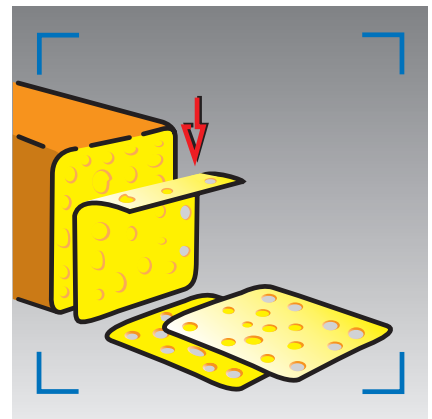
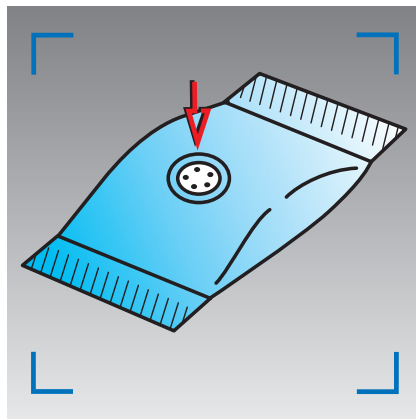
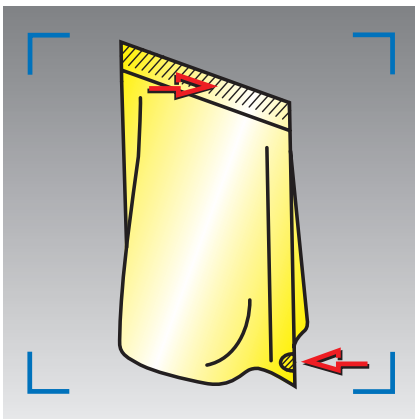
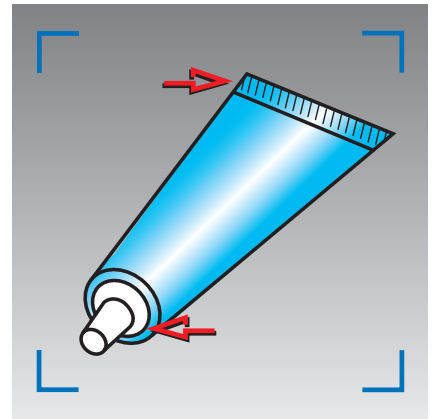
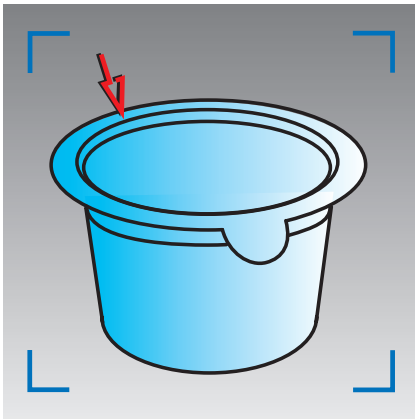
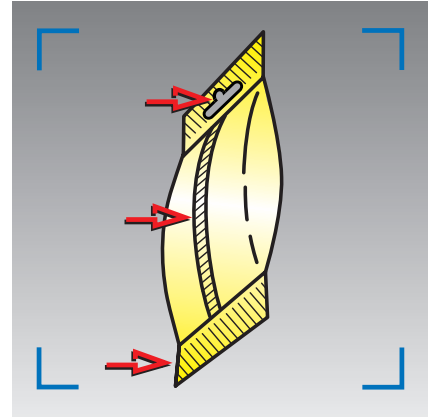
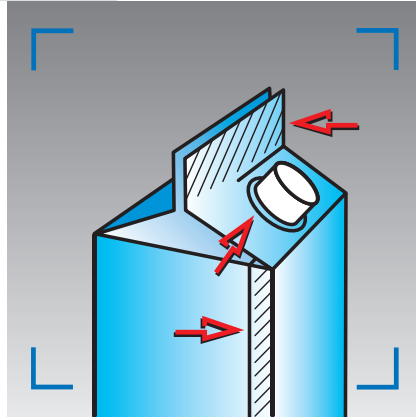
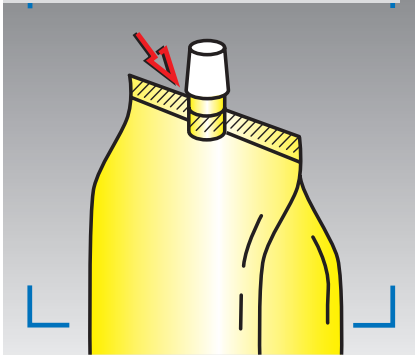


ULTRASONICS

MASTERED BY ONLY

A FEW SPECIALISTS



High-speed, Reliable Ultrasonic Packaging Sealing Technology
Specialized for Your Application.

PACKAGING

WORLDWIDE EXPERTISE IN ULTRASONIC TECHNOLOGY



Herrmann Ultrasonics European headquarters in Karlsbad, Germany and North American headquarters near Chicago, IL.

Superior experience

Since the foundation of the company in 1961, Herrmann has concentrated exclusively on the production of ultrasonic components. By focusing on the welding of thermoplastic materials, Herrmann has acquired vast know-how in a variety of market segments. In the field of packaging technology, this expertise is based on a multitude of successfully realized sealing and welding systems for various packaging machinery applications.

