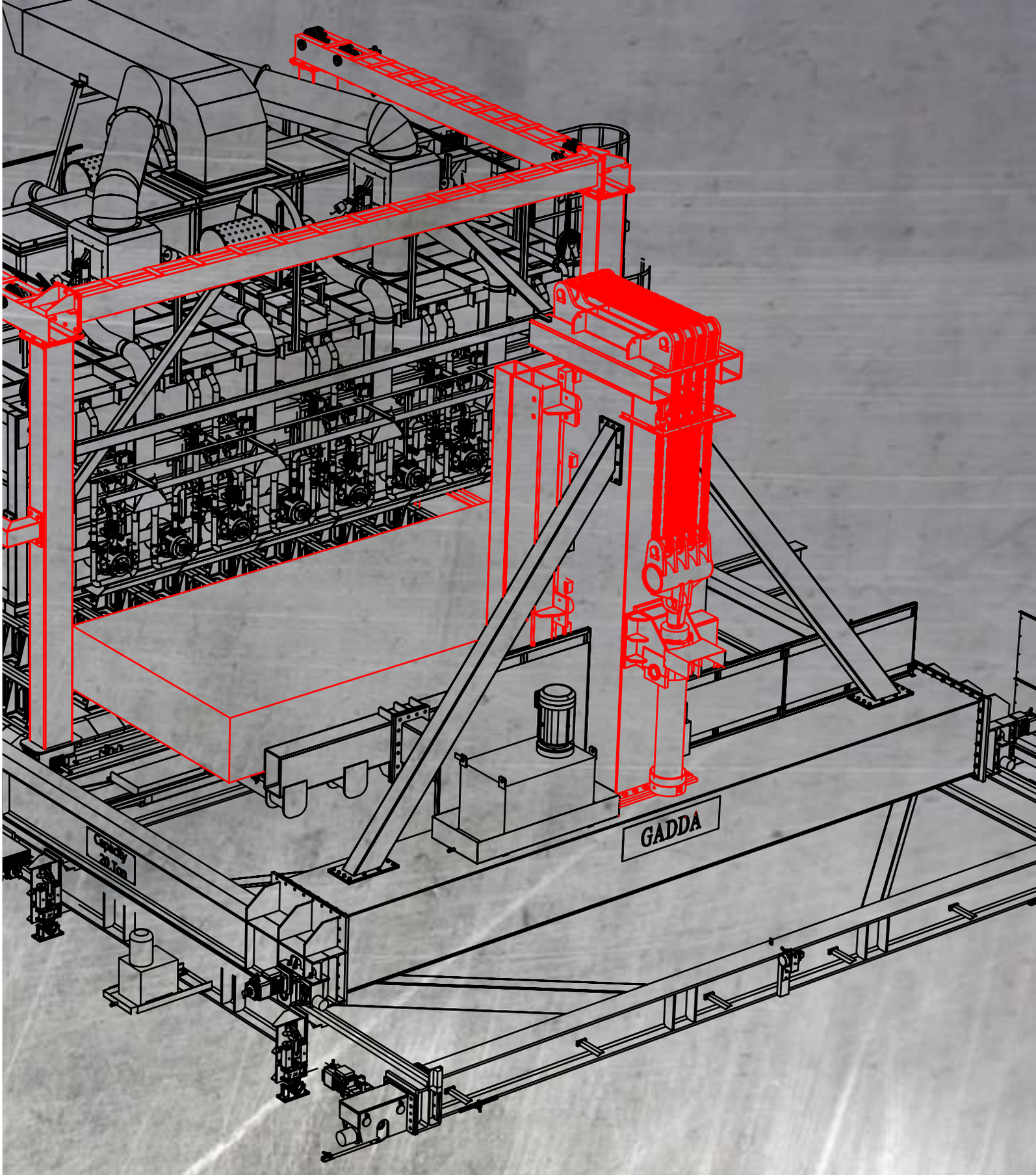


GADDA GROUP

MAKING YOUR FUTURE STRONGER

GADDA GROUP – MAKING YOUR FUTURE STRONGER

INDUSTRIAL FURNACES

GADDA GROUP

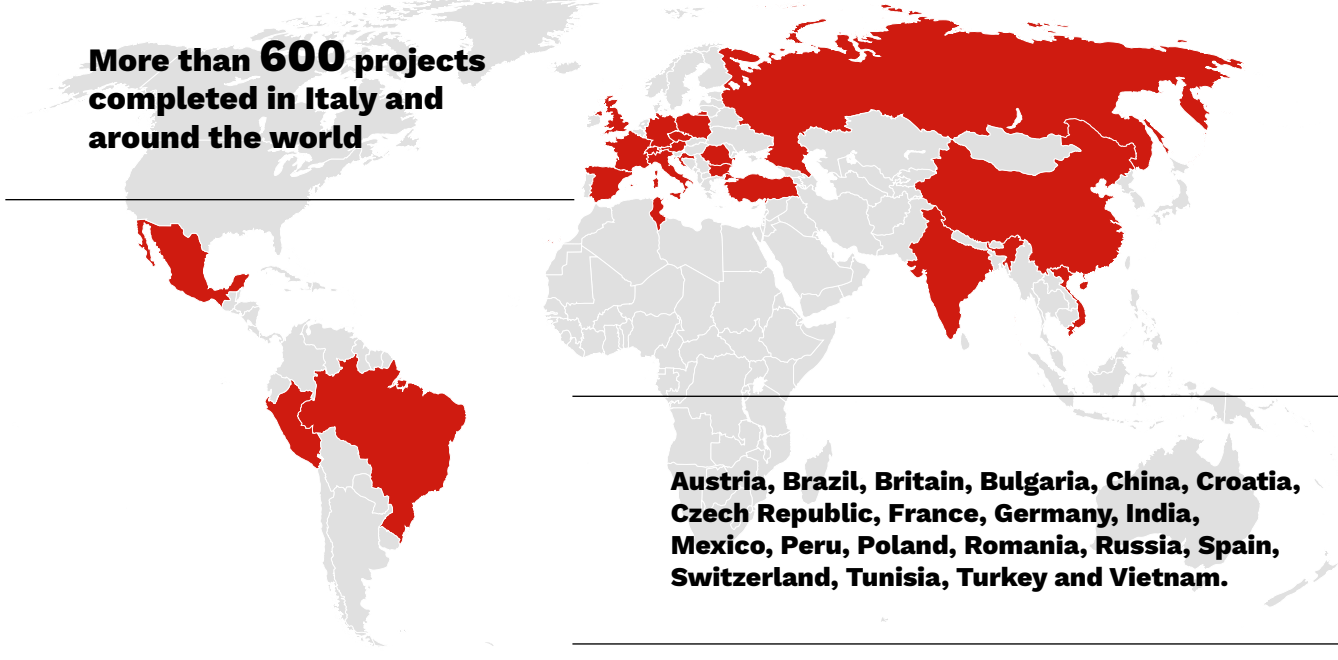
MAKING YOUR FUTURE STRONGER

INDUSTRIAL FURNACES

Index

Gadda around the world

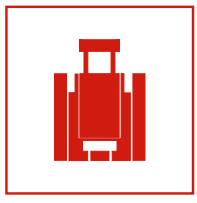
More than 600 projects completed in Italy and around the world



