



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 200 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).



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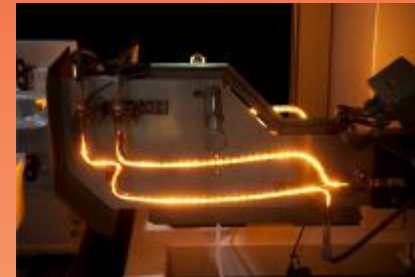
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KLN Ultraschall
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I N F R A R E D W E L D I N G



Vibration + infrared pre-heating

- integrated in the LVW program

Pure infrared heating with short- or medium-wave radiation

- integrated in the hot plate program

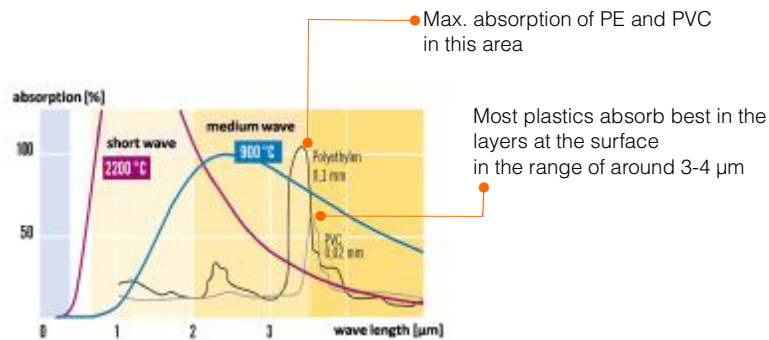
P L A S T I C W E L D I N G T E C H N O L O G Y
Thermo Ultrasonic Vibration SpinWelding Infrared



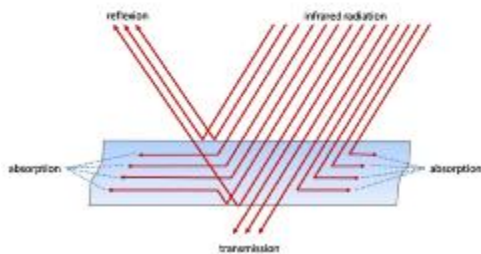
INFRARED WELDING

For welding by means of infrared technology short-wave (0,78-2 μm) as well as medium-wave (2-4 μm) infrared radiation of the spectrum can be used. This depends particularly on the absorption capacity of radiation of the respective plastic material.

The more precisely the radiator is adapted to the absorption capacity of the plastic material, the higher is the degree of efficiency, that means the conversion into warmth. Short waves are absorbed in deeper layers of the material, whereas medium waves heat it up more at the surface. The nearer the radiation source is positioned at the spot to be heated up and the better the ray is focussed, the faster the material will be heated up.



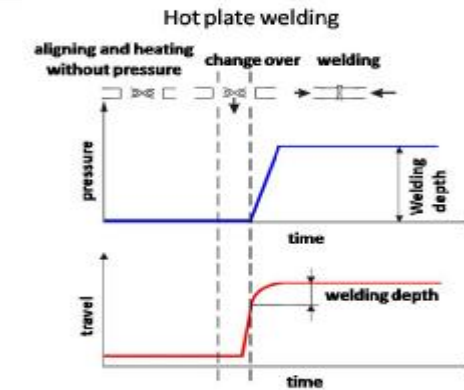
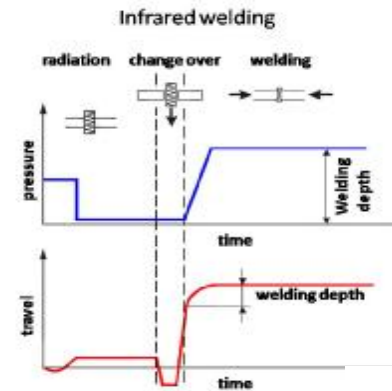
Additives in the plastics (carbon black, glass etc.) increase the absorption capacity, however, they decrease the penetration depth of the radiation.