Superior quality

At Herrmann, quality is of utmost importance from the development and design of components and systems to the complete packaging sealing modules in production. All components requiring ultrasonic expertise are manufactured in-house.

Customers utilize our extensive know-how, which benefits their applications accordingly.

Superior performance

Utilizing of high quality components designed for optimum output results in unparalleled performance. One example is Herrmann's patented twin converter technology. The combination of two converters driving a single sonotrode results in a compact and lightweight design, providing a uniform sealing amplitude

and high power capability. Our exclusive solution allows longer welding seals without loss of performance in packaging machinery.

Superior flexibility

The modular design of our ultrasonic packaging components combined with our patented rigid design of the sonotrode holder and drive systems guarantees precise adaptation of the ultrasonic welding system to a wide range of production machinery.



Superior service

We understand the importance of service to our customers. Whether in the development of ideas, in consultation or realization, detailed planning, installation, instruction, training, or maintenance – you can rest assured that you have found a reliable partner in Herrmann for every situation.

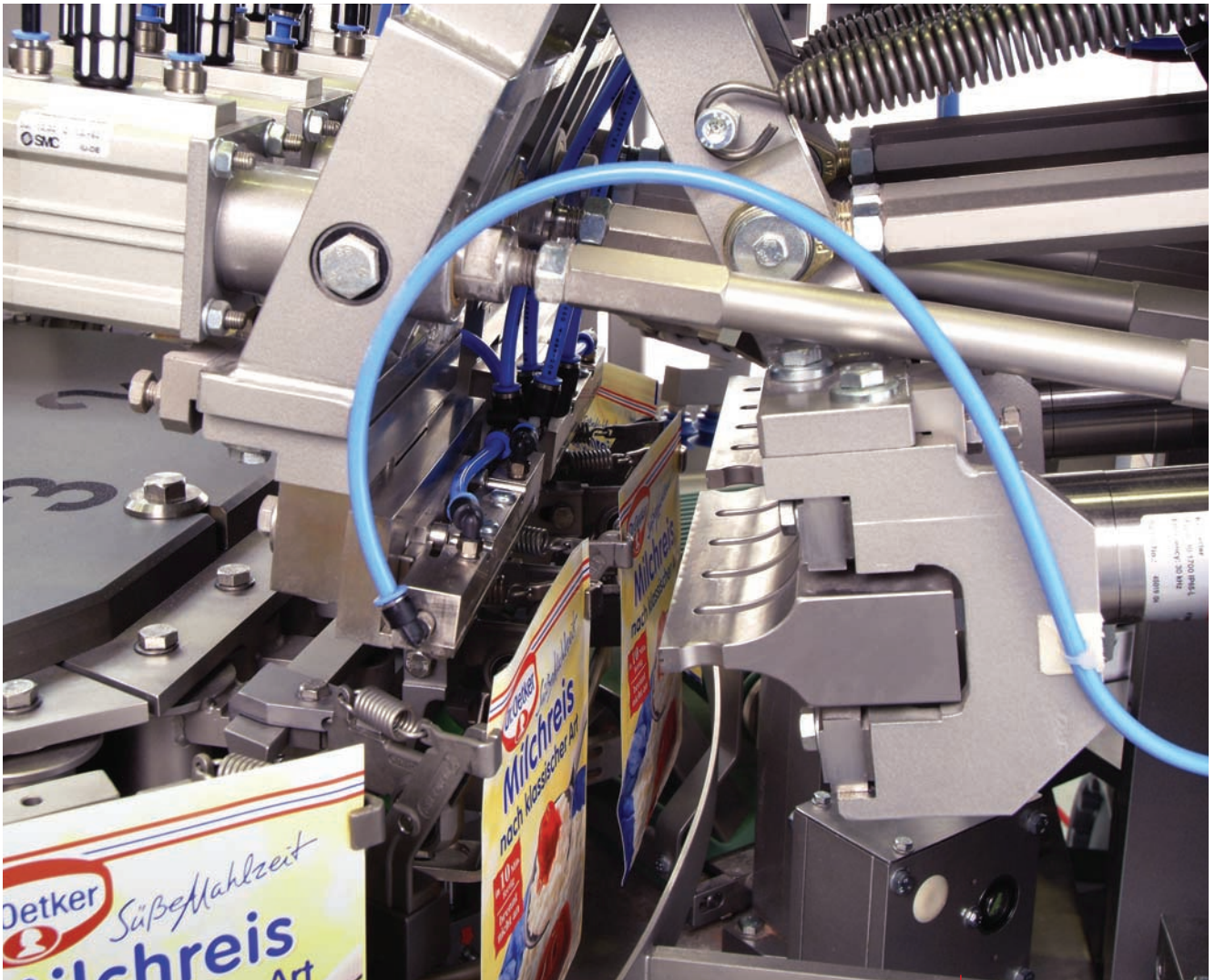


Seal integrity testing: one of the many services offered by our packaging application engineers.

Herrmann has its own applications laboratories equipped with state-of-the-art measuring and testing technology. Finding the optimum tear and tensile strength and testing the homogenous melt flow of the seal area form the basis of successful implementation of the sealing system in your equipment.

Herrmann Ultrasonics patented twin converter technology for long weld seams.

