

# Gadda group

## Who we are

Experience and a commitment to innovation are our guiding principles

We want to be at the customer's side with our engineers, at every step in the production cycle. From design to commissioning to support. We offer **tailor-made engineering solutions with a high technology content** providing not only a product or a service, but an answer to our customers' requirements and development opportunities.

We have extensive experience, with more than **600 projects** completed in Italy and around the world: we have worked for customers in **Austria, Brazil, Britain, Bulgaria, China, Croatia, Czech Republic, France, Germany, India, Mexico, Peru, Poland, Romania, Russia, Spain, Switzerland, Tunisia, Turkey and Vietnam.**

Our headquarters are located in Italy: 18.000 m<sup>2</sup> in the Caravese, one of the most industrialized areas in northern Italy, which has always been at the forefront of technology and engineering. From there, we have opened up to the world, responding to the most complex challenges, from new technologies to environmental sustainability.

## What we do

For more than forty years, we have been **developing, producing and installing industrial furnaces and machinery**, integrated heat-treatment and reheating systems for ferrous and non-ferrous materials, in Italy and around the world.

We are technological and strategic partners, we work with the customer at every stage of the project and in the production cycle, offering made-to-measure services and solutions in response to your needs.

We are leaders in complete, direct management of every step in the engineering, commissioning and customer support cycle. An international benchmark in the metal heat treatment and reheating industry

## Why you should choose the Gadda group

### High-tech: Engineering and Innovation

The quality of our products and services has made us partners of choice in our field, providers of **turnkey engineering for industry 4.0** that delivers effective, innovative, technological solutions to rationalize systems, optimize processes and costs, and consequently generate additional value.

We invest in our engineers to develop innovative projects that offer customers reliable, **top-quality solutions** to support them in the digitalization process of the so-called "Fourth Industrial Revolution", acting as a preferential partner to help them take advantage of opportunities for growth and development.

We use **thermo-fluid dynamic analysis software** to research new solutions and develop and validate our projects.

### An answer to our customers' requirements and development opportunities

#### Tailor-made: Custom solutions

- We develop customized products to meet the specific requirements of our customers
- We provide support through each phase in the production cycle, with an all-round range of services and solutions using **equipment design, produce and test in-house**
- We are a **full-cycle supplier**, from engineering to commissioning at the customer site.
- We provide **after-sales support** to guarantee the performance of our products
- Our customer-centered approach means we focus on the customer's specific needs at every stage in the project
- Customer loyalty is one of our key drivers: more than **70%** of our returning **customers** have been with us for more than **30 years**
- To date, we have offered more than **7.000 hours/year** of **technical support** and specialist consultancy to improve the quality and productivity of our services and products.

## Construction and pre-assembly in Italy

### Made in Italy: Excellence and Quality

- We always use components of the highest quality and offer systems delivering maximum productivity levels.

- **Construction and pre-assembly in Italy** and whenever possible pre-assembled and tested at our main facility. This enables us to resolve any problems efficiently and test key product functions before shipping. During the construction process, customers may visit our production site to check progress. After pre-assembly the product is dismantled into easily transportable parts and sent to the installation site. This significantly reduces assembly manpower hours, as well as supervision service time.

- We aim for high quality by constantly improving our products and services and developing our know-how for the growth and development of the metallurgy sector.

- **The more than four hundred companies that place their trust in us are the best testimonials** of the attention, commitment and level of innovation we offer today.

## The more than 400 companies that place their trust in us are the best testimonials

### Sustainability: Energy Efficiency

Energy efficiency is a fundamental part of our processes, together with effective production process control, use of innovative eco-technologies and emissions monitoring.

## Effective production process control & innovative eco-technologies and emissions monitoring

## Making your future stronger



Andrea Simoni and Stefano Deiana, the 2nd generation of the Adriano family at Gadda group



# Our products

## Batch Automatic Lines



Batch automatic lines represent Gadda's core business. Each line could include: ass-tempering and tempering batch furnaces, quenching tanks, loading/unloading machines, cooling stations, storage stations and handling equipment. Heat treatment lines are fully automatic, all processes are controlled by the computerized control systems and with adequate storage stations, customers can perform continuous production without supervision or during weekends. Projects are tailored to best satisfy customers requirements. Typical materials treated are: cast, alloyed steel pipes, fittings, forged or cast pieces. Batch lines are very flexible and cover almost any executable thermal treatment. A modular approach allows future expansion to accommodate incremented productivity needs.

