

## Good Vibrations Enhance The Product Offering From Telsonic

Vibration welding systems complement ultrasonic technology

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SIEVING



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Since the company's inception in 1966, Swiss based Telsonic has established an impressive record of delivering industry leading solutions for plastic welding, metal welding, cleaning and sieving using industrial ultrasonic technology. As a business with a philosophy of ongoing innovation and product development, Telsonic continuously seeks new ways to enhance value for customers. The latest addition to the company's comprehensive European portfolio of plastic bonding technologies is a range of Vibration Welding Systems from Korean manufacturer Daeyoung. This builds on an already successful business relationship enjoyed by the two companies in the North American market – United States, Canada, and Mexico.

Unlike conventional ultrasonic welding technology, linear vibration welding technology can be used to weld large as well as 3D-shaped components. This is a friction welding process, where thermal energy is transferred by friction between the two halves of the component within the joint design. Linear vibration welding is designed with electromagnetic heads that eliminate wear and lubrication associated with bearing surfaces. By comparison to the ultrasonic welding process, vibration welding works with much lower frequencies and higher amplitudes, up to 1.8mm at 240Hz and 3.8mm at 100Hz. Another differentiator is the high welding forces, which in combination with the parameters already mentioned, allow larger welding areas to be processed. The vibration tool technology therefore plays a crucial role due to the powerful forces that are applied during the joining process.



01 Vibration Welder, Typ 830e

02 Vibration Welder, Typ 715e

## A broad range of applications for a flexible technology

The increasing use of lightweight plastics in automotive manufacturing, combined with the diversity of the different plastic materials processed and the physical size of certain components, have been instrumental in the growth of vibration welding technology within this sector. The process is ideally suited to large components and assemblies such as instrument panels, HVAC air ducts, bumpers, spoilers and underbody panels. In addition, the process is environmentally friendly through its energy efficient operation and the fact that no solvents or consumables are required. The resulting welds are clean, strong and hermetically sealed, which also makes the process suitable for the production of tanks, fluid reservoirs and other assemblies such as rear light clusters which must remain sealed from the external environment. Furthermore, vibration welding is suitable for the wide range of thermoplastics commonly used in the production of automotive components.

In much the same way that mould tools are changed on injection moulding machines, vibration welding technology offers the same adaptability by allowing users to quick change between different component parts and assemblies as required. This flexibility, inherent within the machines and the process, also enhances the return on investment (ROI) for those using the technology.

In addition to the wide range of parts produced within the automotive sector, vibration welding technology is also ideally suited to the production of a diverse selection of other plastic components and assemblies such as those found on domestic appliances, durable household products such as lawn mowers and dishwashers, or other technical plastic products.

## Broad range of systems available

Telsonic currently offers a range of six vibration welding machines covering upper tool weights from 5 kg to 200 kg, weld surface areas from 50 cm<sup>2</sup> to 650 cm<sup>2</sup> and frequencies ranging from 100 Hz to 240 Hz depending upon application and model. In all cases, these systems boast an impressive array of features including: depth and time welding modes, analysis of the welding results including welding time, welding depth, welding power, welding amplitude, dwell time plus multi-stage welding and safety functionality through the use of light curtains for operator safety and shorter cycle times.

## Process backed by Telsonic's expertise in tool design and plastic joining

Telsonic also applies their extensive expertise on tool design and plastic joining when working with customers to configure the technology for their specific components and applications. Close consideration must always be taken to the oscillating upper tool during the design process, and Telsonic use Finite Element Analysis (FEA) to confirm stability and ensure it can absorb the forces generated during the welding process.

The company's commitment to process excellence and customer support is reinforced by the expansion of the Telsonic GmbH centre of excellence in Germany to provide support and technical services ranging from tool design and manufacturing to on-site assistance.

By Jochen Bacher, President, TELSONIC Ultrasonics Inc. and Tom Pettit, Genesis Sales & Marketing Limited



03 Jochen Bacher,  
President, TELSONIC  
Ultrasonics Inc.