INNOVATIVE SYSTEM SOLUTIONS FOR PACKAGING MACHINERY



Ultrasonic sealing offers a universal and economical welding technology for the packaging industry

Herrmann views itself not only as a supplier of components, but also as a competent partner for system solutions to meet your individual packaging application needs. Our products are continuously under review and development. As a result, we offer innovative designs and solutions customized to your requirements. For example, such tailored solutions resulted in the IP65/67 converter for wet area applications, decoupled anvil technology for thin packaging materials, and the ultrasonic spout applicator for liquid dispensers.

Herrmann ultrasonic sealing module incorporated into a horizontal form-fill-seal pouch line.

FAST AND RELIABLE

ULTRASONIC PACKAGING SEALING

Ultrasonic technology exceeds industry requirements for packaging. Our machinery seals packaging economically and combines reliable protection of the product while adhering to increased requirements regarding minimum shelf life, shape flexibility, environmental protection, and recycling.

Faster speed with increased efficiency

Packaging sealing with ultrasonic welding is achieved with very short welding times, even in cases of complex packaging material designs. Additionally, energy transferred to the welded seal is also effective on contaminated welding surfaces.



Strong hermetic seals even in cases of contaminated sealing surfaces.

Customized solutions for a wide range of packaging materials

Nearly all packaging materials and laminates with a thermoplastic sealing layer or coating are suitable for the use of ultrasonic technology. Strong hermetic welds and peelable seals are possible with ultrasonic welding. Packaging materials with complex construction (such as laminates with a barrier layer) or coated cartons or papers do not reduce the effectiveness of ultrasonic welding. In most cases, an extremely thin coating is sufficient for secure and controlled packaging sealing.

High productivity due to minimum downtimes

Ultrasonic welding is an inherently clean technology. The acoustic sealing tooling remains cold through the weld process; no contamination related to products or packaging is created on the sealing tool. Such contamination could later interfere with the sealing process and cause a disruption to machine operation. Reduced cleaning expenses in conjunction with extended tool life result in higher productivity when using ultrasonic technology.

Controlled quality with maximum repeat accuracy

Ultrasonic welding creates reliable seals every time – even where welding surfaces are contaminated. Ultrasonics seals securely through contaminants such as powder, liquids, or fibers, which occur during filling processes in both the food and non-food sectors. The continuous comparison of actual versus reference process parameters ensures a uniformly high quality level. This makes ultrasonic technology ideal for isolated applications, characterized by frequent changes of the packaging materials and products, as well as for fast packaging of mass products.



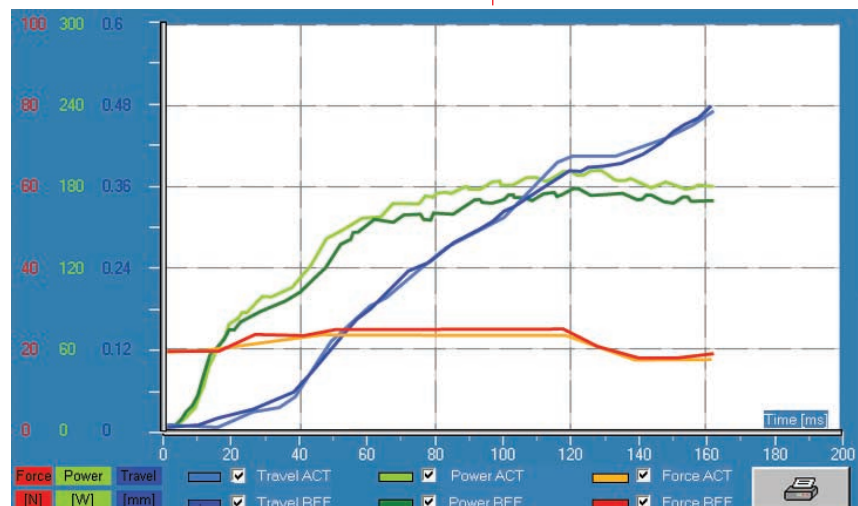
IP65/67 converter system meets the highest requirements in wet area sealing.

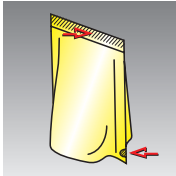
Environmentally friendly technology

Ultrasonic technology is characterized by exceptionally low energy requirements. In contrast to permanently heated thermal processes, energy transfer only takes place during the brief moment of the actual welding process.

Another advantage of the ultrasonic process is the lack of additives such as adhesives or solvents. Ultrasonic welding often allows for the optimization of the packaging substrate and reduction of packaging thickness.

Controlled quality through continuous comparison of actual versus reference process parameters.





Stand-up pouches Flat pouches



Ultrasonic sealing through top seal product contamination in an SUP production line.

In fully automatic packaging lines for flat or stand-up pouches, pre-formed pouches or pouches produced from a roll are fed into the filling machine, opened, filled, and sealed. Herrmann offers complete, customized welding systems for integration into existing machine systems. Our components are flexible and the expertise of our engineers ensures the secure adaptation of interfaces to the production machine.

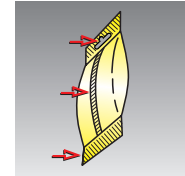
Our welding systems are equally suitable for the original equipment at production plants as well as the retrofitting of existing machinery.