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

Our products

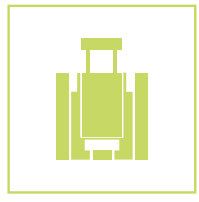
Batch Automatic Lines



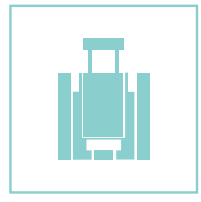
Bell and Pit Furnaces

Rotary Hearth Furnaces

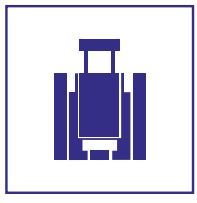
Continuous Furnaces



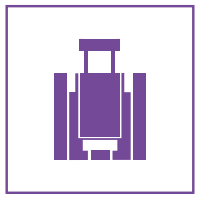
Bogie Hearth Furnaces



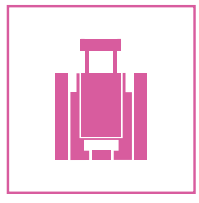
Chamber Furnaces



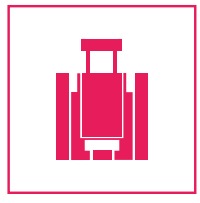
Automatic Loading Machines



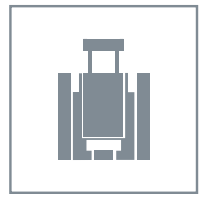
Cooling Systems



Energy Saving

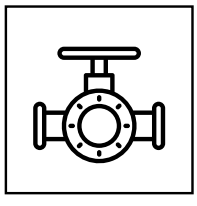


Automation Systems

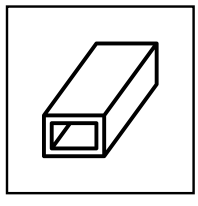


Industries we serve

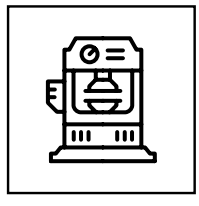
OIL & GAS



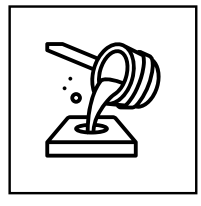
STEEL



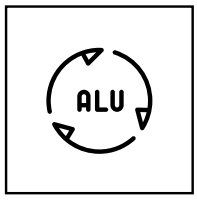
FORGING



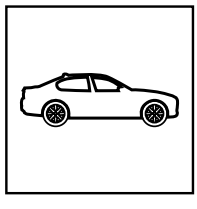
FOUNDRY



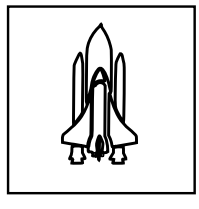
ALUMINIUM



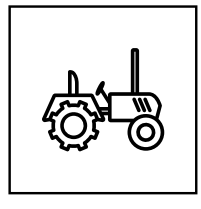
AUTOMOTIVE



AEROSPACE



AGRICULTURAL



Gadda group

For more than 40 years we have been developing, producing and installing industrial furnaces, machinery integrated heat-treatment and reheating systems

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 m² in the Canavese, 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.

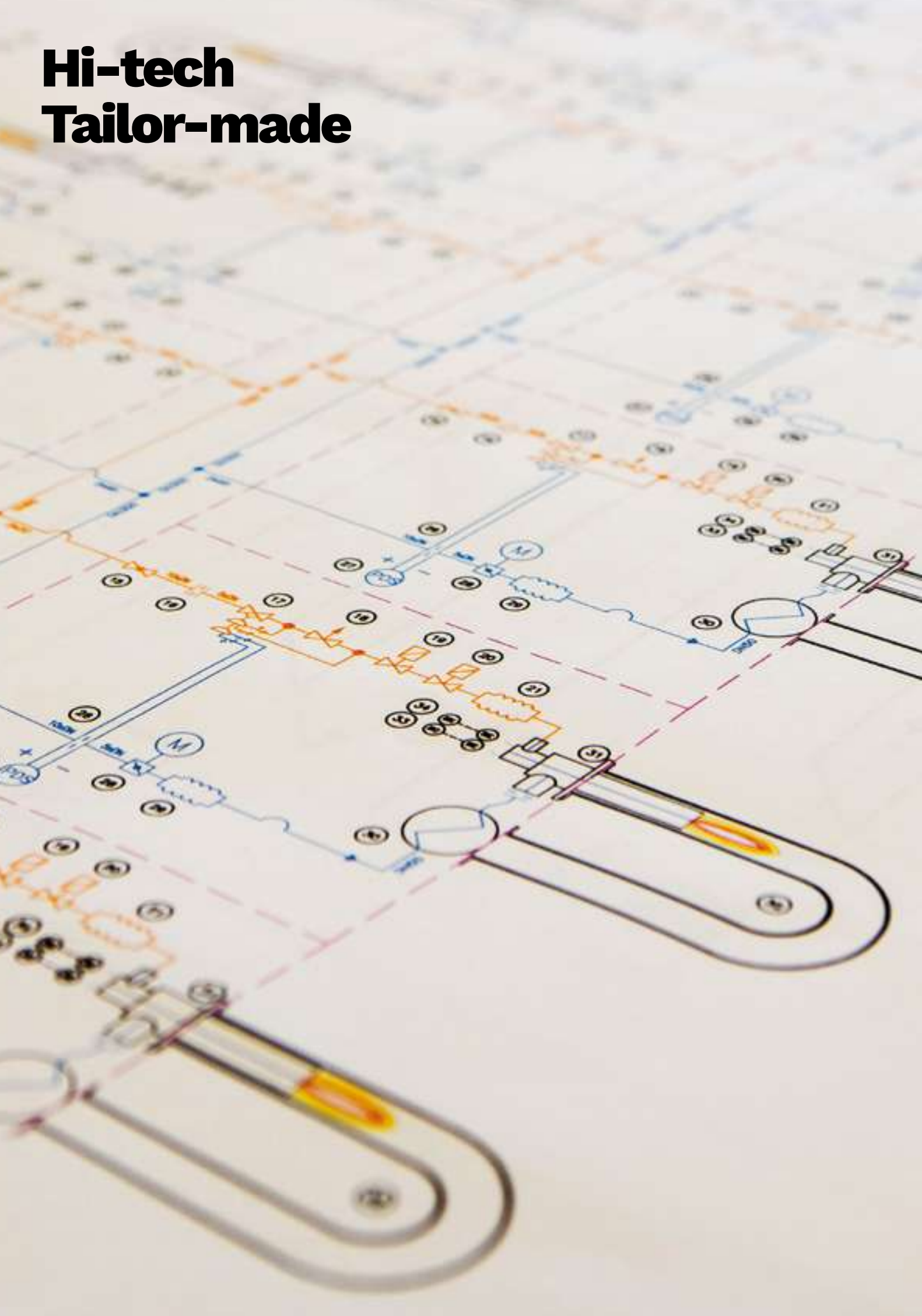
We are leaders in complete, direct management of every step in the engineering, commissioning and customer support cycle. An international benchmark in the metal heat treatment and reheating industry.

Turnkey engineering for
industry 4.0
Thermo-fluid dynamic analysis

Andrea, Simone and Stefano, the 2nd generation of the Adorisio family at Gadda group

Making your future stronger

Hi-tech
Tailor-made



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** we **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**. Our systems are constructed entirely 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

Our headquarters

Our headquarters are located in Italy: 18.000 m² in 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

Batch Automatic Lines

Batch automatic lines represent Gadda's core business. Each line could include: austenitizing 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: bars, 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.