## Bell and Pit Furnaces



The Gadda group produces high quality bell and pit furnace. Key design factors are maximum reliability and high efficiency/low energy consumption. The bell furnaces design allows the positioning of heating elements evenly on both long side walls and parts optimal chamber sealing, allowing excellent temperature uniformity to be reached. A bell furnace combined with multiple bases increases the efficiency of the plant reducing unproductive times. A combination of lift and translation of the furnace increases room for loading/unloading operators and allows the use of existing cranes to manipulate the load. Different types of heating elements and heat recovery devices are available. Optimal sealing and fast quality refractory materials reduce thermal losses to a minimum. Furnace forced cooling could be offered as an option.

## Rotary Hearth Furnaces



The Gadda group produces high quality rotary hearth furnaces, which can be integrated in a complete line and automatically fed by robot arms allowing parts tracking. Rotary hearth furnaces are extremely versatile and their high throughput and repeatability of results make them particularly suitable to treat large quantities of similar or identical parts. Optimal sealing of the rotary chamber is obtained with a liquid channel sealing system. A rotary furnace can be designed to lay directly on the floor without the need of a foundation. Furnace loading can be programmed on multiple circular layers in order to fill the chamber with small parts. In rotary furnaces with double doors, a vertical wall in between the two doors reduces thermal losses during loading/unloading operations.

## Continuous Furnaces



The Gadda group produces multiple types of high-quality continuous furnaces to perform different heat treatment processes. A typical continuous furnace has the shape of a tunnel with a motorized pulling system that moves the load at a controlled speed through the different sections. Various adaptation systems are offered as motorized rollers and chain transport systems. Different types of heating elements and heat recovery devices are available. Specific thermal profiles are obtained by modulating heating in the different zones. Forced cooling spray quenching or quenching tank sections could be added in series. Isotherm furnace temperature uniformly controlled by CFD engineered forced air recirculation. When needed, air is recirculated in a chamber sealed between the insulated external panels and an internal stainless-steel panel. A fan mounted on the furnace floor extracts the air from the load and generates a turbulent flow in the recirculation chamber where air is heated up by the heating elements. Hot air flows back into the chamber from below the parts being treated and transfers the heat to the load. Recirculation fans and heating elements are mounted on plugs for easy maintenance operations.

## Bogie Hearth Furnaces



The Gadda group produces high quality bogie hearth furnaces. Key design factors are maximum reliability and high efficiency/low energy consumption. Different types of heating elements and heat recovery devices are available. Optimal sealing and fast quality refractory materials reduce thermal losses to a minimum. In chamber forced cooling is option al.

## Chamber Furnaces



The Gadda group produces multiple types of high-quality chamber furnaces for different applications as: reheating furnaces, batch furnaces for heat treatment automatic lines, low temperature high uniformity furnaces, and controlled atmosphere furnaces. Different types of heating elements and heat recovery devices are available. Optimal door sealing and fast quality refractory materials reduce thermal losses to a minimum. In chamber forced cooling could be offered as an option.

## Automatic Loading Machines



The Gadda group produces 4 axis automatic loading machines that are designed to: move loads up to 50 T along the batch line, immerse loads in the quenching tank, withdraw and deposit loads onto storage stations. High quality machined fittings and mechanical ribbons allow high precision movements and positioning. Axis control is performed using encoders on inverter controlled electric motors, position encoders and laser positioning system. Ground or aerial runway architecture is available in order to accommodate individual customer needs. Loading machines move at speeds as high as 120 meters/min allowing load immersion in quenching tank within 30s.

## Cooling Systems



The Gadda group produces different systems to perform high-quality controlled cooling for thermal treatments. According to customer needs, forced cooling chambers and/or quenching tanks are available. A forced air cooling station with exhaust hood can be integrated in the line and fed by an automatic loading machine. Internal air recirculation is engineered using computed fluid dynamics in order to optimize flow around actual load shape allowing fast and uniformed controlled cooling. Cooling rate can be controlled in feedback through inverter powered recirculation fan, so thermal annealing/treatment chamber are manufactured. When forced cooling is not needed, free air normalization stations with outdoor smoke aspiration and thermal shields are offered. Water/polymer or oil tanks are designed taking advantage of computed fluid dynamics in order to optimize flow around actual load shape. Different water flow distribution (horizontal/vertical) with Kaplan duct fans or diffuser nozzles under the load are available. Quenching can be performed with the load still assisted by the fully integrated loading machine with the load deposited on trays submerged in the tank or using a dedicated elevator. An automatic tank covering system can be installed for improved safety. Typical time to submerge load from furnace door opening is under 30 seconds. Water cooling is done with an external heat exchanger and cooling tower. Tank volumes range from 20 m<sup>3</sup> to 400 m<sup>3</sup>.