Superior quality level

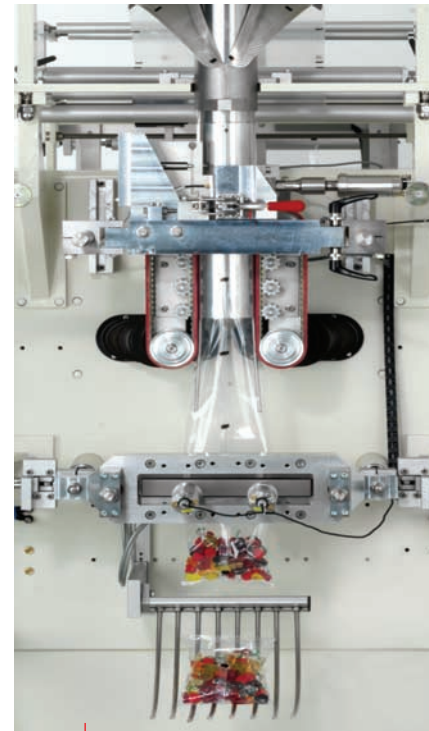
Ultrasonic technology consistently produces strong, hermetic seals across contaminated surfaces. This applies to liquid, fibrous, powdery, lumpy, and foamy products. All welding parameters are documented. A direct good/bad selection takes place as a result of the continuous actual versus reference comparison of the welding seams.

Improved productivity and efficiency

Short welding times in conjunction with long ultrasonic tool life increase productivity. Users achieve a significant increase in efficiency even in existing production plants as a result of the significantly lower down times of the machines.



Form-Fill-Seal-Bag VFFS/HFFS



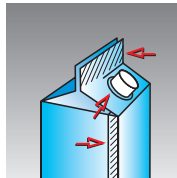
Herrmann's ultrasonic modules incorporated into VFFS and HFFS equipment.

In common versions of vertical form, fill and seal (VFFS) and horizontal form, fill and seal (HFFS) machines, packaging material is fed off a roll to a form shoulder, shaped into a tube, and sealed longitudinally. Then the bag is filled, sealed horizontally, and separated. The welding of the cross seal simultaneously creates the top seal of the filled tube and the bottom seal of the next bag at the same time.

Herrmann produces sealing systems and modules for both VFFS and HFFS packaging systems. In addition, independent add-on modules such as valve and zipper applicators are available.

Longitudinal sealing unit

The compact longitudinal sealing module offers many advantages for horizontal and vertical form-fill-seal machines:



Carton



Herrmann Ultrasonic modules incorporated into carton packaging equipment.

- Due to permanent cold tools the sealing area does not warm up
- Reliable seals even on contaminated surfaces.
- Compact design facilitates reduced height of fall in vertical form-fill-seal machines

Cross sealing unit

The cross sealing unit is an integrated system, which offers many benefits in popular VFFS/HFFS machines:

- Reliable seals even on contaminated surfaces
- No hot-tack effect.
- Short welding times even with complex laminate structures
- High degree of up-time through reduced maintenance and long tool life
- Direct good/bad selection
- Full electronic documentation of welding results

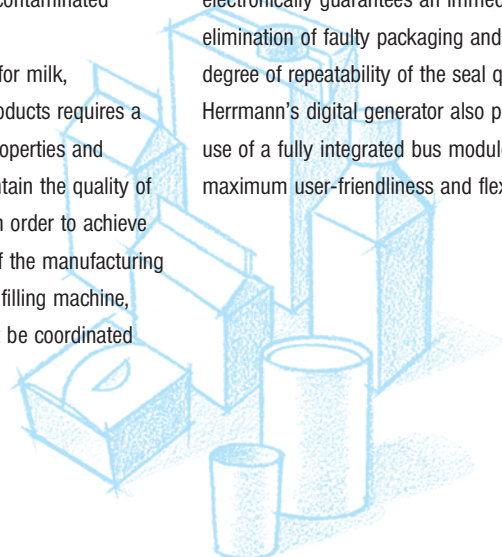
Herrmann has been supplying well-known machine manufacturers in the carton packaging sector for many years.

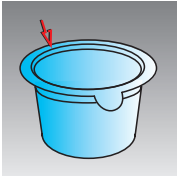
The ultrasonic welding process is ideally suited to the welding of coated carton packaging. Ultrasonic movement applied to the material is transferred directly through the various layers of the carton to the inner sealing layer. Here ultrasonic vibrations produce a secure and strong welded seal, even on contaminated surfaces.

