagar (Gujarat) and Mumbai, with a well-equipped application lab, tool room and machine shop, sophisticated testing and design center and a high-tech laboratory with sophisticated measuring instruments.

Welding

Ultrasonic Solutions For Plastics Joining

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.

A standard ultrasonic welding unit comprises the following main components:

Electronic Ultrasonic Generator, Converter, Booster, Sonotrode, Pneumatic Press and Control Unit.



Technical Specifications

	UHG-500/ 1000	WP 450-500/ 1000	WP 750-1000/ 1500	WP 3000-1000/1500/ 2000/3000/4500	WP 3000/6000- 3000/4500
Pneumatic Press		WP 450	WP 750	WP 3000	WP 3000
Closing Force Max	-	450 N	750 N	3000 N	3000/6000 N
Generator	HG-35-500/ 1000	WG-35-500/ 1000	WG-36-1000/ WG-20-1500	WG-20-1000/1500/2000 /3000/4500	WG-15-3000/ 4500
Ultrasonic O/p Power (W)	500/1000	500/1000	1000/1500	1000/1500/2000/ 3000/4500	3000/4500
O/p Frequency (KHz)	20/35	35	20/36	20	15
Dimension- Press	Dia 54×220	300×500×490	360×575×1000	410×685×960	410×685×960
(WxDxH)mm Generator	500×350×220	93×365×278	510×440×220	510×440×220	510×440×220
Weight- Press	0.6/1.2	22	60	100	100
(Kg) Generator	15	7.2	13.8	13.8	13.8

Ultrasonic Spin Welding Systems

Spin Welding as the name implies is a friction welding technique to join thermoplastic parts. It is essential the parts to be joined or at least their joint areas, must be circular for this method of joining to be used. A shallow machining groove (tongue & groove) is desirable to index the two parts and to provide a uniform bearing surface.

With one part held stationary, either vertically or horizontally, in a special fixture, the other is rotated at 100-4000 rpm with enough pressure applied to keep the parts in contact with each other. The heat generated in friction is used to bring the surfaces to a sealing temperature.

When sufficient melt is obtained, the spinning stops and the pressure is increased to distribute the melt and also to squeeze out excessive melt, completing the general process.

Applications

Any circular part made out of thermoplastic, specially for Nylon, PP & Polyethylene Group, Cream Jar, Hair Oil Bottle, Container Lid, Casserole, Filtration, Automotive Filter and many more.



Ultrasonic Metal Welding Systems

Ultrasonic metal welding is described as a friction welding process, where oxides and other contaminations present on the material surfaces are broken up, and the parts to be welded are brought together under simultaneous pressure. Molecular bonding, similar to the conventional cold-press welding, then takes place.

The greater the challenge, the stronger our commitment:

Ease of automation, weld parameter monitoring and statistical process control are demanded by the market, as they are prerequisites for the use of ultrasonic metal welding in industrial production Environments. On the basis of solid engineering know-how and precision machine building, we offer application specific welding systems for semi and fully automated production processes.



Advanced Features

- Welds similar and dissimilar non-ferrous material
- Excellent weld quality and helium tight welding
- Fast, reliable, consistent welding quality with microprocessor controller
- No need of any filler materials
- Low power consumption
- Clean and safe process (no sparks, flames and smoke formation) and hence, environmental friendly
- 100% bond conductance
- Can be easily automated
- Continuous welding operation possible

Ultrasonic Wire Splicer

RTUL offers high power/high precision equipment for wire splicing. Precision and reliability are decisive preconditions for electrical connections in automobile wire harnesses. Ultrasonic welding ensures flawless electrical conductivity in the wire splices over years and years.

Advanced Features

- No booster, approx. 12kg including tools
- Cross sections from 0.2 mm² up to 45 mm²
- Perfect for splicing on and off assembly board
- Simple design & user-friendly touch screen
- Tool change within 15 minutes
- Adjustment is mechanically defined
- Innovative tool change concept reduces setup failures
- Automatic calibration of the tools. No additional gauge needed



Ultrasonic Solution For Textile Industries

Ultrasonic energy has found extensive use in cutting of textiles, woven sacks/plastics etc and their downstream processing. Many of these uses are based on the ability to use ultrasonic energy to induce heat and pressure by vibratory action. The use of ultrasonic Cut n Seal technology makes manufacturing of non-wovens and wovens, economical and process-safe and our customers from the medical, packaging, fabrics and engineering industry value it tremendously.



