# ZANARDI AUSTEMPERING: subcontract heat treatment service for European market

01 ADI, IDI, AGI and austempered steel

02 Austempering plant

03 Quality, controls and technical support

# 01 ADI, IDI, AGI and austempered steel

## High-performance, competitive and sustainable materials

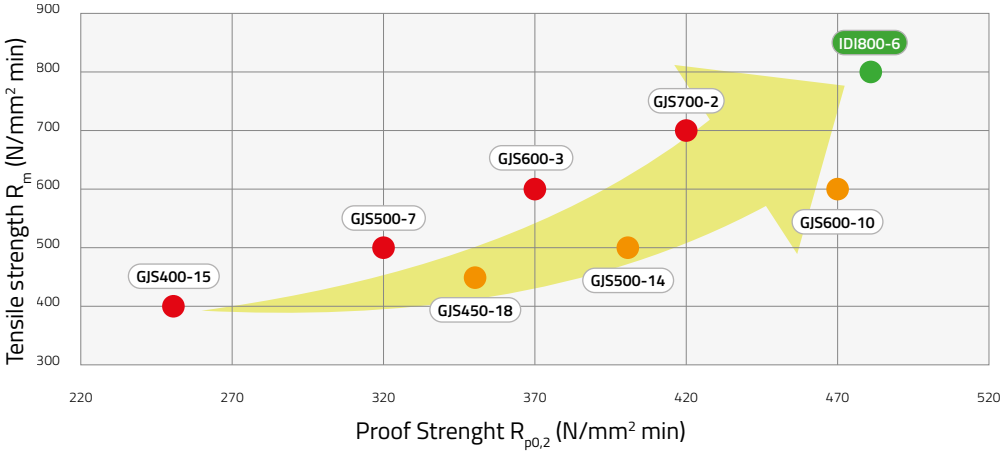
Through austempering heat treatment, applicable to ferrous materials, the mechanical performance of as-cast components can be improved. These materials, after being partially or fully austenitized, are quenched in a molten salt bath to obtain bainite in steels and ausferrite in cast irons.

- **Austempered ductile iron (ADI)** according to international standards
- **Austempered gray cast iron (AGI)**
- **Isothermal ductile iron (IDI)**
- **Austempered steel**

## Isothermal ductile iron (IDI): high performance starting from ferritic grade

We also offer to iron foundries our patented material grade: isothermal ductile iron IDI **($R_m$ 800 MPa, $R_{p0,2}$ 480 MPa, A% 6%, HB 250-300)**.

IDI is obtained by heat treating, with isothermal quenching in a salt bath, a **ferritic spheroidal cast iron parts (GJS400-15)**; this process permits to increase the proof and tensile strength of the material, without compromising its elongation capacity and guaranteeing uniformity in the mechanical properties as the thickness varies. This makes the material particularly high-performance for components where considerable static and fatigue resistance is required.



# 02 Austempering plant

For austempering heat treatment, we use three **AFC-Holcroft UBQA 36” x 72” x 36” furnaces**.

## Facilities characteristics:

- Internal dimensions of heat treatment baskets: **840 x 1,705 x h890 mm**
- Installed heat treatment capacity: **10,000 t**
- Weight range treated parts: **1 kg to 1,000 kg**

These modern and efficient heat treatment plants ensure process stability and flexibility, combined with quality and repeatability of material characteristics.

Sharing product requirements with customers is the basis of our contract austempering service.

# 03 Quality, controls and technical support

We work side by side with our clients to allow to overcome the typical difficulties of the development stages, even those who are not fully familiar with this technology.

With our experience in the production of austempered ductile iron materials, we can offer specific support to cast iron and steel producers in defining chemical analysis, with the goal of minimizing the use of alloying elements and the complexity of metallurgical management.

Thanks to the equipment of our metallographic laboratory, we can provide the **3.1B** certificate of the austempered materials. On the treated materials, we perform thorough inspections with state-of-the-art machinery:

## Micrography

- Optical microscope
- SEM

## Hardness Range

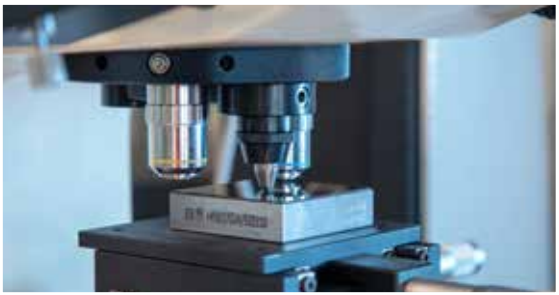
- Durometers to measure the hardness value

## Mechanical properties

- Machines to test tensile strength

## Resilience

- Charpy Pendulum to measure resilience even at -40°C.



# Benefits

01. Components weight reduction
02. Design freedom
03. Mechanical performance improvement
04. Excellent fatigue strength
05. Wear resistance
06. Vibration reduction
07. No risk of crack formation
08. Elimination of stressed zones
09. Greater production process flexibility
10. Lower Total Cost

Discover case histories

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Zanardi Austempering is a brand of Zanardi Fonderie S.p.A.