The use of carton packaging for milk, beverages, and other food products requires a very high degree of barrier properties and tightness to consistently maintain the quality of the packaged food product. In order to achieve this, the major components of the manufacturing process (packaging material, filling machine, and sealing technology) must be coordinated

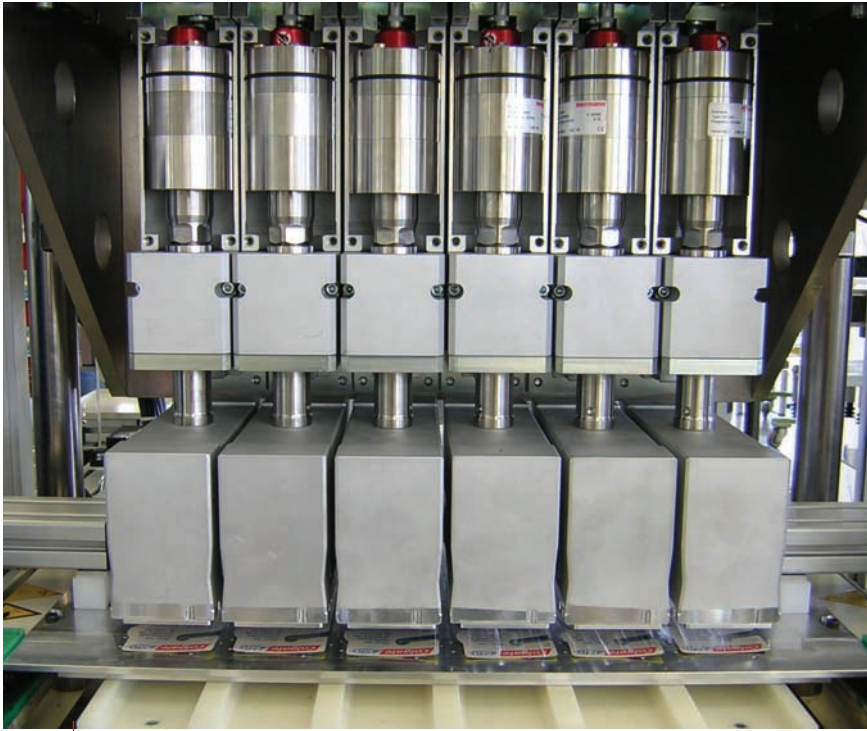
precisely. Ultrasonic technology is singularly capable of fulfilling the requirements of today's high-performance fillers. Herrmann ultrasonic sealing systems are specifically adapted to the requirements of aseptic filling.

All welding components are manufactured from stainless steel or titanium and meet the requirements of IP65/IP67. The option of documenting all relevant welding parameters electronically guarantees an immediate elimination of faulty packaging and thus a high degree of repeatability of the seal quality. Herrmann's digital generator also permits the use of a fully integrated bus module for maximum user-friendliness and flexibility.





Blister Clamshell Cups Trays



Ultrasonic technology utilized in blister packaging manufacturing.

Herrmann provides complete system solutions for the closure, cutting, and peelable sealing of thermoformed containers.

These are either formed directly on the machine or fed into the packaging machine as preformed containers. The containers are then filled and sealed with a covering lid stock or a deeply drawn lid. In certain cases the lids are simultaneously cut out of the sheeting.

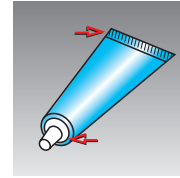
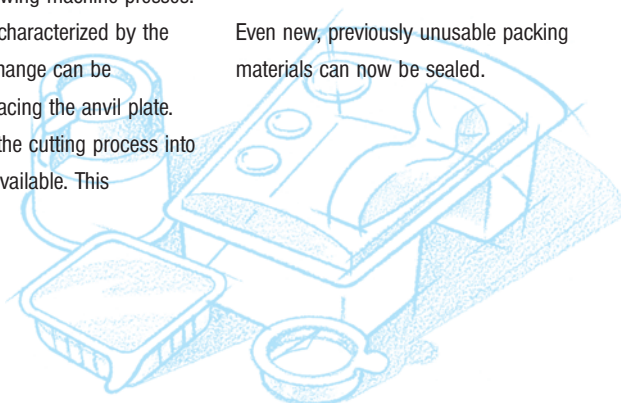
The ultrasonic welding module developed specifically for this market segment has been designed to be flexible and can be adapted to various types of deep-drawing machine presses. This concept is primarily characterized by the fact that a rapid format change can be completed by simply replacing the anvil plate. The option of integrating the cutting process into the anvil design, is also available. This

eliminates the need for an additional mechanical die cutting station.

Welding systems with an actuator unit adapted to the blister can be used for double-sided, three-dimensional blister packs.

Ultrasonic technology demonstrates its unique properties and advantages again in this category of packaging applications in terms of very short welding times and the reliable welding of contaminated sealing surfaces. The latter is particularly important in the area of MAP or vacuum packaging.

Even new, previously unusable packing materials can now be sealed.



Tubes

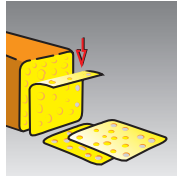


Ultrasonic welding for high-speed tube filling line.

Today, tubes made of synthetic material are primarily used in areas where design and function are decisive criteria. The tubes are passed to the tube fillers, filled, and then sealed. Ultrasonic technology is utilized to weld the injection-molded tube shoulders into the preformed tube shape and for sealing after filling is complete.

Ultrasonic welding technology is fully in accord with the trend towards increasingly complex laminate structures and the continuing reduction of packaging thickness for cost reasons.

Whenever the requirement arises in the chemical, pharmaceutical, or cosmetic industry to exclude all oxygen from the tube, ultrasonic technology is ideal. As a result of the low heat radiation during the welding process, the



Food Processing Cutting



Ultrasonic technology utilized for food cutting applications.

thermal effect on the product to be filled is minimal. Together with the unique ability to weld securely through product-contaminated surfaces, it is possible to fill and seal products containing alcohol with headspace as well as oxygen-sensitive fillers without headspace.

