

# Hardening

The characteristics of steel, nonferrous metals can be modified through thermal or thermo-chemical heat treatment.

Depending on the application microstructures will be adjusted for the ideal chipping (turning, milling) or deep-drawing and punching. After machining the units get a further heat treatment to obtain the required constructive properties: Strong surface hardness and tempered core as well or strong stability over the total cross section.

Our hardening shop can fulfill these requirements, e.g. with prefabricated components from machine- and automotive engineering as well as from chain- and electrical industry. Moreover we dispose of our own delivery service.

The continuous monitoring of the equipment is carried out through process controls which precisely adjusts all treatment parameter, like temperature, time and gas configuration, and keeps records of them.

We work with continuous annealing lines which quench either with oil or with polymer. Tempering occurs fully automated at the downstream furnaces. The components can be deep frozen after hardening, in order to carry out a residual austenite transformation before tempering, if necessary. The surveillance of the equipment continuously happens by our quality control to get the highest rate of repeatability and quality.

## **We offer the following heat treatments:**

- Carbonitriding (gas)
- Case hardening
- Hardening and tempering
- Solution treatment
- Artificial ageing
- Annealing at spheroidite (GkZ)
- Deep-freezing
- Vibratory grinding

## **Material testing and quality control:**

### **Tension-compression machine:**

- Elastic limit  $R_p 0,2$
- Tensile strength  $R_m$
- Expansion  $A_5$
- Lateral contraction  $Z$
- Compression strength  $\sigma_{dB}$

### **Hardness test according to:**

- Vickers
- Rockwell C
- Rockwell A
- Brinell
- Fully automated routine test
- CHD – characteristics (Eht)
- Spectral analysis

Do you have any questions or want detailed information?  
Our [sales team](#) will be pleased to help you.