Ultrasonic Textile Slitters

Ultrasonic cutting and sealing process is mostly used in the field of textiles on circular loom. The principal advantage of the ultrasonic seal and cut method is that the edge of the textile material, while being cut simultaneously, is sealed by the dissipation of ultrasonic energy, thereby preventing the presence of a frayed edge or the unraveling of threads, no discoloration of fabric and very strong, smooth, clean and long lasting edges without over thickness with low energy consumption. The model is mainly used for cutting of woven sacks, HDPE or PP circular woven fabric, etc.

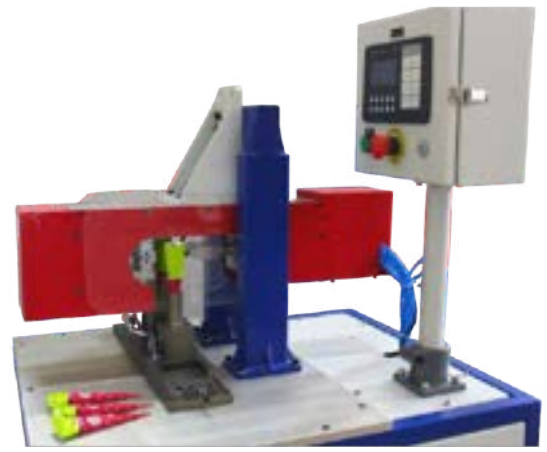


Specifications TCS 500L/ 1000L

Ultrasonic Generator	UTG - 500W/ UTG - 1000W
Ultrasonic Converter	36 kHz/ UC 40/ 33
Horn	Special Steel Alloy/ Titanium (Based on applicaton)
Working GSM	20-150/ 150-270
Cutting blade	Industrial Grade, Ceramic (Based on application)

Ultrasonic Packaging Systems

Ultrasonic welding is a reliable and economic alternative for typical thermal processes that ensures tight weld seals despite of product contamination. Ultrasonic welding technology is particularly well suited for packaging processes with high production rate requirements and applications with challenging process. The ultrasonic process also offers additional benefits such as cold welding/sealing process, tight sealing of films, repeatable and analyzable weld process which is not possible when using radiant heat process.



Technical Specifications

Ultrasonic Power	1000/ 1500 Watts
Frequency of Operation	36 kHz
Diameter of tubes	20 to 45 mm dia.
Speed of Operation	45 to 70 tubes/ min depending on the dia & material of tube



Ultrasonic Cleaning Systems

Microprocessor based Ultrasonic Cleaners

Ultrasonics, i.e. high frequency vibrations, generate agitation in liquid resulting into 'Cavitation', which is rapid formation and collapse of minute bubbles in liquid. Implosion of bubbles with high pressure on exposed surface of component dislodges and removes contamination like dirt, dust, oil, grease, chips, wax, lapping paste, carbon etc.

Very high degree of cleaning can be achieved in multi-chamber/multi-operation cleaning system with proper orientation of components, filtration of cleaning liquid, rinsing of components and drying with air and/or vacuum.



Technical Specification

TYPE		TPC - 15H	TPC - 25H	TPC - 40H	TPC - 120H	TPC - 280H
Mains Voltage	V	230	230	230	230	230
Current consumption incl. heater	A _{max}	0.8	1.0	1.2	5.0	8.0
Ultrasonic output eff/peak	V _{max}	75/150	75/150	150/130	300/600	600/1200
Operating frequency	Khz	30/40	30/40	30/40	30/40	30/40
Digital adjustable thermostats	20° -80° c	Yes	Yes	Yes	Yes	Yes
Digital timer	1 _{Sec} - 99 _{Min}	Yes	Yes	Yes	Yes	Yes
Heating Power	W	120	150	150	800	1200
Tank Capacity	L	1.5	2.5	4	12	28
Int. dimensions LxWxD	mm	150x135x100	235x135x100	235x135x150	300x235x200	505x300x200
Ext. dimensions LxWxD	mm	180x165x220	265x165x220	265x165x262	330x270x325	535x330x370
Output valve		No	No	No	Yes	Yes
Weight	kg	3.0	3.5	3.5	9.0	18.0
Item Code		900 970 010	900 976 010	900 978 010	900 979 010	900 981 010

Cleaning Components

Advanced Cleaning Generators

RTUL's ultrasonic welding components is designed & developed for simple and complex welding and cutting tasks in production lines, and special systems.



Immersible Box

Immersible box is available in different sizes & dimensions with different output power.



Tube Resonators

This novel design of transducer in tubular form ensures ultrasonic in all 360° and ease in retrofitting in existing system. This is available in various frequencies and different mounting lengths.



