ULTRASONIC WELDING TECHNOLOGY

CONSUMER

Herrmann Ultraschall

Ultrasonic welding technology.
For consumer goods.

Without plastics, everyday life as we know it would be unthinkable. Plastics offer a nearly unlimited range of use with regards to their visual appearance, dimensions, function, and material properties. The number of plastic components used in consumer goods is steadily increasing. In addition to maximum flexibility in design, both low production costs and light weight speak in favor of plastics. Component development focuses mainly on joining plastics. Ultrasonic welding provides an ideal method for joining plastics. Also, in the packaging industry, ultrasonically sealed plastics can be used in various ways. Herrmann Ultraschall is a world-leading company in the field of ultrasonic welding. For our customers, we assume the role of both consultants and application problem solvers with regards to the ultrasonic joining of plastic materials. In addition to leading-technology products, we provide excellent, in depth application consulting to solve joining tasks and problems while taking into account both the quality and economic aspects.

Ultrasonic welding of consumer components.
As unique as the product itself.

Household

Optimized solutions.
For your specific requirements.

Nowadays, requirements for components for consumer goods have become increasingly complex. Tightness, strength, accurate dimensions and the impeccable visual appearance of surfaces are typical quality criteria. In order to ensure economically cost-effective manufacturing, low energy requirements, cost-effective product design and avoidance of rejects are key aspects.

Herrmann Ultraschall ultrasonic welding systems and components, along with application laboratories and technical application oriented experts, provide the basis for efficient and high quality production processes. A high degree of product safety and reproducibility, as well as the selection of correct weld process parameters, ensure a standard of high quality for the finished component. Herrmann Ultraschall provides ideal solutions for maximum flexibility in production - from small volume assembly to fully automated production processes.

