



"UMH" (Uniform Magnetic Heating) is an inductive process that uses low-frequency magnetic fields for heating workpieces. The workpiece to be heated is subjected to an alternating magnetic field. Compared to medium- and high-frequency induction heating, this process can achieve a higher penetration depth, thus ensuring uniform pre-heating in the workpiece and not just on its surface. This uniformity minimizes the thermal gradient and reduces the formation of internal stresses. The workpieces are also automatically demagnetized using this low-frequency technology.

Using a UMH system from pro-beam, workpieces can be heated efficiently at a consistent quality and then fed downstream to additional manufacturing processes. For example, the system is extremely well suited for pre-heating before welding jobs, heating of workpieces for shrinking processes or the tempering of previously-hardened components. It is robust, low-maintenance and very user-friendly. In some cases, different workpieces can be heated with one and the same tool. The UMH heating system is available as an integrable module in various configurations or as a standalone system in various sizes and performance levels (S, M, and L-Line). This makes it especially flexible when it comes to integration into manufacturing processes.

### Advantages at a glance

- **Uniform heating:** No warping – high dimensional accuracy, consistent quality, no reworking, minimal formation of thermal gradients
- **Fast and efficient:** Direct energy application, high efficiency
- **Reproducible:** Time-controlled process, reliable and consistent product quality
- **Demagnetization cycle:** Heating includes a demagnetization cycle
- **Flexible and no setup:** No setup necessary for different workpiece geometries
- **No water connection necessary:** Air is used for cooling the coils instead of water
- **Automation possible:** Good integration into plant systems
- **Low-maintenance and robust:** Compact machine, easy in-house maintenance

### Application examples

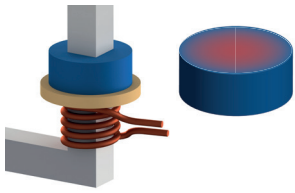
- **Gear wheels**  
Industry: Automotive
- **Truck pistons**  
Industry: Automotive
- **Stator housing**  
Industry: Electromobility
- **Hydraulic pistons**  
Industry: Mechanical engineering

\*Figure incl. control cabinet and control panel

## Applications

APPLICATION AREA	WORKPIECES	WORK PROCESS
Welding	Gear wheels, truck pistons, piston rods, bearing cages, etc.	Pre-heating/post-heating
Tempering	Gear wheels, pistons, etc.	Reduction of internal stress
Shrinking	Pistons, e-motor housings, bearing cages	Contraction
Demagnetization	Ferromagnetic workpieces	Demagnetization
Tailored tempering	Pipes, automotive body sheets, lightweight construction	Partial heat treatment before forming
Heat forming	Blanks	Pre-heating

## Heating methods

	UMH HEATING
Heating	Eddy currents + alternating magnetic field
	<b>From the inside out</b>
Diagram	

Uniform heating of electrically conductive workpieces using low-frequency, alternating magnetic fields.

## Technical data

	S-LINE	M-LINE	L-LINE
Workpiece dimensions (max.)	h 100 mm Ø 200 mm	h 350 mm Ø 350 mm	h 550 mm Ø 550 mm
Workpiece weight	≤ 4 kg	≤ 30 kg	≤ 50 kg
Temperature	250°C	500°C	
Workpiece material	Ferromagnetic, paramagnetic, electrically conductive		
Frequency	80 - 400 Hz		
Machine power	30 kW	50 - 73 kW	50 - 110 kW

Subject to change without notice. All the information listed is a general description and performance features which do not always apply in the form shown in the specific application or may change as a result of further development of the products. Illustrations may contain options, special equipment or accessories that are not part of the scope of supply and services. The performance descriptions agreed in the contract are binding.

Further information at [www.pro-beam.com](http://www.pro-beam.com)



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