Technical specifications

Dimension
- Size and productivity tailored to customer needs
- Batch sizes up to 50 T
- Quenching tanks up to 400 m³

Typical line components
- Batch furnaces
- Quenching tanks
- Cooling stations
- Storage stations
- Transfer trolley
- Automatic loading machine

Heating types
- Gas burners direct flame
- Radiant tubes (inert atmosphere)
- Electric heating elements

Energy saving
- Centralized heat recovery system
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring through supervision system

Heat treatment performed
- Normalizing
- Austenitizing
- Annealing
- Solubilization
- Tempering at different temperatures up to 800 °C
- Quenching in different fluids: (water, polymer, oil)
- Isothermal annealing with indirect air-cooling stations

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration with customer management system


Quality tested


Tailor made


Made in Italy


Safety


Aerospace


Oil & gas


Automotive


Steel


Foundry

Automatic batch line #1244

20.000 Kg 1.150°C

Description

Automatic batch line to perform heat treatment of steel components including tubular billets as well as large pipeline components. The line can perform various processes as: normalizing, austenitizing, annealing, solubilization and tempering. Quenching could be performed in different fluids: water, polymer and oil. Maximum batch weight is 20 T treated at 1.150 °C. The quenching tank has 6 Kaplan agitators and a scale/slag removing system, the total volume is 160 m³. The liquid of the tank could be preheated or cooled.

Batch line components

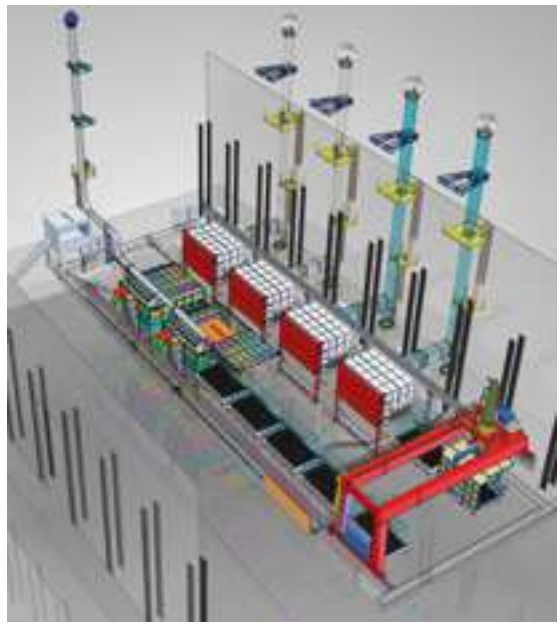
- 4 chamber furnaces
- 2 quenching tanks with agitators and slag removing system
- 6 storage stations
- 1 loading/unloading transfer station
- 1 automatic loader (20 T capacity) gantry lame type, movement on 4 axis
- Custom made supervision system ready for full integration with customer management system

Load dimension

- **Width:** 2.500 mm
- **Length:** 4.500 mm
- **Height:** 2.000 mm

Load weight

- 20.000 Kg



Custom made supervision system ready for full integration with production management system

Automatic batch line # 1318

20.000 Kg 1.150°C

Description

Automatic batch line to perform heat treatment of steel components, can perform various processes as: normalizing, austenitizing, annealing, solubilization, tempering, quenching in different fluids (water, polymer, oil) and air quenching. Maximum batch weight is 20 T treated up to 1.150 °C. The quenching tank has 4 Kaplan agitators and a water-cooling system, the total volume is 210 m³. Normalization process is performed in three forced cooling cabins. A Wi-fi load temperature acquisition system is used to record and monitor temperatures of the load during treatments.

Batch line components

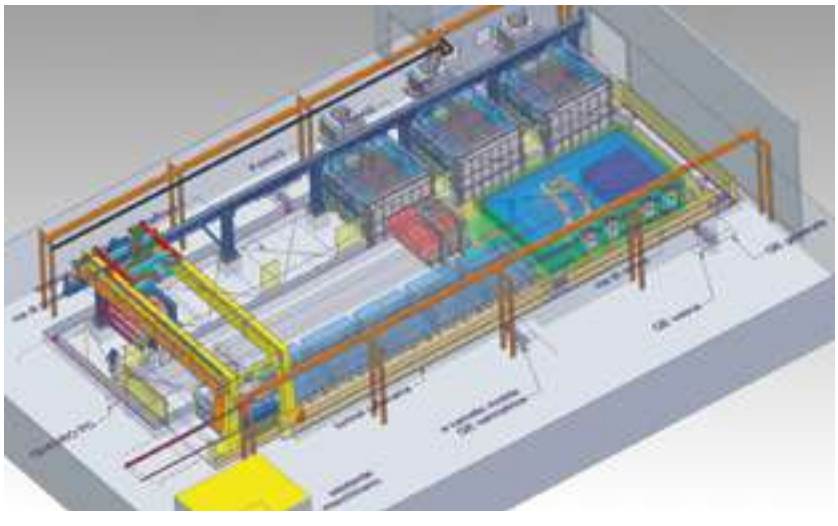
- 3 chamber furnaces
- 1 quenching tanks with agitators
- 3 forced cooling stations
- 5 storage stations
- 1 loading/unloading transfer station
- 1 automatic loader (20 T capacity) gantry lame type, movement on 4 axis
- 1 Wi-fi load temperature acquisition system
- Custom made supervision system ready for full integration with customer management system

Load dimension

- **Width:** 3.500 mm
- **Length:** 3.500 mm
- **Height:** 1.000 mm

Load weight

- 20.000 Kg



1 automatic loader (20 T capacity) gantry lame type, movement on 4 axis

Automatic batch line # 1212

20.000 Kg 1.200°C

Description

Automatic batch line to perform heat treatment of steel components. The line is fully automated and can perform various processes as: normalizing, austenitizing, annealing air quenching and tempering. Maximum batch weight is 20 T treated up to 1.200 °C.

Batch line components

- 8 chamber furnaces
- 2 forced cooling chambers
- 8 storage stations
- 2 loading/unloading transfer stations
- 1 automatic loader (20 T capacity), movement on 4 axis, ground runways
- Custom made supervision system ready for full integration with customer management system

Load dimension

- **Width:** 3.400 mm
- **Length:** 3.800 mm
- **Height:** 1.700 mm

Load weight

- 20.000 Kg

Automatic batch line for carbon steel bars # 1272

20.000 Kg 1.200°C

Description

Automatic batch line to perform heat treatment of steel components, can perform various processes as: normalizing, austenitizing, annealing, solubilization, tempering and quenching in different fluids (water, polymer). Maximum batch weight is 20 T treated up to 1.200 °C. The quenching tank has 4 Kaplan agitators and a water-cooling system, the total volume is 160 m³. In order to perform normalization processes a rotating forced cooling hood is positioned over the deposit stations. A Wi-fi load temperature acquisition system is used to record and monitor temperatures of the load during treatments.