Office supplies

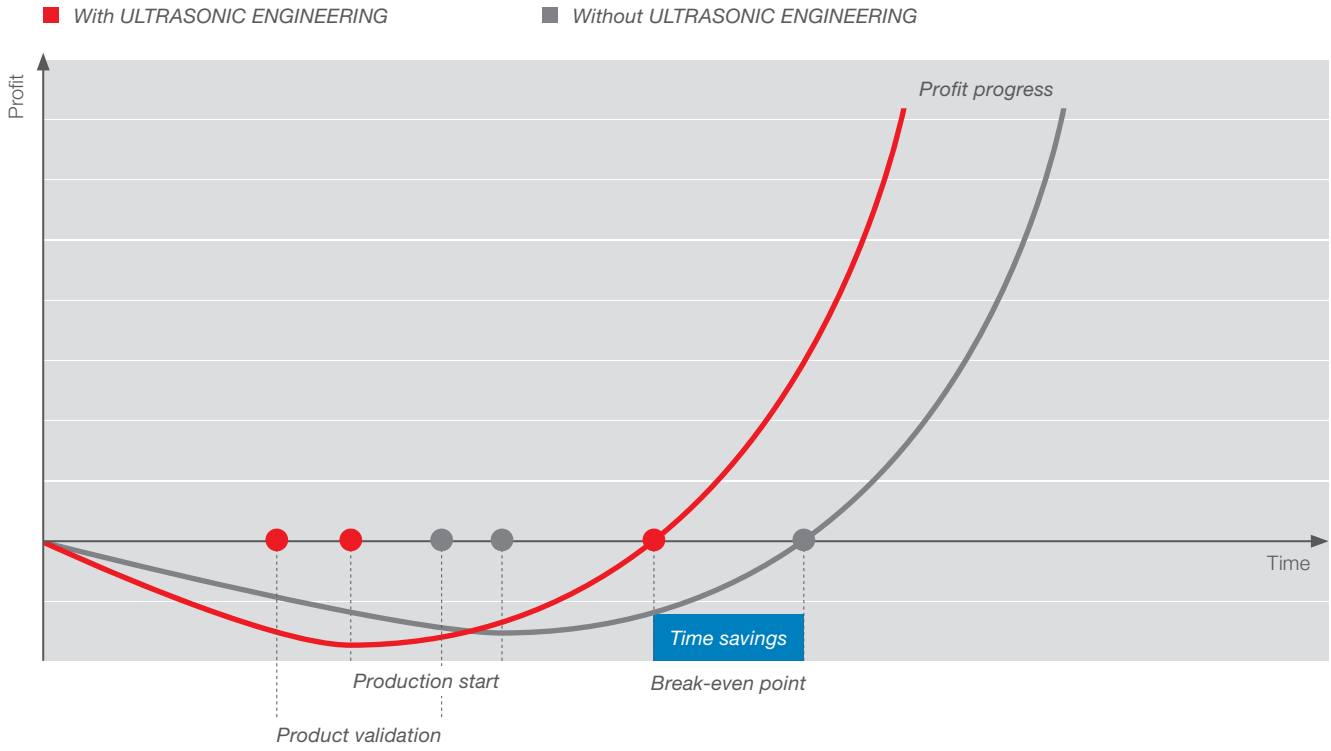
Leisure + garden

Typical product requirements.
Possible with technology from Herrmann Ultraschall.

- High strength
- Surfaces free of print marks
- Reliable functionality of components
- 100 % hermetic seal
- Dimensional accuracy

Highly efficient.
With technical application-related consulting.

Short R&D periods are a crucial competitive advantage. By utilizing ultrasonic welding technologies from Herrmann Ultraschall, break-even points can be met earlier and the required profit range can be reached sooner.



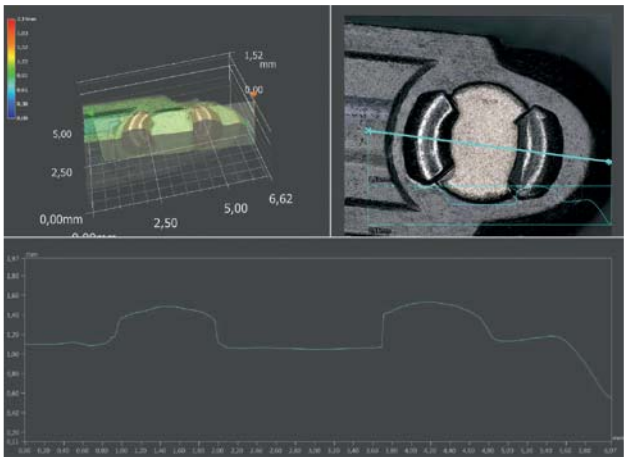
Advantage through efficiency. With competent industrial knowledge and experience.

Long-term experience by Herrmann Ultraschall, with respect to the joining of plastic components in the (consumer) sector, is an important success factor in component development. Early introduction of Herrmann Ultraschall specialists in the product design state reduces experimental processes and costs.

- Data base-supported experience from more than 10,000 successful applications
- Increase of overall product quality through obtaining an optimum component design
- Reduction of repetitive and expensive modifications and optimization loops for injection molding tools and dies
- Reliable feasibility studies using test tools, including process documentation
- Early definition of process parameters and implementation into series production
- Support for validation of the weld process
- Pre-series production by means of contract welding
- Consistent weld processes can be reproduced across multiple production facilities worldwide

Stable processes – increasing security.
Weld geometry and process optimization.

Experienced technical application-related consulting and development process support by Herrmann Ultraschall prevents unnecessary expenses and reduces the overall R&D period. In many cases, existing processes can be significantly improved by utilizing Herrmann Ultraschall generator and controller technology. This often ensures a more universal process, which saves time and money.



Advantage through efficiency. With revolutionary technology.

By using ultrasonic welding, the machine and controller units allow for unparalleled process monitoring and optimization, of which is unattainable with other joining processes. Unique identification and traceability options facilitate and optimize the quality of the product throughout the entire product life cycle.

Environmentally friendly and energy efficient

BLUEcoMPETENCE
Alliance Member
Partner of the Engineering Industry Sustainability Initiative

Ultrasonic welding technology is considered as environmentally friendly. In comparison with thermal joining processes, its overall energy footprint is reduced by 75%. This is due to power only being drawn during the actual weld time.

Properties and advantages

- Very low energy required due to optimum efficiency
- Energy is focused specifically in the area to be joined and only during the actual weld process
- Efficient use of energy due to ultrasonics not requiring preheating or stand-by cycles
- No power dissipation through heat radiation as with typical thermal processes

Highest welding quality.
For household applications.

Welding of vacuum cleaner bags

Vacuum cleaner bags are available in a wide variety of dimensions and designs. Typical requirements include: strong layer bonding, dustproof sealing, integration of functional layers and functional components, production of various sizes, high output and uniform quality.

