



M U L T I - H E A D S Y S T E M S



Founded in 1947
by the physicist Dr. Lehfeld and known since
1972 as KLN Ultraschall, we are today one of the
leading European manufacturers of machines
and equipment for welding thermoplastic parts
and ultrasonic cleaning technology in Europe.

In January 2000 KLN Ultraschall has joined the Crest Ultrasonics Corp., USA/Trenton, New Jersey, a group with international activities. All over the world a staff of more than 1.000 employees works on 20 locations in 12 countries. The complex technologies of plastics welding and ultrasonic cleaning are the main activities of the Crest Group. Currently at the German locations in Heppenheim and Fürth an expert team of 180 employees works on complex customer projects.

Plastic welding technology

Standard machines for ultrasonic welding, ultrasonic multi-head machines, ultrasonic continuous welding for aluminum foil or thermoplastics, special machines, vibration welders, spin welders, hot plate welders, processing machines for plastics fuel tanks.

Ultrasonic cleaning technology

Ultrasonic vibration tanks, compact machines with drying feature, special machines, modular tank systems with agitation, rinsing, drying and rust inhibiting.

Special brochures

Additional brochures on our product range can be downloaded from our homepage or be ordered by e-mail (info@kln.de).



S P E C I A L M A C H I N E S
W E L D I N G T E C H N O L O G Y
Thermo Ultrasonics Vibration Spinwelding Infrared



KLN Ultraschall
A Crest Group Company

Odenwaldstraße 8
D-64646 Heppenheim

Tel. (+49) (0) 6252 14 0
Fax (+49) (0) 6252 14 277

E-Mail info@kln.de
Internet <http://www.kln.de>





MULTI-HEAD SYSTEMS

Ultrasonic multi-head machines for plastic parts

In plastic parts which are not suitable for ultrasonic standard machines due to their size and characteristics, it is recommendable to find individual solutions with several ultrasonic units for the ultrasonic welding and processing methods.

Welding Riveting Spot welding Punching Beading



These machines can also be designed for complex problem solutions. They can also be combined, for example, with other welding techniques, like vibration, hot plate etc. and with a wide variety of automation possibilities. These include the feeding technology of clips and also other techniques like imprinting and embossing, bar code systems or other automatic loading systems as a part of the quality control and a complete recording. The individual components are largely standardized.



Feeding automation for the exact positioning of clips on interior trim parts of cars.



Ultrasonic Technology
in complex tasks

Ultrasonic riveting:

re-shaping of pins, hollow pins or bridges for the fixation of components, e. g. reinforcement inserts.



References:

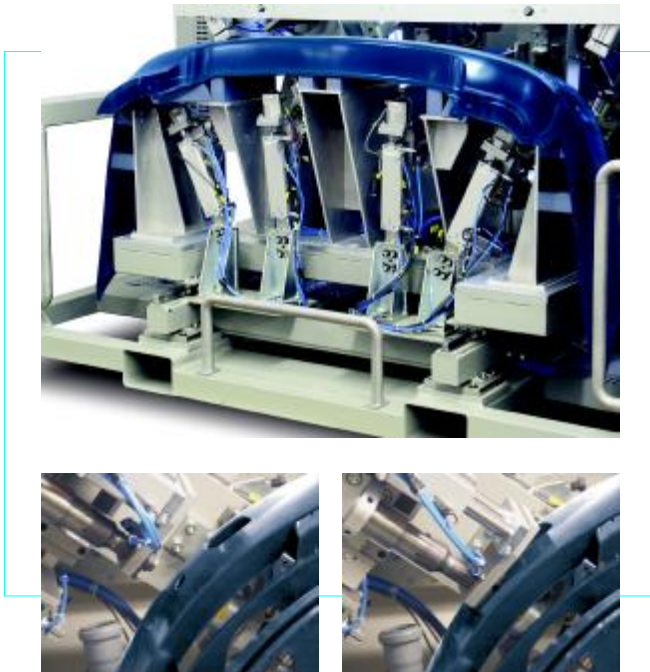
e.g. FAW Volkswagen- VW-Caddy, Passat (B6), Bora, Jetta Future, Audi (B7), Peugeot 307, Maserati, Ford Mondeo, Fiat limousines & transporters.



Ultrasonic Technology
in complex tasks

We develop and manufacture

punching machines with precise radius design on the surface, e. g. for punching holes for incorporation of distance sensors in lacquered bumpers or lamp cleaning units.