Batch line components

- 1 bell furnace
- 1 quenching tank with agitators
- 1 rotating forced cooling hood
- 2 loading/unloading deposit stations
- 1 automatic loader (20 T capacity) movement on 3 axis, ground runways
- Custom made supervision system ready for full integration with customer management system
- 1 Wi-fi load temperature acquisition system

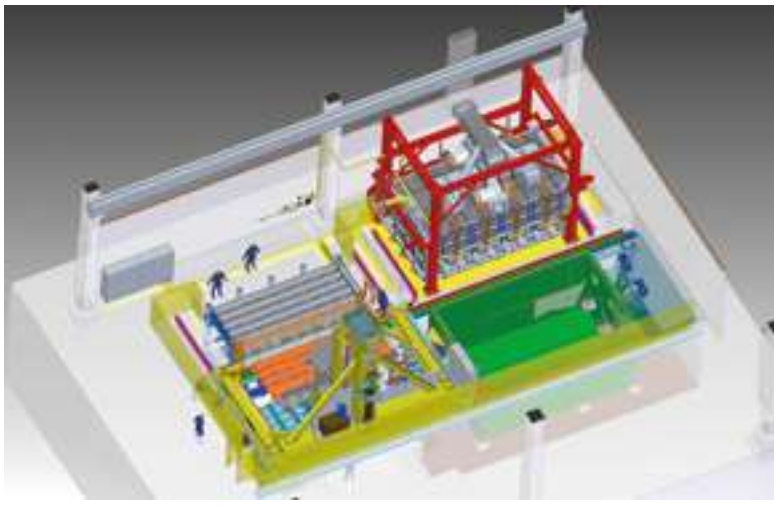
Load dimension

- **Width:** 2.500 mm
- **Length:** 6.500 mm
- **Height:** 1.500 mm

Load weight

- 20.000 Kg

Wi-fi load temperature acquisition system is used to record and monitor temperatures on the load during treatments



Automatic batch line #1321

5.000 Kg 1.200°C

Description

Automatic batch line to perform heat treatment of steel components, can perform various processes as: normalizing, austenitizing, annealing, solubilization, tempering and quenching in different fluids (water, polymer). Maximum batch weight is 5 T treated up to 1.200 °C. The quenching tank has 4 Kaplan agitators and a water-cooling system, the total volume is 75 m³.

Batch line components

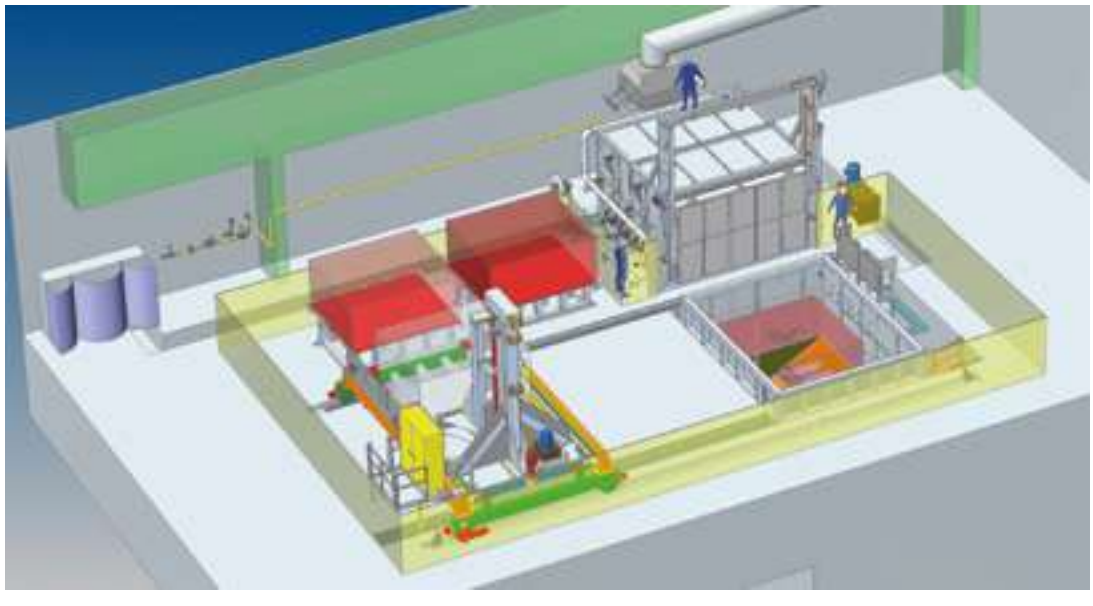
- 1 chamber furnace
- 1 quenching tank with agitators
- 2 loading/unloading deposit stations
- 1 automatic loader (5 T capacity) movement on 3 axis, ground runways
- Custom made supervision system ready for full integration with customer management system

Load dimension

- **Width:** 3.000 mm
- **Length:** 3.500 mm
- **Height:** 1.600 mm

Load weight

- 5.000 Kg



Automatic batch line #1322

3.000 Kg

1.150°C

Description

The heat treatment line is composed of 5 batch furnaces in nitrogen atmosphere with radiant tube heating elements. The line is designed to treat stainless steel wire rods and can perform various processes as: normalizing, austenitizing, annealing, solubilization, tempering, quenching in different fluids (water, polymer) and isothermal annealing with indirect air-cooling stations. The line is completely automatic with segregated working area. The load enters and exits the line through a motorized loading/unloading station. Maximum batch weight is 3 T treated up to 1.150 °C. The quenching tank has 4 Kaplan agitators and a water-cooling system, the total volume is 60 m³.

Batch line components

- 5 chamber furnaces in nitrogen atmosphere
- 3 quenching tanks with agitators (1 water, 1 water/polymer and 1 for rinse)
- 1 automatic loader (3 T capacity)
- 1 forced cooling station
- 2 motorized loading/unloading stations
- 5 storage stations
- Custom made supervision system ready for full integration with customer management system

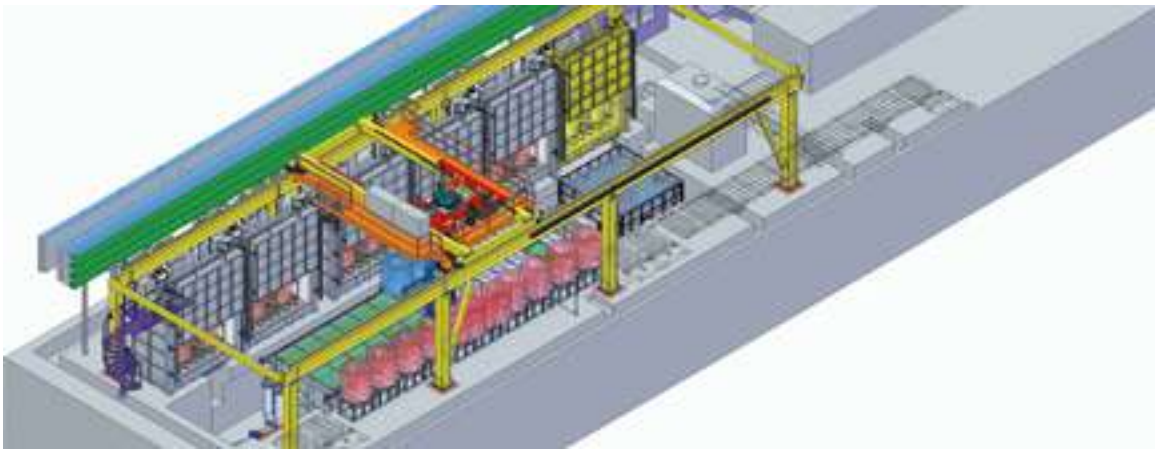
Load dimension

- **Width:** 2.800 mm
- **Length:** 1.300 mm
- **Height:** 1.100 mm

Load weight

- 3.000 Kg

5 batch furnaces in nitrogen atmosphere with radiant tube heating elements



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 grants 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 operations 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 first quality refractory materials reduce thermal losses to a minimum. Furnace forced cooling could be offered as an option.