## Energy Saving



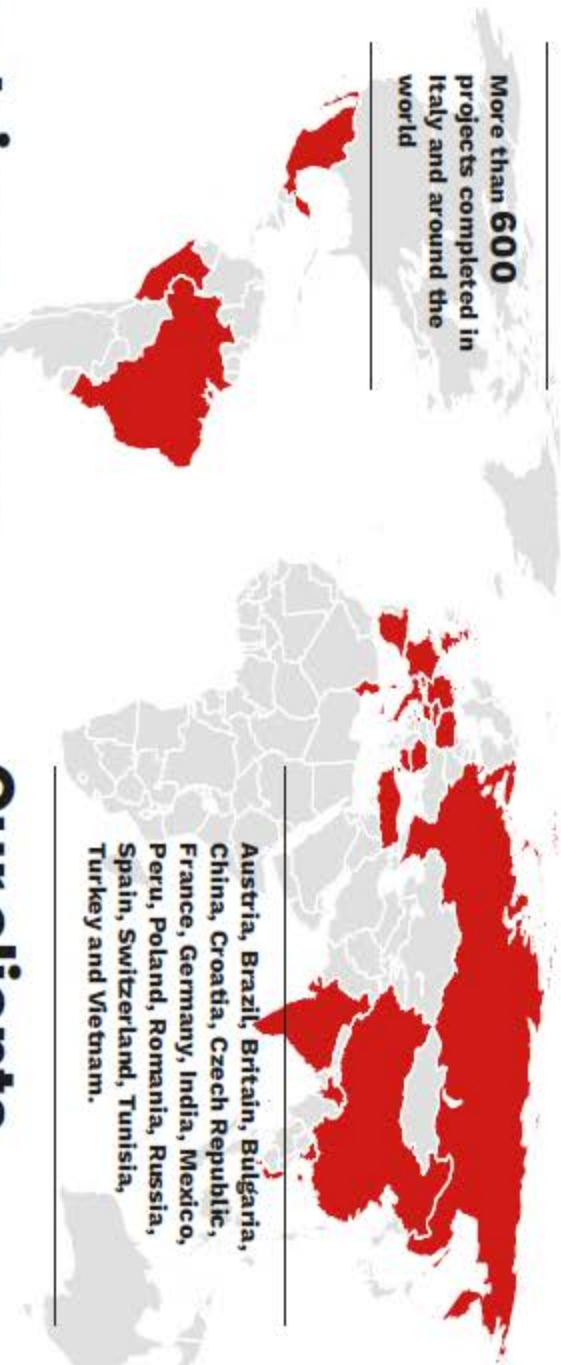
When high working temperatures must be maintained for a long time, improved burner efficiency and reduced thermal losses are key factors in the design. Different heating technologies are proposed in order to satisfy the requirement such as self-occupative burners, regenerative burners or exhaust fumes/combustion air centralized heat exchangers and this is where Gadda's expertise can make the difference. Optimal door sealing is achieved with sturdy and clever design of movements and closing systems. Prime quality and adequately dimensioned refractory lining will further improve the energetic performance of the furnace. The computerized management system will help the plant manager to monitor performances in order to keep all the systems in optimum condition.

## Automation Systems



The Gadda group designs and realizes the hardware and relative software to control complex automated heat treatment plants, using the most advanced industrial automation equipment available today. The main purpose of the plant supervision system is to monitor production processes in real time integrating data with the customer's production management systems. Each project is customized according to the client's specifications and needs. The control system is designed to manage level 3 Logic process by means of PLC; level 2 process control by means of HMI/MMI configured to access and visualize plant information simply, intuitively and accessible remotely (WAN), high-level control through interfaces with customer's management systems already in place or data acquisition systems for data storage in relational databases equipped with ODBC and OLEDB interfaces (e.g. ACCESS, MS SQL SERVER).

# Gadda around the world



# Industries we serve

|                      |                   |                  |                     |
|----------------------|-------------------|------------------|---------------------|
|                      |                   |                  |                     |
| <b>OIL &amp; GAS</b> | <b>STEEL</b>      | <b>FORGING</b>   | <b>FOUNDRY</b>      |
|                      |                   |                  |                     |
| <b>ALUMINIUM</b>     | <b>AUTOMOTIVE</b> | <b>AEROSPACE</b> | <b>AGRICULTURAL</b> |

# Our clients

Austria, Brazil, Britain, Bulgaria, China, Croatia, Czech Republic, France, Germany, India, Mexico, Peru, Poland, Romania, Russia, Spain, Switzerland, Tunisia, Turkey and Vietnam.

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