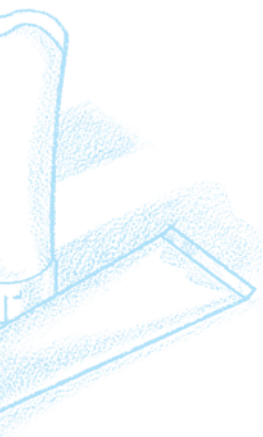
Working with Herrmann application engineers in the design phase of the welding parts ensures a successful production process on our customers' production lines.

Herrmann offers customized solutions for a multitude of applications when separating and cutting both food and non-food products. With cutting applications, focus is placed on the design of the cutting geometry, the individual acoustic behavior of the ultrasonic sonotrode, and the integration of the components into the machines. Cutting geometry depends to a large extent upon the product to be cut. Herrmann experts rely on extensive know-how in using finite element analysis (FEA) calculations when finding application solutions. Only an appropriately optimized sonotrode profile guarantees a reliable ultrasonic acoustic system capable of working under the most demanding conditions.

All applications are tested in our technical applications laboratory prior to the use in the production system.

For special applications, Herrmann uses ultrasonic sonotrodes with our patented twin-converter technology. This makes cutting lengths of up to 600 mm possible. Other ultrasonic acoustic cutting components can be supplied in stainless steel to meet IP65 or IP67 specifications.

Usually the movement of the acoustic cutting system is executed by the main machine. However, an extensive range of diverse actuator units is also available, which together with the ultrasonic cutting stack and the digital generator form an ideal unit, which can be easily integrated into an existing machine.



EXPERT APPLICATION CONSULTATION FOR INDIVIDUAL SYSTEM SOLUTIONS

From the idea to the package

Our packaging application engineers ensure that your ideas are translated into designs and become reality. Working closely with you and your team, we produce samples to prepare your production and marketing decisions. You benefit from our many years of worldwide packaging experience. Production conditions, required volumes, and coordination with existing or new packaging systems are important criteria for determining of the best possible solution for you.

Support through experienced application engineers

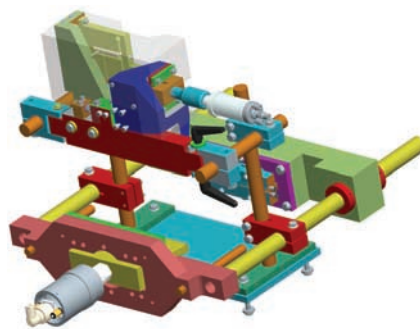
Our packaging application engineers analyze your specific requirements together with the packaging material manufacturers and packaging machine manufacturers. This enables Herrmann to continuously obtain current information regarding the state of developments in the packaging materials and machinery sector. This knowledge is then passed on to our valued customers.

Detailed planning, mechanical design, and preparation for installation

Our packaging engineers and technicians

create circuit diagrams and machine drawings during the development and design of each project. Often special designs pave the way for new processes and systems solutions for complete packaging installations.

To ensure a smooth integration of the systems, the conditions relating to the machinery are coordinated between the sales department, the project manager, the machine manufacturer, and the end customer from an early stage onwards.



Installation, commissioning, and training

By customer request, experienced members of the Herrmann customer service team carry out the installation and commissioning of the ultrasonic systems. At the same time, operators and maintenance engineers are trained to use the ultrasonic sealing system.

Herrmann experts explain and demonstrate the

setup of the acoustical sealing stack, operation of the digital generator, and individual functions of the ultrasonic welding system.

Quality

Herrmann is certificated according to DIN EN ISO 9001: 2000. The certificate, however, is only an outwardly visible symbol for the fact that we understand quality as an indicator for the performance of our entire company.

To obtain the certificate, we have repeatedly



Extensive ultrasonic packaging sealing workshop at the Herrmann Ultrasonics training center.

shown evidence that production and administration operate in accordance with structured methods and comprehensible operating procedures.

Training

We consider operator training an important contribution to safe and largely uninterrupted operation of ultrasonic sealing technology in packaging machinery. We pass on our theoretical and practical knowledge during seminars and explain important procedures and functions of working with ultrasonic components. Participants in the training sessions are given support documentation and can test their acquired knowledge using the machines in our technical applications laboratories. Herrmann also offers special training at customers' locations upon request: in locations abroad, or for special machinery, this is an efficient and cost-effective alternative to the training in our facilities.

Herrmann Ultrasonics packaging application laboratory.



DIGITAL GENERATOR TECHNOLOGY: SUPERIOR PERFORMANCE AND FLEXIBILITY

Ultrasonic Generators ULTRAPACK digital control PK

The new Herrmann ultrasonic generator series in the ULTRAPACK digital control PK series are based on state-of-the-art digital technology, which functions independent of ageing effects, temperature fluctuations, and component tolerances. In addition, comprehensive programming enables an intelligent adaptation of welding parameters to a wide range of acoustical stacks. The parameters relevant to the process (time, energy, peak power) are indicated on individually programmed control displays. The wide-ranging interfaces include opto-electronically separated PLC inputs and outputs, as well as RS-232 and RS-485 interfaces. Integration of a field bus connection interface can also be arranged for all currently available bus systems per customer request.