Technical specifications

Dimension
- Size and productivity tailored to customer needs
- Load up to 200 T

Heating types
- Gas burners direct flame
- Radiant tubes (inert atmosphere)

Energy saving
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring through supervision system

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration with customer management system

Quality tested

Tailor made

Made in Italy

Safety

Aerospace

Oil & gas

Automotive

Steel

Foundry

Bell furnace # 1166

100.000 Kg 1.100°C

Description

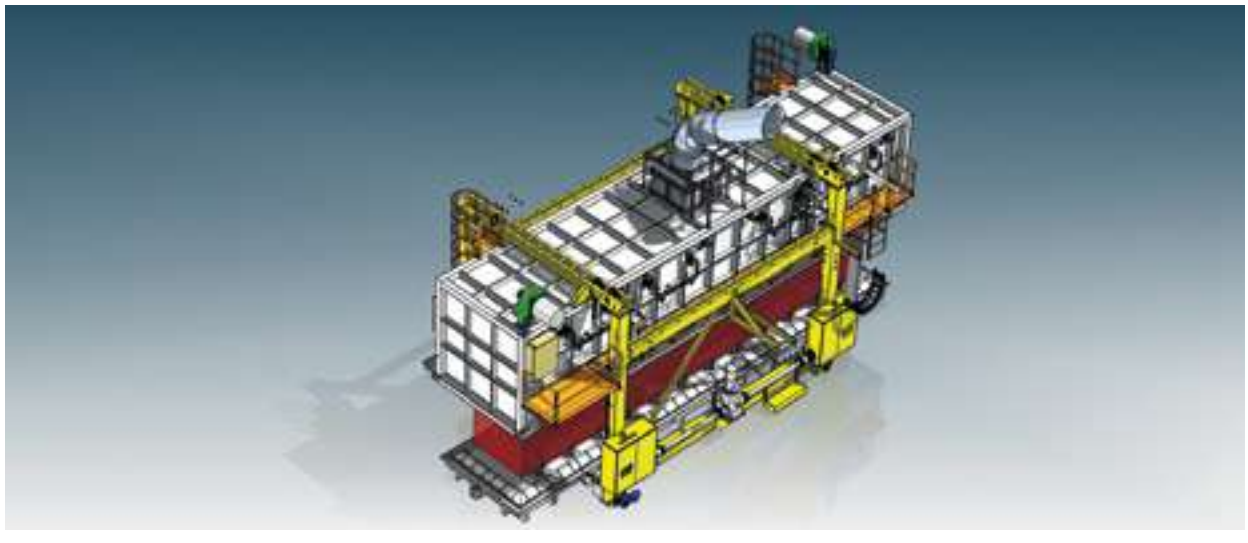
Heat treatment bell furnace with three bases and translation crane on rails. Heating is by high speed gas burners above and below the load for optimal uniformity.

Chamber dimension
- **Width:** 2.200 mm
- **Length:** 12.500 mm
- **Height:** 2.200 mm

Load weight
- 100.000 Kg

Temperature uniformity
- from 750 °C to 1.050 °C ± 5 °C

Max temperature
- 1.100 °C



Bell furnace #1331

50.000 Kg 1.100°C

Description

Bell furnace for heat treatment. The plant has been paneled to be placed outdoors. Loading is via forklift on both long sides. Heating is by high speed gas burners.

Chamber dimension
- **Width:** 3.200 mm
- **Length:** 7.000 mm
- **Height:** 2.800 mm

Load weight
- 50.000 Kg

Temperature uniformity
- from 450 °C to 1.000 °C ± 5 °C

Max temperature
- 1.100 °C

Bell furnace automatic plant # 1291

15.000 Kg 950°C

Description

Bell furnace in nitrogen atmosphere for wiring rod heat treatment with controlled cooling capability. Inert atmosphere recirculation is performed by a fan and a diffuser integrated in the base. The furnace is loaded by an automatic loading machine. Heating is performed by high speed gas burners with heat recovery from exhaust gasses.

Chamber dimension
- **Diameter:** 3.500 mm
- **Height:** 2.500 mm

Load weight
- 15.000 Kg

Temperature uniformity
- from 700°C to 900 °C ± 8 °C

Max temperature
- 950 °C

Heating is performed by high speed gas burners with heat recovery from exhaust gasses

Pit furnace # 1253

6.000 Kg 750°C

Description

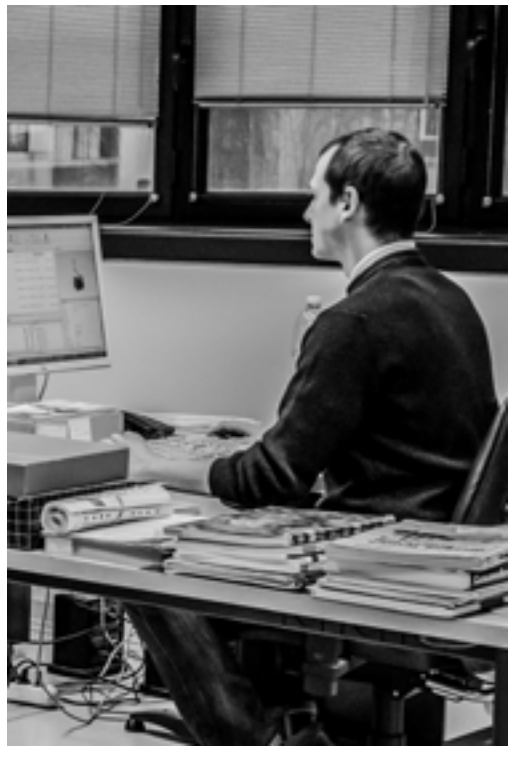
Pit furnace in nitrogen atmosphere. The furnace performs heat treatments on parts loaded into a rack lifted by a crane. High temperature uniformity is obtained by internal gas recirculation. The furnace can perform controlled cooling of the load. Heating is via armored electric resistors.

Chamber dimension
- **Diameter:** 1.800 mm
- **Height:** 1.300 mm

Load weight
- 6.000 Kg

Temperature uniformity
- from 480°C to 750 °C ± 5 °C

Max temperature
- 750 °C



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.

Technical specifications

Dimension
- Size and productivity tailored to customer needs
- Diameter from 4 to 20 m
- Single or multiple door design

Heating types
- Direct flame gas burners
- Radiant tubes (inert atmosphere)
- Electric heating elements

Energy saving
- Centralized heat recovery system
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring through supervision system

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration on customer management system

Gadda rotary furnace patented design

Gadda's patent consists of the furnace divided in multiple rotating chambers that allows precise and separate temperature management of the different zones during the hearth rotation. Rotating chambers block tangential flow in the furnace allowing multiple temperature zones. Rotary furnaces are characterized by an optimal temperature uniformity.