INFRARED WELDING

Advantages of IR welding

- contactless (no adhesion)
- well controllable
- high melting depth can be achieved
- may be integrated in existing hot plate and vibration machines
- the use of masks gives a good focus on the welding joint
- 3D contours can be realised in the medium- and short-wave range, but not any contour can be realised
- all thermoplastics can be melted; depending on the radiator type the pigmentation has an influence on the melting characteristics





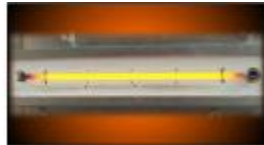
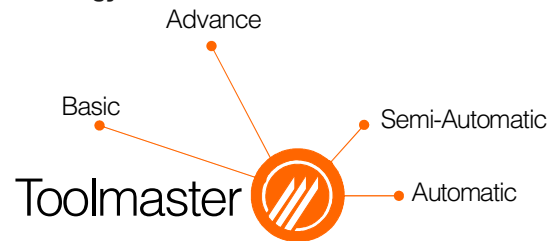
INFRARED WELDING



Hot plate welding machine HE - SA Significant properties

- High acceleration of the slide for the parts fixture and optionally also for the hot plate slide
- Precise speed regulation, depending on the travel
- Regulated braking of all travel motions
- Precise speed regulation, depending on the travel, in various steps of the melting and welding powers. The required parameters can be set at the TP.
- Exchangeable hot plates (standard size 350 x 200 mm) or exchangeable hot plate caps which are heated directly
- PLC control Siemens S7 with Siemens TP

On request, all standard machines of the Toolmaster series can be retrofitted with infrared technology.



Short-wave and medium-wave IR elements can be formed in 3D.



INFRARED WELDING

The following radiators are suitable for heating up of welding joints:

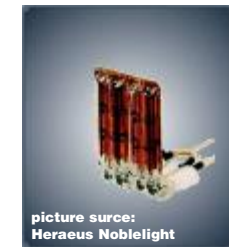
Contour radiators



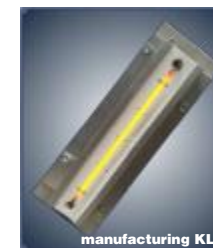
- short-wave radiation (2200 °C at the metal filament)
- 3D contours can be realised, but the production is expensive (graphite mould)
- high energy efficiency as surface transmitter
- also narrow areas can be focussed with respective masks (expensive in 3D contours)
- quick reaction time (1-2 s), thus control is possible in the heating-up phase
- for pre-heating in vibration welding (reduction of lint formation)
- for melting of the welding surfaces (analogous to hot plate welding)
- performance curve is adapted to each material

surface transmitter

- short- and medium-wave radiators (900-2400 °C at the metal filament)
- suitable for large surfaces
- by special masks it can be adapted to the respective welding contour
- high energy consumption
- only flat parts can be welded
- can be used as standard radiator
- for pre-heating in vibration welding (reduction of lint formation)
- for melting of the welding surfaces (analogous to hot plate welding)
- surface transmitter can be used for all parts together



Metal foil radiator



- medium-wave radiator (approx. 800°C at the metal filament) ceramic welding nest needed
- 3D contours can be illustrated (ceramic nest)
- cheap radiator due to in-house production
- short heating-up time
- required distance to the welding surface: approx. 3mm → exact contour needed
- for pre-heating in vibration welding (reduction of lint formation)
- for melting of the welding surfaces (analogous to hot plate welding)
- energy introduction independent from color or pigmentation of the material