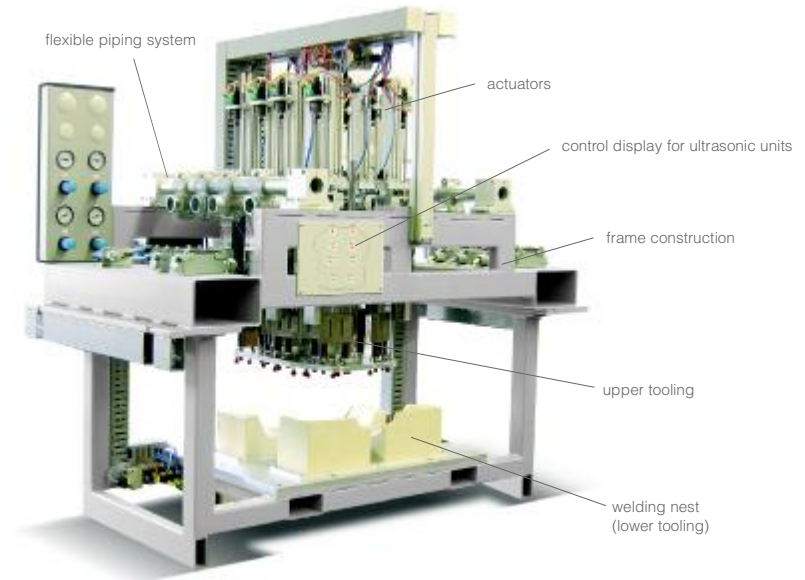
Ultrasonic punching: production of round or angular holes with high precision, whereby the component is preserved; also suitable for already lacquered surfaces.



MULTI-HEAD SYSTEMS

The modular changing system

Makes possible the tooling exchange for different parts, keeping the basic machine. The KLN program comprises all types of ultrasonic multihead machines.



Tooling

State-of-the-art tooling design for all tasks, considering sensitive visible surfaces, like lacquered, leathered, fine-grained or foamed surfaces. Manufacturing and optimisation acc. to customer CAD data.





MULTI-HEAD SYSTEMS

Ultrasonic technology in Multi-head machines

- **Ultrasonic welding:** considering mostly the roof-shaped welding additives (energy directors). Welding by means of friction at the connecting surfaces.
- **Ultrasonic riveting:** re-shaping of pins, hollow pins or bridges for the fixation of components, e. g. reinforcement inserts.
- **Ultrasonic punching:** production of round or angular holes with high precision, whereby the component is preserved; also suitable for already lacquered surfaces.
- **Spot welding:** Patented technology for high-tensile and compact compounds: The KLN penetrating waffle sonotrodes. Optimal conditions with regard to material distribution and surface pressure, also in contour lines. Parts with sensitive, lacquered or leathered surfaces can be welded without risk of damage or presence of a weld seam (ERG).



Spotwelding

Ultrasonic converters

The converters are produced with an extremely complex technology, that is high-quality lapping and a special assembly of components which was developed by KLN. Here our customers take profit from our 50 year experience in converter technology.

Ultrasonic units

All KLN ultrasonic units are fitted with integrated titanium boosters and safety housings, and have a high starting amplitude of approx. 10 μ . This technology gives maximum protection for the piezo-ceramic converters and simultaneously reduces the heating up of the sonotrodes, as the desired operating amplitude is usually achieved with low sonotrode transformation.



Ultrasonic Technology in complex tasks

One section of application of ultrasonic welding technology is the production of bumpers. The most frequently used processing methods are:

- **surface welding (waffle sonotrode)**
- **punching**
- **riveting**

Surface welding: Patented technology (# 20 2005 003 067.8) for high-tensile and compact compounds: The KLN penetrating waffle sonotrodes. Optimal conditions with regard to material distribution and surface pressure, also in contour lines. Parts with sensitive, lacquered or leathered surfaces can be welded without risk of damage or presence of a weld seam.



Ultrasonic welding:

considering mostly the roof-shaped welding additives (energy directors). Welding by means of friction at the connecting surfaces.



Ultrasonic Technology
in complex tasks



WELDING TECHNOLOGY



Multi-head equipment especially for bumpers

For other applications in US Multi-head technology like instrument panels, center consoles, door panels etc. please ask for brochures and complete program.



MULTI-HEAD SYSTEMS

Flexible KLN piping system

for free adjustment of the operating positions.

The pneumatic feed units are fixed preferably in a flexible piping system. This allows the unrestricted adjustment of the welding positions in all directions. Like this parts modifications during the manufacturing phase can be taken into account without causing additional costs.



View into the interior of a special ultrasonic machine for the production of I-panels

Apart from this additional feed units can be easily integrated at a later date. After determination of the final positions the system is fixed with bolts. This technology also offers enormous advantages for later planning. e.g. the use of the machine for other tasks. At the customer's request we can also equip the machine



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Wide range of application

for plastic parts in the automotive industry, for example column panelling with wrapping technique, I-panels, door panelling, centre consoles, spoilers, bumpers, coating with sound protection, cluster (instrument carriers) etc. Apart from this these machines are used also in other industry branches, like in the appliances industry for manufacturing of components for washers, driers etc.



Special ultrasonic machine for the manufacturing of car bumpers.

Pneumatic actuators

The actuators have a high level of exactness due to their linear precision railings. The actuator is additionally combined with cylinder switches for parking position, ultrasonic unit and depth inquiry for travel-limiting switching off as well as other special technologies, like tandem cylinder systems and encoder systems.



M U L T I - H E A D S Y S T E M S

Ultrasonic generators

State-of-the-art plug-in technology as well as modular versions for the frequency ranges 20, 30 and 40 kHz, capacity from 700 to 3000 Watt. All generators are equipped with a communication board for operation at a PLC.



Control technology

A excellent team of specialists of electro-construction, manufacturing of electrical controls and software development is responsible for the production and programming of the machines adapted to individual requirements. Integration of state-of-the-art systems like bar code readers, touch panels, distant diagnosis, robot interfaces, and control displays.