Rotary hearth furnace # 1260

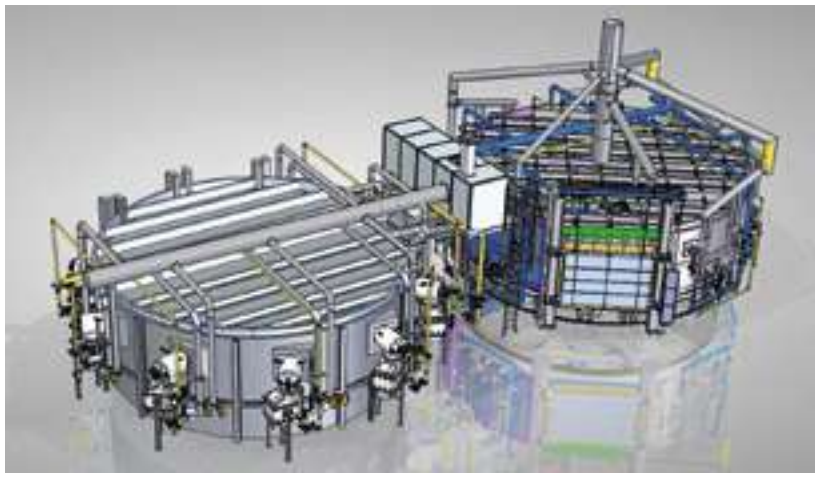
8.000 Kg/h 1.300°C

Description

Forging rotary hearth furnace able to treat parts that weigh up to 2.000 kg each for a production capacity of 8.000 kg/h with temperatures up to 1.300 °C. Heating is via regenerative low NOX burners.

Overall specifications

Outer diameter of the chamber:	8.100 mm
Inner diameter of the chamber:	3.300 mm
Chamber height:	1.700 mm
Hourly production:	8.000 Kg/h
Max temperature:	1.300 °C
Temperature uniformity:	+/- 14°C



Rotary hearth furnace #1239

2.000 Kg/h 1.300°C

Description

Forging rotary hearth furnace able to treat parts that weigh up to 500 kg each for a production capacity of 2.000 kg/h with temperatures up to 1.300 °C. Heating is via radiant flame burners with a centralized heat recovery system to preheat combustion air up to 500 °C. The entire insulation is made of refractory casting. A vertical wall in between the loading and unloading doors reduces thermal losses during open door operations.

Overall specifications

Outer diameter of the chamber:	4.100 mm
Inner diameter of the chamber:	1.900 mm
Chamber height:	1.300 mm
Hourly production:	2.000 Kg/h
Max temperature:	1.300 °C
Temperature uniformity:	+/- 10 °C

Rotary hearth furnace #1320

80 Kg/h

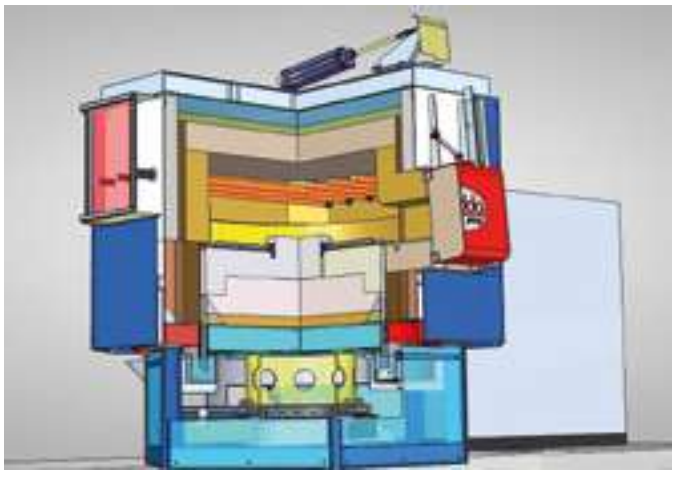
1.250°C

Description

Rotary hearth furnace for heat treatment of titanium parts. Heating is performed by electric silicon carbide radiant elements. The entire insulation is made of refractory casting.

Overall specifications

Outer diameter of the chamber:	1.350 mm
Chamber height:	250 mm
Hourly production:	80 Kg/h
Max temperature:	1.250 °C
Temperature uniformity:	from 800 °C to 1.250 °C ± 5 °C



Rotary hearth furnace #1261

4.000 Kg/h 1.200°C

Description

Heat treatment rotary hearth furnace that can treat parts that weigh up to 1.000 kg. Heating is performed by self-recuperative high-speed gas burners. The furnace has a single door and is divided in rotating chambers as per specific Gadda patented design. The multiple rotating chambers allow precise and separate temperature management of the different zones during the hearth rotation. Rotating chambers block tangential flow in the furnace allowing multiple temperature zones.

Overall specifications

Outer diameter of the chamber:	1.350 mm
Inner diameter of the chamber:	4.800 mm
Chamber height:	1.500 mm
Hourly production:	4.000 Kg/h
Max temperature:	1.200 °C
Temperature uniformity:	from 800 °C to 1.150 °C ± 5°C