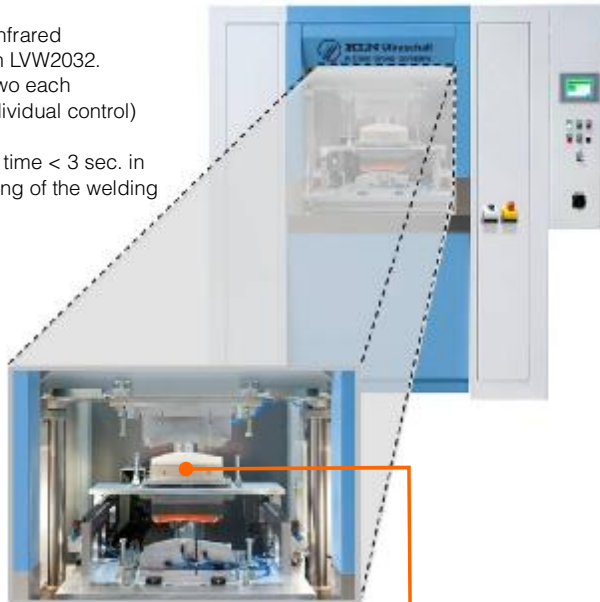


INFRARED WELDING

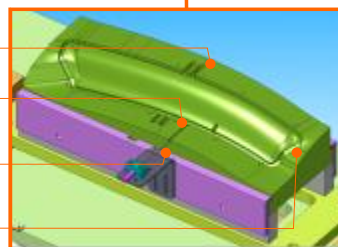
Vibration welders with integrated infrared pre heating.

KLN offers the possibility to integrate infrared technology in all machines or tools to minimise abrasion during the solid matter friction phase, by pre-heating with short or medium waves.

- Vibration tool with infrared metal foil radiator in LVW2032.
- Radiator unit with two each metal radiators (individual control) approx. 300 mm
- Quick change over time < 3 sec. in order to avoid cooling of the welding joint.



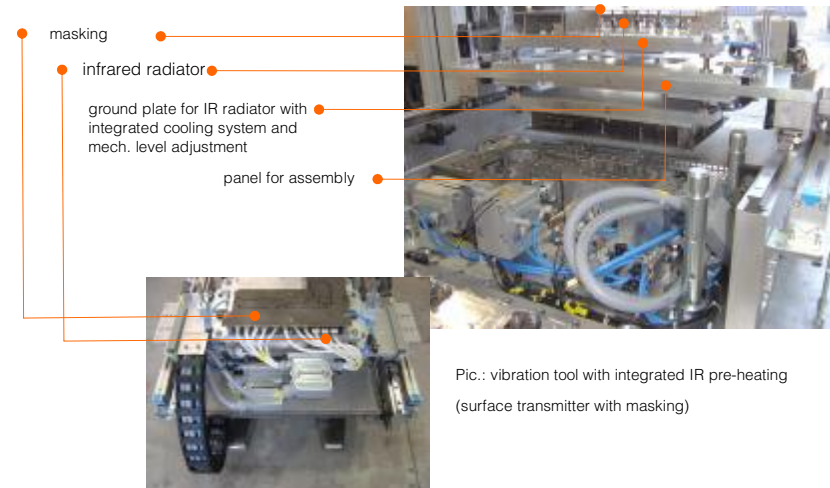
- ceramic nest
- fixation with wire loop
- thermo sensor
- groove for metal



IR metal foil radiator formed in 3D



INFRARED WELDING



Pic.: vibration tool with integrated IR pre-heating (surface transmitter with masking)

Models of the LVW series

Modell	LVW2032	LVW2046	LVW2346	LVW2261
Schwingkopffrequenz (Hz)	-260	-260	-240	-240
Amplitude (mm)	0,35 - 1,0	0,35 - 1,0	0,35 - 1,0	0,35 - 1,0
Fügefläche (cm ²)	~300	~300	~500	~500
Hubtischabmessungen (BxTmm)	800 x 500	1000 x 500	1200 x 600	1550 x 560
Max. Fügekraft (kN)	12	19,8	30	30
Oberwerkzeuggewicht (kg) max.	0-40	0-50	0-80	0-80 [120]
Touchpanel - Bediengerät (Zoll)	7"	7"	7"	12"
Antrieb	Hydraulisch	Hydraulisch	Hydraulisch	Hydraulisch

Modell	LVW2261se	LVW2371	LVW2371se	LVW2871
Schwingkopffrequenz (Hz)	-240	100-150	100-150	100-150
Amplitude (mm)	0,35 - 1,0	0,35 - 1,80	0,35 - 1,80	0,35 - 1,80
Fügefläche (cm ²)	~500	~600	~600	~600
Hubtischabmessungen (BxTmm)	1550 x 560	1800 x 600	1800 x 600	1800 x 700
Max. Fügekraft (kN)	30	47	40	47
Oberwerkzeuggewicht (kg) max.	0-80 [120]	0-220	0-220	0-240
Touchpanel - Bediengerät (Zoll)	12"	12"	12"	12"
Antrieb	Servo.	Hydraulisch	Servo.	Hydraulisch