Welding of appliance housings

Household appliances are often complex 3D components with demanding requirements of perfect visual appearance, high strength and perfect functionality. Typical applications: electric iron, vacuum cleaner and kitchen appliances.

Welding of wipes

It is also possible to join textile products using ultrasonic technology. Typical requirements include: soft weld joints, high strength, no formation of holes, high output, implementation of individual design elements and the joining of functional layers. Typical applications: wash gloves, dust cloths, cosmetic pads, cleaning wipes.

Welding of display plates and control panels

Control units for electrical and electronic systems are integrated into many household appliances and include both small and large format units. Typical requirements include: perfect surface finish, no marking, reliable functionality, high dimensional accuracy, tightness. Typical applications: control panels for washing machines, dishwashers and ovens.

Welding of water containers

When manufacturing plastic water containers and tanks, the main focus is on leak-proof designs, even with intensive use. However, mark-free visual appearance is equally important. Typical applications: steam irons, coffee makers, watering cans, thermos flasks and spray bottles.

Welding and staking of functional components

Functional components must fulfill a wide variety of requirements and are often subject to vibration, increased pressure or varying temperatures. Therefore, the main focus is on guaranteeing the proper function of the components. Typical requirements: strength, tightness and the joining of plastics and metal. Typical applications: products and devices for daily use such as electric toothbrushes, shower heads, razors, and accessories for household appliances.

Highest welding quality.
For leisure and garden applications.

Welding of appliance housings

Requirements for household appliances are more strict for machines and devices that are used in difficult outdoor conditions. Typical requirements are high strength, perfect visual appearance, tightness and, above all, reliable functionality. Typical applications: power saws and electric gardening tools.

Lamination of roof lining membranes

Roof lining membranes provide efficient insulation of the roof from the elements. The requirements for this type of web material are strong layer bonding, non-vapor retardant permeability, joining of functional layers, no formation of holes, tear resistance and UV and weather resistance.

Welding of functional components

Functional components for gardening and outdoor use must meet particularly high requirements. These include tightness, extreme durability, and reliable functionality. Typical applications: house connection systems, dripper regulation for watering systems, sprinkler systems and water filters.

Welding of toys

Requirements for plastic toys, particularly with regard to safety, are just as high as almost every other kind of products. These requirements include reliable welds to prevent loose parts, smooth and flash-free weld areas, high strength and a mark-free surface. Even complex 3D geometries can be joined using ultrasonics.

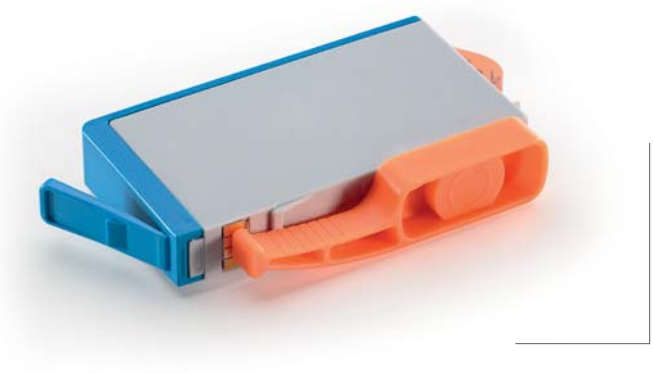
Joining of different materials

Ultrasonic technology can be used to join and weld plastic materials with both similar and different properties, and even to join plastic to metal. Typical requirements: high-strength, flash-free and temperature-resistant bonds. Typical applications: pacifiers, broomsticks with plastic/metal connections, rakes and gardening tools.

Highest welding quality.
For office applications.

Welding of writing utensils

Writing utensils and other high-quality consumer goods, along with other lifestyle products, require perfect production quality and an excellent surface finish. Depending on the type of product, strength and tightness also play an important role in producing high-quality items. Typical applications: fountain pens, highlighters, and other writing utensils.



Welding of print cartridges

Print cartridges are products that are manufactured in large quantities. Ultrasonic technology can be used to reliably weld print cartridges of any type and size, guaranteeing absolute tightness and perfect functionality.