Rotary hearth furnace #1185

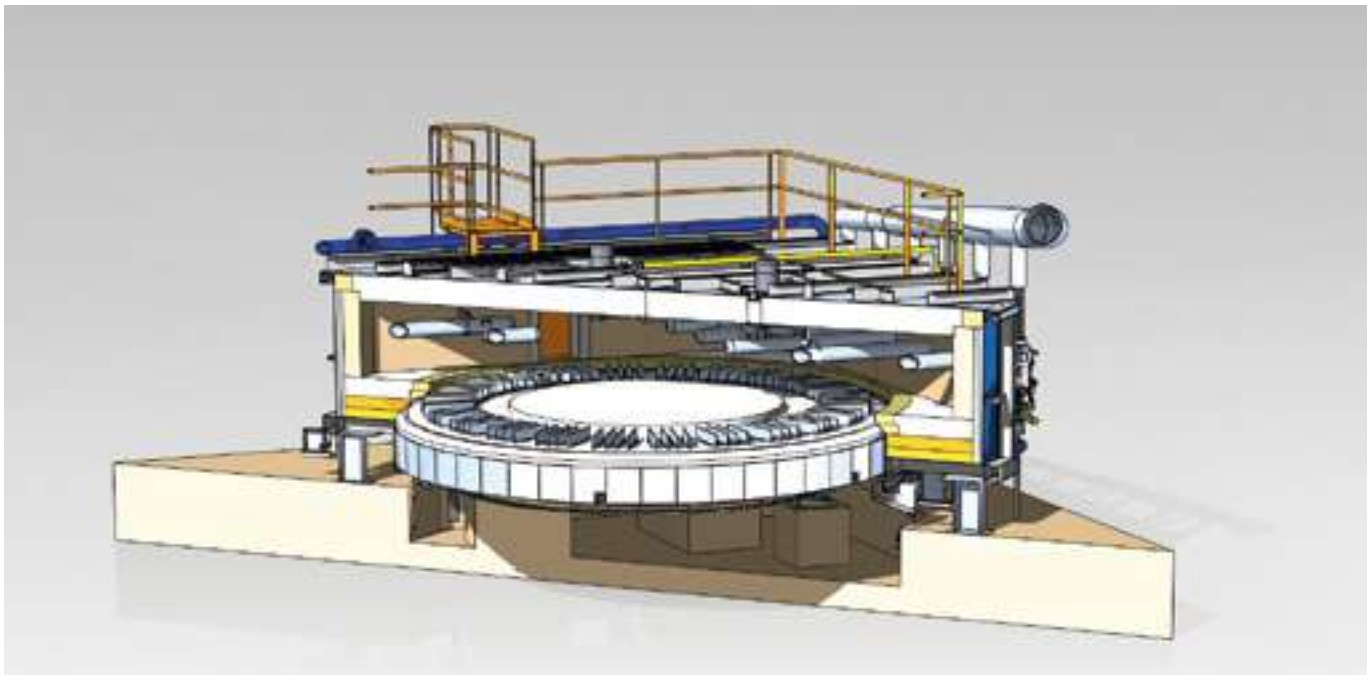
1.500 Kg/h 1.000°C

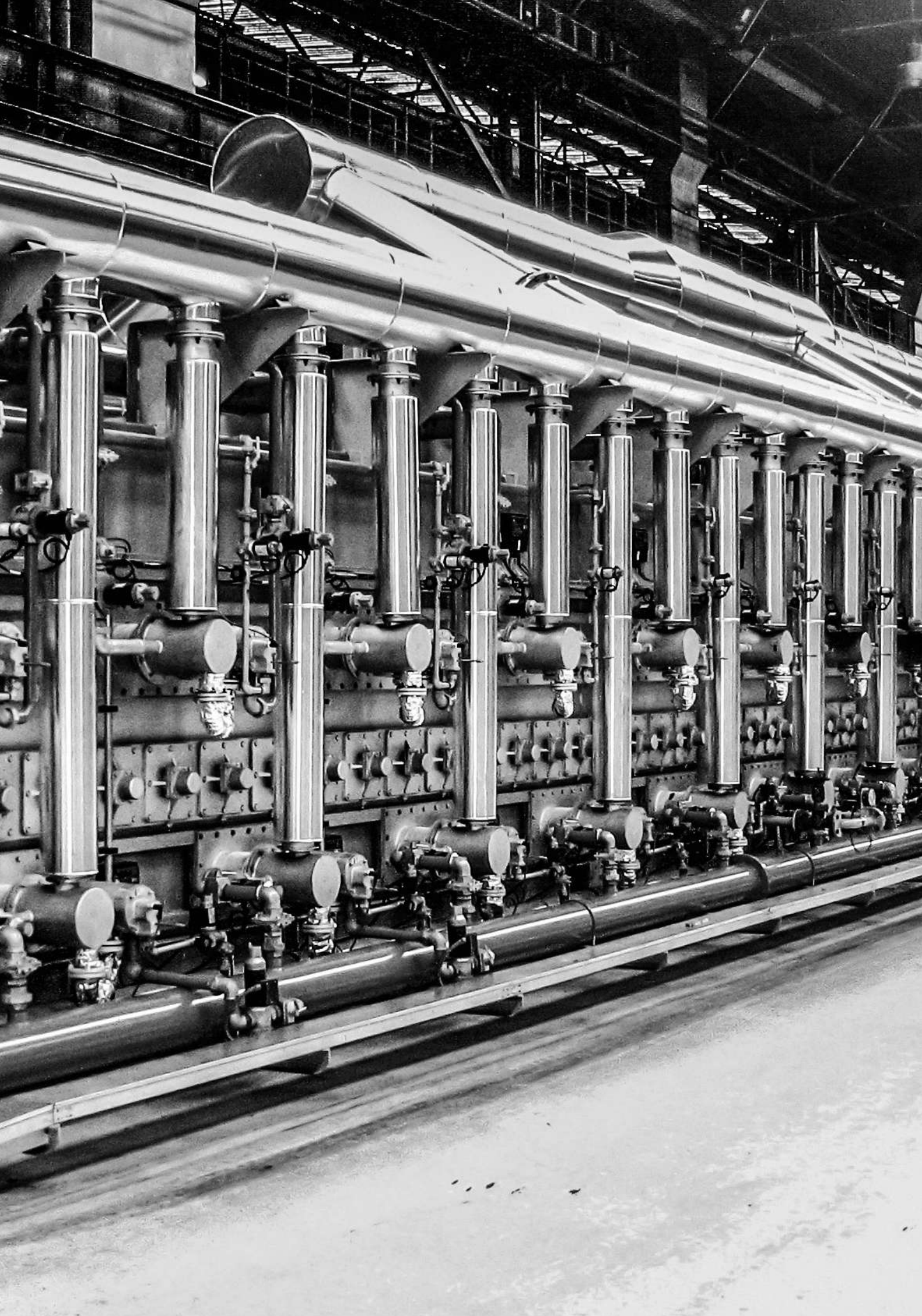
Description

Heat treatment rotary hearth furnace in controlled atmosphere. Heating is performed by self-recuperative burners with radiant tubes. Recirculation fans are used for optimal temperature uniformity. A fully automated shuttle loader fed by a robot introduces and extracts the parts in the furnace.

Overall specifications

Outer diameter of the chamber:	5.600 mm
Inner diameter of the chamber:	3.000 mm
Chamber height:	900 mm
Hourly production:	1.500 Kg/h
Max temperature:	1.000 °C
Temperature uniformity:	from 600 °C to 1.000 °C +/-5





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 advancement 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. Excellent furnace temperature uniformity is obtained by CFD engineered forced air recirculation. When needed, air is recirculated in a chamber created 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.

Technical specifications

Dimension
- Size and productivity tailored to customer needs

Heating types
- Direct flame gas burners
- Radiant tubes (inert atmosphere)
- Electric heating elements

Energy saving
- Centralized heat recovery system
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring through supervision system

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration with customer management system

Quality tested | Tailor made | Made in Italy | Safety

Aerospace | Oil & gas | Automotive | Steel | Foundry

Roller continuous furnace #1201

10.000 Kg/h 1.000°C

Description

Roller continuous furnace in protected atmosphere (esogas) to perform bright annealing of steel tubes. The furnace is divided in two sections that perform heating and controlled cooling; one load and one unload platform completes the line for a total length of 120 m. Heating is performed by radiant tubes with gas burners. Cooling is via radiation with the internal wall of the cooling chamber cooled by water recirculation.

Overall specifications

Width:	2.200 mm
Length:	83.000 mm
Height:	300 mm
Hourly production:	10.000 Kg/h
Max temperature:	1.000 °C
Temperature uniformity:	+/- 5 °C

Roller continuous furnace #1333

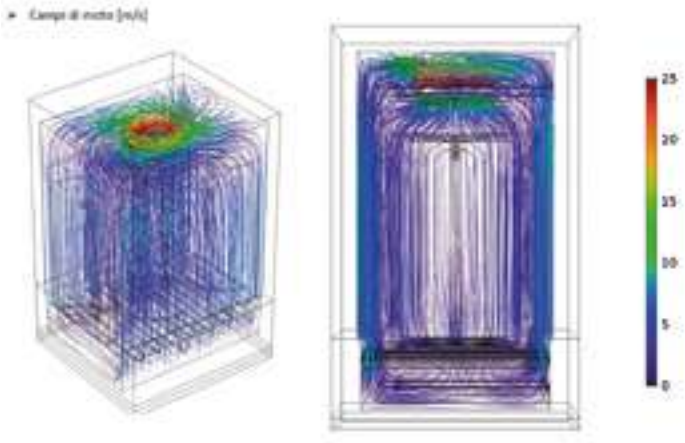
3.000 Kg/h 900°C

Description

Roller furnace for heat treatment of steel coils in nitrogen atmosphere. The furnace performs heating and controlled cooling of coils held by specifically designed supports. The load is composed on a platform in front of the furnace door where the coil supports are loaded/unloaded. Heating is via radiant tubes with self-recuperative gas burners. Cooling is via cold air pumped into the radiant tubes and additional tubes used for cooling only are installed below the load. High speed air circulation, optimized by CFD, assures high temperature uniformity. Air is recirculated in a chamber created 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 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.