Ultrasonic Multi-Chamber Cleaning Systems



COMPONENT CLEANING - INTEGRAL PART OF MODERN PRODUCTION SEQUENCE

Cleaning is, almost by definition, a part of any manufacturing process for the removal of sufficient surface contamination to make something suitable for the next phase of its use. It may come in at the raw material prep stage, some intermediate manufacturing stage, or prior to surface finishing such as plating or painting or before final packaging. The cleaning sequence depends on various aspects like: type of component, material, surface quality, type of contamination and required cleanliness level in terms of Millipore as well as particle size.

Products Range

- Single chamber multi-operation cleaning systems (coarse /intermediate / fine cleaning)
- Vapour degreasing systems
- Ultrasonic Components : Tube resonators , Eco-generators, Immersible boxes, Transducers etc.
- Customized Single Chamber Ultrasonic Cleaners of any capacity
- Conveyorized Ultrasonic cleaning systems
- Online Ultrasonic wire / strip cleaning system
- Multi-chamber Ultrasonic cleaning systems

Non Destructive Testing & Material Evaluation

Among the Non-Destructive Testing methods for Flaw Detection, Ultrasonic Testing is a fast & reliable method. With this, one can save on material, labour, machining cost and time by early detection of defects at raw material stage. It also helps to ensure quality and safety. Various materials like metals, glass, plastics, ceramics, etc in cast, rolled, forged, welded forms can be tested for defects like cracks, blow holes, porosity, inclusions etc.



Bond Testing



Weld Testing



Pipe Testing



Immersion Testing

Ultrasonic Flaw Detector 4400L



UFD 4400L model is a combination of basic and advanced technology in ultrasonic flaw detection. It is quite useful for beginners in ultrasonic testing field and building confidence for high end complex ultrasonic testing equipments. Meets International standards & very user friendly. Dual gates with positive/negative logic and threshold setting with alarm. Auto & quick calibration is available in all the models.

Ultrasonic Flaw Detector 4444D



UFD 4444D is an advanced model with latest electronics, TFT display & features like DAC, AVG useful in complex ultrasonic testing applications. Video mode, A scan freeze, B scan & PC connectivity in model 4444D. Dual gates with positive/negative logic and threshold setting with alarm & wide band amplifier. Auto & quick calibration is available in all the models.

Ultrasonic Thickness Gauge

High Accuracy Ultrasonic Thickness Measurement

Ultrasonic Thickness measurement is non destructive method of measurement and particularly, suitable for components having access only from one side, where conventional gauge cannot be used.

It is especially useful in measurement of thickness of pipes, pressure vessels. We have automated systems for online thickness measurement in pipes or plates and for applications like corrosion monitoring, bond testing, lamination detection, material characterization. The testing is fast, reliable and with high accuracy.



Ultrasonic Thickness Gauge UX 4510

- Light weight, easy to use.
- Thickness measurement possible for one side access components.
- On line thickness monitoring, with suitable fixtures.
- Microprocessor controlled with facility to store calibration and measured data.
- Auto memory (with time selectable from 1 to 10 sec.) Color mapping which is suitable for large plates where readings are taken at various points on grid, which are represented with different colors to get quick idea about thickness variation.



Ultrasonic Concrete Tester (Ultrasonic Pulse Velocity Meter)



Auto Digital Calibration

High Range & Accurate

Large Digital Display

Battery Operated



UCT is a fully portable instrument for assessing the strength of concrete either in situ or precast. It complies with the British Standard BS -4408 (Part V – 1974), BS-1181 and ASTM C-597. It is designed with field conditions in mind and is very simple to operate. Its accuracy and stability are unmatched. It generates low frequency pulses and measures the time of flight in the material. The time is displayed by 5 digit display.

The time of flight and hence the velocity is related to the mechanical strength of concrete. The majority of concrete testing requires transducers with frequency of 50 to 100 kHz. However higher frequencies are preferred for testing small specimens and achieving better timing accuracies. Wide range of transducers are offered with UCT. The high quality of transducers has been exploited to the fullest extent and the accuracy of the measurement is improved over the entire range to 100 nano seconds.

