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Company Information

Herrmann Ultrasonics, Inc.

1261 Hardt Circle
Bartlett, Illinois 60103

Phone: 630-626-1626
Fax: 630-626-1627

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Product Release

Ultrasonic Welding of Thermoplastics Makes for Profitable Production



In the welding labs at Herrmann Ultrasonics, hundreds of welding applications are solved each year and brought to series production. This extensive application expertise, combined with constant market observation and targeted customer polls, provided the basis for developing the new ultrasonic welding machine HiQ evolution. In addition, topics like energy efficiency, user-friendliness, the upcoming New Machinery Directive and ergonomics all had to be considered by the Herrmann development team. Energy efficiency, in particular, is becoming ever more important when buying equipment. Responsible handling of resources and rising energy prices represent both a challenge and an opportunity. While ultrasonic welding technology for thermoplastics is already considered a quite energy efficient joining process, production environment is now being scrutinized for additional saving potential. With the HiQ evolution for 20, 30 and 35 kHz a new machine concept hits the market that differs from current weld systems in many ways.

Customer benefits at many levels are obvious, especially considering the importance of life cycle costing for production machines:

- Reduction of non-productive time
- Flexibility through freely programmable effective stroke
- Fast Sonotrode-stack exchange – no tools required
- Automatic start activation (enhanced productivity)
- Energy efficiency
- Safety standard (EU New Machinery Directive)
- User-friendly: intuitive user navigation with EasySelect and Expert mode
- Higher generator output of 1200 – 6000 Watts

Six modular auxiliary functions can be ordered as options, for example clamping system, pneumatic hold-down device and shuttle table.

The completely new and unique effective stroke feature allows for optimized sonotrode motion thus saving pneumatic energy and time. After completion of the weld the sonotrode retracts just far enough for part removal and loading of new, unwelded parts. The complete stroke is only used for home position and tool change. Depending on the topology of the assembled parts, the consumption of compressed air is reduced by up to 80%. Monitored by an integrated position measuring system, any work position along the entire working stroke is feasible.

Pneumatics: an unbeatable drive concept
The power density makes pneumatics unbeatable when it comes to the ultrasonic welding process. The newly developed HMC (High Motion Control) pneumatic module is a closed-loop control unit which regulates pneumatic pressure precisely. In simplified terms, it operates based on electronic differential pressure control of the pneumatic cylinder and is active along the complete stroke range. The HMC pneumatic module offers advantages for driving ultrasonic tools with optimized speed and weld force profiling. It guarantees precise position control and provides overload and interference protection. The aligned non-contact, non-wear position

measuring system offers measuring precision, even at high speeds and cycle sequences. Special drive cylinders with optimum friction coefficients improve the reproducibility of the weld, particularly when utilizing low forces. A unique SoftTouch Mode prevents damage to the joint geometry when the sonotrode descends on the part.

Quick and safe Sonotrode-stack exchange

The new tool change system TCS with quick release fastener allows an indexed tool change of the preset Sonotrode-stacks without time-consuming adjustment. This means the tool change can be accomplished accurately in seconds without any wrenches or alike.

Weld process software DIALOG 2.0

Nowadays, operating personnel is often challenged by complex software menus. Herrmann Ultraschall has responded to this problem with a new Look and Feel of its renowned weld process software. The intuitive menu navigation of DIALOG 2.0 – based on Windows® XP – facilitates communication and now offers EasySelect and Expert mode. With EasySelect the menus are reduced to basic functions for operators to navigate easily in firmware typical structures. When programming the six possible auxiliary functions, the intelligent system configurator, a Herrmann engineering software, helps to select control and motion settings. Various software additions are available to meet customer needs.

High-performance industrial PC: "Herrmann inside"

Central control is handled by the powerful H-IPC, specially designed and configured by Herrmann, featuring a fast Intel® Celeron® M processor, large storage media and a 15" color touch screen. All main components – generator, H-IPC, HMC and position measuring system – communicate via Industrial Ethernet.

To the core: all-new digital generator

10 years after introducing the first fully digital ultrasonic generator, Herrmann has developed a new line of digital generators with 20, 30 and 35 kHz. The progressive development of electronic components has made it possible to build faster and more powerful generators. The product family includes models ranging from 1200 to 6000 Watts

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