The digital packaging generators can precisely recognize the behavior of the acoustical stack and therefore operate sonotrodes with an extremely narrow bandwidth.



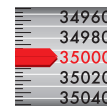
DSP with intelligent memory

Digital Signal Processing (DSP) provides adaptive intelligence with long-term memory. This includes stored detailed error batches and weld process data storage accessible at all times.



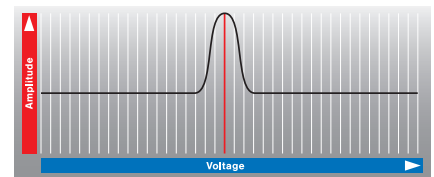
Overall system integration through bus module

The individual choice of bus modules permits flexible integration of the ultrasonic generator into the machine control system used by the customer. The bus module is completely integrated into the generator. Standardized interface connections guarantee error-free communication.



RESONANCE SCAN frequency matching for optimum performance

The ULTRAPACK digital control PK ultrasonic generators recognize the acoustic stack resonance frequency and automatically adjust to the start-up characteristics of various sonotrode types. This protects the sonotrodes from damage and ensures that the entire system works under optimum operating conditions. The sonotrode data can be stored and thus permits a true plug-and-play operation when changing the sonotrode. The generator can also operate extremely narrow bandwidth sonotrodes as a result of precise digital recognition of the acoustical behavior.



RESONANCE SCAN automatically determines the resonance frequency of the sonotrode and tunes the whole system.



DIGITAL CONTROL for repeatable sealing results.

A digital process continuously monitors the sonotrode assembly and ensures a maximum degree of effectiveness. Temperature fluctuations and sonotrode wear are automatically compensated for. The sonotrode amplitude is unaffected by line voltage fluctuations.

Technical Data Ultrasonic Generators ULTRAPACK

Type	ULTRAPACK active control		ULTRAPACK digital control								
	500 M	700 M	1000 M PK	1000 PK	2500 twin PK	1700 PK	3500 twin PK	2000 PK	4000 PK	5000 PK	5000 twin PK
Generator Type	500 M	700 M	1000 M PK	1000 PK	2500 twin PK	1700 PK	3500 twin PK	2000 PK	4000 PK	5000 PK	5000 twin PK
Frequency [kHz]	35	35	35	35	35	30	30	20	20	20	20
Ultrasonic Power [W]	500	700	1000	1000	2500	1700	3500	2000	4000	5000	5000
Supply Voltage [V]	230	230	230	230	230	230	230	230	400	400	400
Input Current [VA]	600	850	1100	1100	2800	2000	4000	2500	4400	5500	5500
Time/Energy/Power Control	- / - / -	○ / - / -						● / ● / ●			
Dimension H x W x D [mm]	130 x 52 x 320		130 x 110 x 380			305 x 110 x 360					
Weight of Generator incl. Case [kg]	3,2	3,2	4,5	7	8	8	8	8	8	8	8
Installation in 19" Rack Mount	10 TE / 3 HE		21 TE / 3 HE								

○ = optional ● = included

GUARANTEED PRODUCTIVITY THROUGH QUALITY AND SERVICE



Firm commitment to quality according to ISO 9001

Our quality management system conforms to the international standards of ISO 9001, which are integrated into all company functions. Our philosophy is to apply high technology to achieve superior quality and lowest total cost solutions.



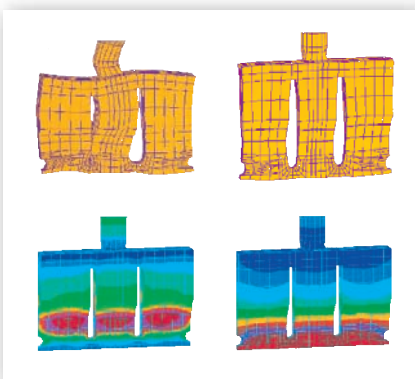
VERIFY 100 for sonotrodes with 100 % quality

Every sonotrode is thoroughly inspected prior to shipping. A computerized inspection procedure precisely measures the resonance frequency, impedance and idling power. Amplitude is measured with a high precision opto-electronic measuring system.



FEA development for lasting ultrasonic sonotrodes

Herrmann utilizes a specialized, highly advanced FEA computer system for sonotrode development. It provides the opportunity to simulate and visualize acoustical dynamic performance and material stress. This information is used to optimize the geometry of the sonotrode. The result is maximum efficiency, even amplitude distribution, and extended sonotrode life.



CHECK 100 guarantees the quality of electronic circuit boards

We verify the performance of each individual circuit board with a computerized test system. Our inspection procedure is second to none in our industry and maintains quality at 100 %.