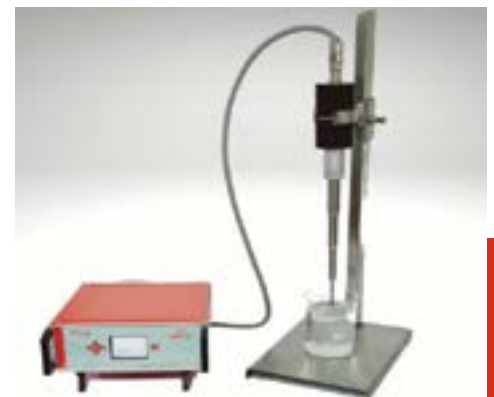
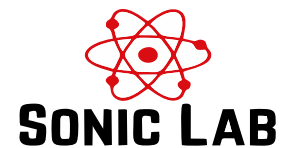
Meets National And International Standards IS, BS-4408, BS-1881, ASTM C-597

- Non destructive Quality Assessment of in situ or precast concrete
- Crack & Void detection
- Determination of Homogeneity of concrete
- Elastic property measurement of concrete

Ultrasonic Laboratory Processors

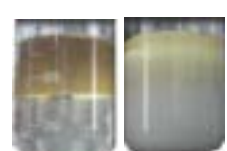
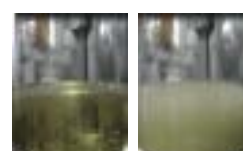
RTUL's new Sonic Lab range of Laboratory processors are being designed to meet the challenges of Sonication process and feasibility trials of its suitability in various chemical processes like emulsification, particle size reduction, crystallization, agglomeration, dispersion, etc.

Sonic lab will be the first such equipment with a comprehensive integrated process measuring controlling unit. It will be an effective tool for establishing sonication process not only in laboratory but also on plant level.



Application Fields

- Dispersion
- Suspension
- Emulsification
- Homogenization
- Degassing of liquids
- Acceleration of chemical processes
- Sonochemistry
- Crystallization
- Extraction
- Cell disruption
- Automization



Ultrasonic Sieving Technology

Powder Screening

With RTUL'S high tech ultrasonic sieving attachment we have transformed conventional sieving procedures. In addition to the conventional method, "ULTRASCREEN" ultrasonic supported sieving technology evenly transmits as oscillating motion, in the micro range, onto the screen surface reducing the friction between the sieve mesh and bulk material. This enhances the throughput and quality of your present vibratory screener, sieve or shifter.



Technical Specifications

Frequency	33-37 kHz
Output	1x100W or dual output 2x100W max for screens > 1000cm ² 1x60W or dual output 2x60W max for screens > 600cm ²
Electrical connection	90V - 265V AC by 50Hz/60Hz
Ambient temperature	0-45° c
Output current	max. 1x (2x) 0.5 A
Output voltage	max. 500 V
Operation modes	8
Space Requirements	280 x 180 x 110
Protection class	IP 65
Certificate	ATEX dust
PLC Interface	US-On, job selection, fault messages, RS-485 interface, PC software



Technical Specifications

Frequency	33-37 kHz
Output	1x100W or 2x100W max for screens > 1000cm ² 1x60W or 2x60W max for screens > 600cm ²
Electrical connection	90V - 265V AC by 50Hz/60Hz
Ambient temperature	0-45° c
Output current	max. 0,5 A
Output voltage	max. 500 V
Operation modes	8
Space Requirements	370 x 80 x 70
Protection class	IP 65
PLC	US-On, fault messages, RS-485 interface, PC software



The space-saving basic version Easy Sieve was developed specifically for installation in a control cabinet.

Unique benefits & features of Powder Screening

- RTUL's ring resonators produce an even distribution of mechanical oscillations, even for larger sieving frame sizes
- Rigid, explosion-proof & waterproof design
- Significant reduced risk of screen mesh blockage, ensuring accurate particle size distribution throughput
- Achieve the same or higher throughput, by using a smaller shifter size
- New boost mode for stubborn sieving
- Better selectivity and optimal utilization of space
- Enhances the degradation of agglomerates, resulting in increased yield and a decrease in the oversize particle fraction
- The best price-to-performance ratio ensures fast amortization
- Only minor upkeep is needed
- Proprietary cool sieve technology which keeps the mesh cool



ULTRASCREEN deblinding attachment facilitates in increasing output and efficiency in powder sieving through vibroscreens. Due to increased throughput, process speed can also be increased and cost of vibroscreens, spares, labour, power can be reduced. This system shows its true capability where other screening systems are pushed to their limits.

Specifications	UltraScreen
Input Supply	90V-265V AC by 50Hz/60Hz
Ultrasonic Power Output	200 Watts, Continuous and pulse mode
Frequency	34-37 kHz
Ultrasonic Generator	ASG-36-200
Detachable Converter	Screwed to the ring resonator
Operation modes	Resonance, boost, linear hopping, random hopping, frequency modulated, amplitude modulated



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