Welding of telephone housings

Welding of high-quality electronic products, such as smartphones, must comply with strict requirements for dimensional accuracy and reliable functionality. Tightness and perfect visual appearance are also very important characteristics, of which can be accomplished by using ultrasonic welding technology. Typical applications: telephones, mobile phones and smartphones.

Maximum sealing quality.
For packaging.

Pouches

Ultrasonic sealing technology guarantees tight joints. By utilizing closed-loop digital monitoring of the seal quality for each seal that is produced, it is possible to substantially reduce the cost of manual quality checks due to overfilling, filling errors, folds, etc. Screw caps or spouts represent a clean and user-friendly solution for product consumption. Ultrasonic technology welds injection molded functional components quickly and safely on numerous types of film. Ultrasonic technology also maintains an attractive appearance of the package by avoiding film shrinkage. The barrier properties of the package are not compromised.

Blister packs

The first-opening guarantee in the form of tamper-evident seals offers the consumer the best possible product quality and prevents theft or manipulation by third parties. This important function is guaranteed 100 % by integrated closed loop digital process monitoring. For PET applications in particular, ultrasonic technology quickly reaches the high melting point, thereby increasing production output. The formation of vacuum at the weld tool makes it possible to hold and feed the lid.

Wrappers

For manufacturing of book wrappers and binding of multi-ply plastic inserts, ultrasonic technology can guarantee high cycle rates and secure welding of multi-layer products. Ultrasonic technology is also used for safe production and high-quality visual appearance of PP wrappers. The planar arrangement of several sonotrodes allows for the customization of a single production solution that can be used for a variety of product formats.

Versatile product portfolio.
Leading in technology and precision.

HiQ product line for plastic weld applications

The HiQ generation welding machines provide an appropriate platform for virtually any application, any market and any budget. The machine series allows for complex joining methods, is user-friendly and provides for easy handling. Adjustable force profiles, a wide range of process parameters and intelligent system software can be used to individually customize weld applications. For integration in automation lines, a large variety of modular actuators is available.

- Precision
- Diversity
- Efficiency

EASYBOND for continuous applications

The EASYBOND product line has been designed for simple, continuous weld applications for nonwovens and web material. The features of the ultrasonic modules are precisely adapted to customer requirements. Their flexible design can be upgraded to MICROBOND technology if required.

- ULTRABOND generators with high continuous ultrasonic power
- High quality for simple ultrasonic applications
- Rigid sonotrode support

PACKLINE sealing modules for packaging material

The ultrasonic modules are provided in a flexible modular system that allows for easy and fast integration into new or existing packaging machines. The intelligent measuring and control technology ensures reliable detection of process faults. High-cost quality returns from the field are thus prevented.

- Reduction of quality assurance costs
- Modular design with high functional output
- Long service life expectancy under extreme environmental conditions

Continuous support from the beginning.
ULTRASONIC ENGINEERING.

The expert teams at Herrmann Ultraschall will support during every phase of a project. This includes joint design discussion, component design, pre-production prototype welding in application laboratories, weld parameter definition for verification of the required component properties, training/ instruction services and after-sales services. Close cooperation with the customer and efficient product development is the primary focus.

Ultrasonic laboratory

Application consulting

- Early support for component design
- Support and direction for designing the geometry of the weld joint area
- Principle testing for feasibility

Application optimization

- Common trials and tests with the customer
- Determination and optimization of tooling profiles and process limits
- Verification of research results with the help of microscopy, tensile tests, sealing tests, burst tests, high-speed cameras, and microtome cuts
- Complete documentation of the feasibility test results

Trainings and seminars

- Beginner and expert seminars
- Hands-on user training
- Trainings on site or at our local facilities
- Customer-specific trainings

Technical project management

- Consistent implementation of customer requirements and test results in design concepts
- 3-D supported collision analysis
- FEM-assisted tool design
- Mechanical and electrical interface definition
- Guidance on integrating the weld process

Tech-Center on site

- Customer-oriented support for feasibility analyses
- Ultrasonic laboratories are strategically located in the major markets worldwide
- Experienced and native-speaking application specialists

After-Sales Service

- Optional 24-hour service hotline
- On-site service in the respective languages through our Tech-Center network
- Preventative maintenance and service measures

FIRST CLASS TECHNOLOGY. WORLDWIDE.

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85729 05/16 ENG 2.000 Subject to technical changes