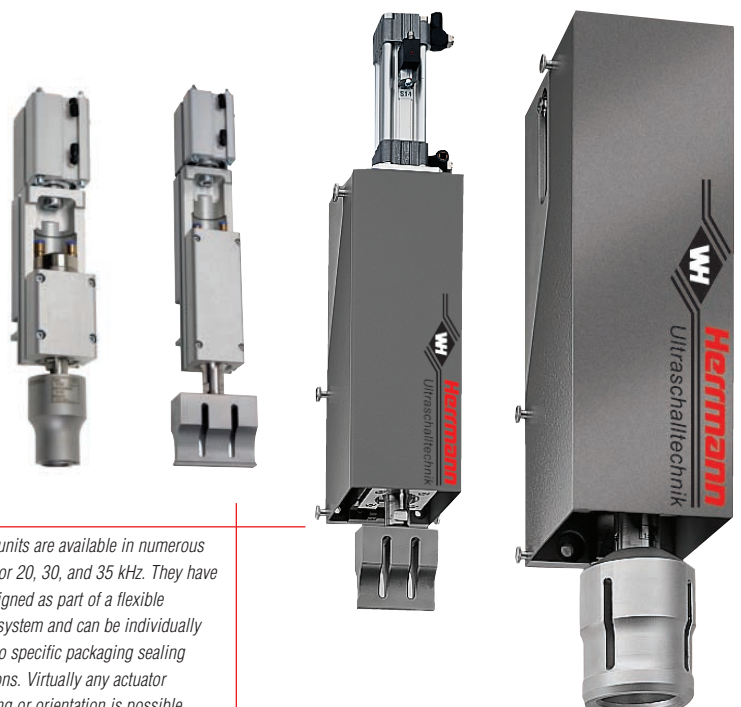
Optimum availability

We have created a comprehensive range of services to ensure machine up-time. These services cover regular maintenance and inspection of your welding system.



Service Hotline

24h telephone consultation, replacement and loaner units, express production, and immediate dispatch of wear and spare parts even on weekends and public holidays.



Actuator units are available in numerous designs for 20, 30, and 35 kHz. They have been designed as part of a flexible modular system and can be individually adapted to specific packaging sealing applications. Virtually any actuator positioning or orientation is possible.

further Product Lines

HIGH QUALITY WELDING OF THERMOPLASTICS

When it comes to ultrasonic joining of thermoplastic parts, Herrmann provides highly advanced technology and a variety of patented solutions.

State-of-the-art digital technology provides precise control of the welding process and ensures high-quality welds with repeatable results. User-friendly touch screen technology provides weld process visualization and optimization to meet and exceed industry requirements.

Herrmann Ultrasonics plastic welding know-how covers virtually all industries:

- Medical Devices
- Electronics
- Automotive
- Filters
- Consumer Goods
- Appliances
- Recreation and Toys
- Textiles



HIGH SPEED BONDING SYSTEMS FOR NONWOVENS

Ultrasonic welding technology provides important advantages for the high speed processing of nonwovens, textiles, composite materials and paper.

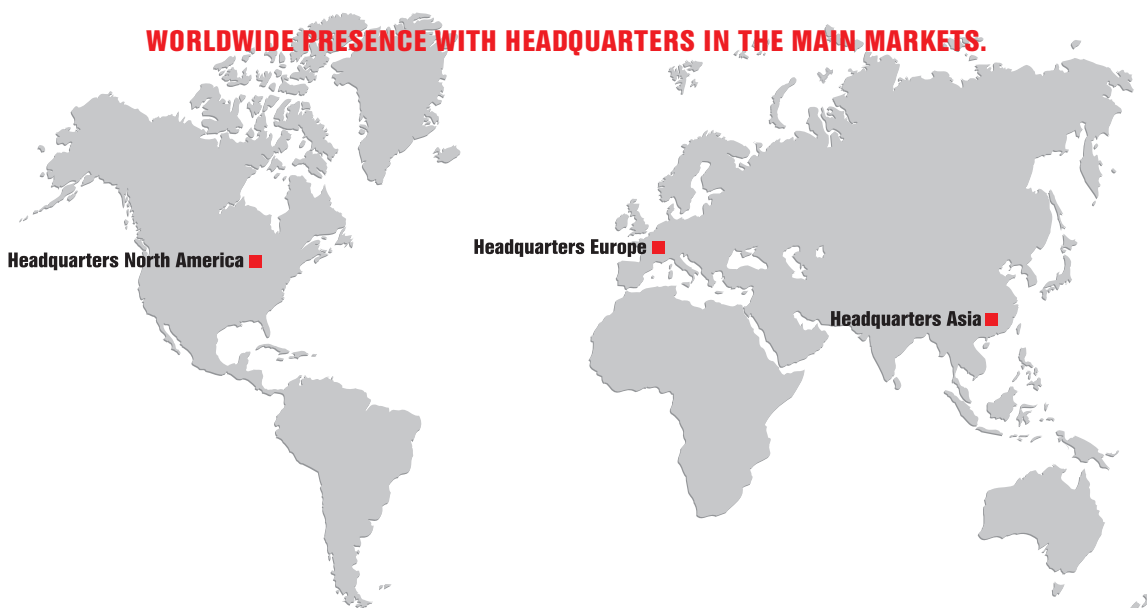
The Herrmann Ultrasonics patented NON-CONTACT/NON-WEAR system utilizes the revolutionary MICRO GAP control system, which provides consistent results and almost eliminates wear.

This reliable system was designed for the precise control of:

- Bonding and cutting across and along the web
- Laminating
- Sewing
- Spot welding
- Die cutting and perforating
- Special applications



WORLDWIDE PRESENCE WITH HEADQUARTERS IN THE MAIN MARKETS.



Herrmann Ultraschalltechnik GmbH & Co. KG

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WH **Herrmann**
Ultraschalltechnik