Overall specifications

Chamber width:	6.500 mm
Chamber length:	25.000 mm
Chamber height:	6.500 mm
Hourly production:	3.000 Kg/h
Max temperature:	900 °C
Temperature uniformity:	+/- 8 °C



Roller continuous furnace #1047

4.000 Kg/h 180°C

Description

Roller continuous furnace with electric heating. The load is composed of tulip elements which are moved inside the furnace on designated pallets. Load pallets are returned to the furnace entrance on a fly-roller lane situated below the furnace. Two elevators lift the pallets at the line extremities connecting the furnace to the return line. The furnace is composed of three different sections: heating, soaking and controlled forced cooling. High speed air circulation, optimized by CFD, assures high temperature uniformity.

Overall specifications

Width:	2.450 mm
Length:	14.300 mm
Height:	4.300 mm
Hourly production:	4.000 Kg/h
Max temperature:	180 °C
Temperature uniformity:	+/- 8°C

High speed air circulation, optimized by CFD, assures high temperature uniformity

Paternoster furnace #1144

900 Kg/h

230°C

Description

Chain conveyor furnace with paternoster layout to perform heat treatment of aluminium components. The furnace is composed of two different sections: heating-soaking and forced cooling. Heating is performed by electric elements.

Overall specifications

Width:	9.500 mm
Length:	4.700 mm
Height:	7.600 mm
Hourly production:	900 Kg/h
Max temperature:	230 °C
Temperature uniformity:	+/- 10 °C

over 600 projects completed in Italy and all-over the world

Chain conveyor continuous furnace #1296

600 Kg/h

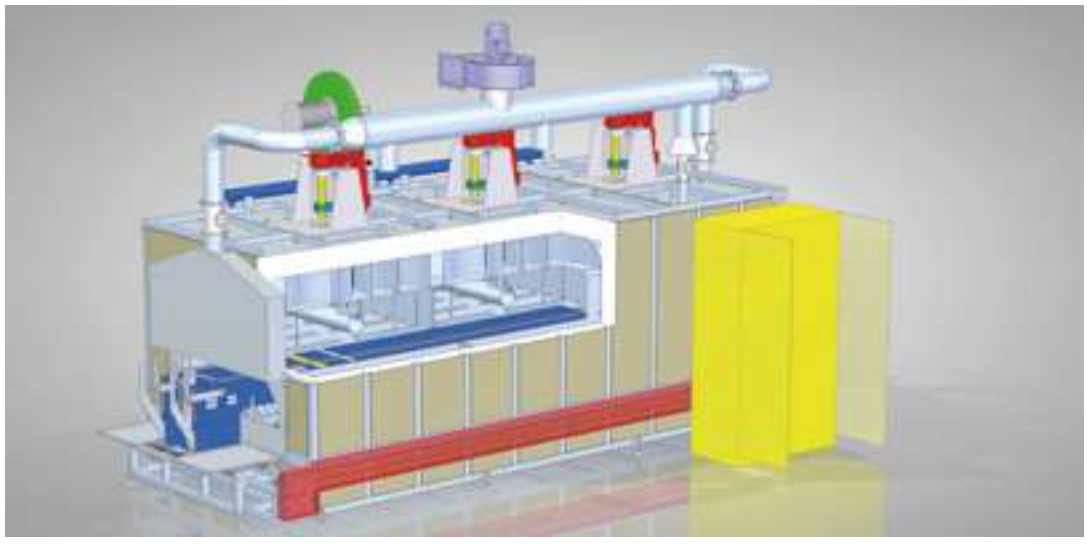
300°C

Description

Belt conveyor gas furnace to perform heat treatment of bent tubes. The furnace is composed of three different sections: heating, soaking and controlled forced cooling. High speed air circulation, optimized by CFD, assures high temperature uniformity. Air is recirculated in a chamber created between the insulated external panels and an internal stainless-steel deflector. 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 by the heating elements. Hot air flows back into the chamber from below the parts being treated and transfers the heat to the load. The furnace is integrated in the customer's automatic production line and fed by robotic arms.

Overall specifications

Width:	6.800 mm
Length:	2.700 mm
Height:	3.000 mm
Hourly production:	600 Kg/h
Max temperature:	300 °C
Temperature uniformity:	+/- 5°C



The furnace is integrated in the customer's automatic production line and fed by robotic arms

Chain conveyor continuous furnace with electric heating #1288

900 Kg/h

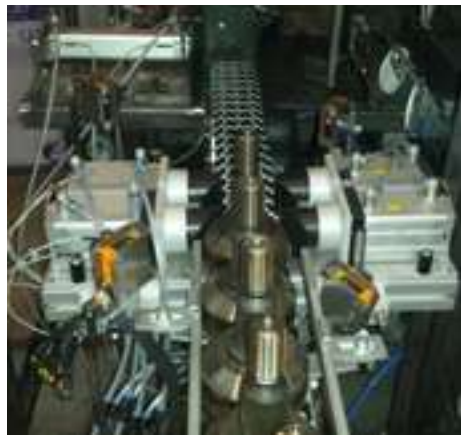
300°C

Description

Chain conveyor electric furnace to perform heat treatment of automotive components. The furnace is composed of three different sections: heating, soaking and controlled forced cooling. High speed air circulation, optimized by CFD, assures high temperature uniformity. Air is recirculated in a chamber created 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 by the heating elements. Hot air flows back into the chamber from below the parts being treated and transfers the heat to the load. The furnace is integrated in the customer's automatic production line.

Overall specifications

Width:	6.000 mm
Length:	3.300 mm
Height:	2.800 mm
Hourly production:	900 Kg/h
Max temperature:	300 °C
Temperature uniformity:	+/- 5°C



The furnace is composed of 3 different sections: heating, soaking and controlled forced cooling

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 first quality refractory materials reduce thermal losses to a minimum. In chamber forced cooling is optional.

Technical specifications

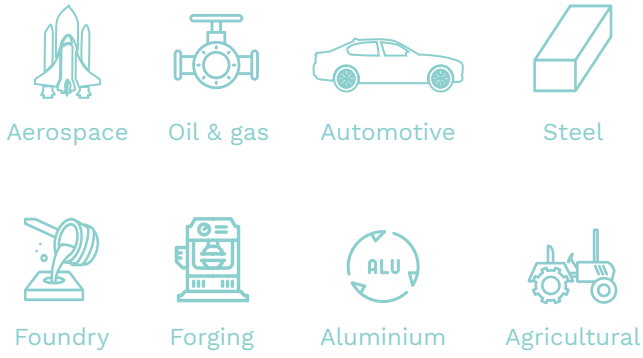
Dimension
- Size and productivity tailored to customer needs
- Load up to 360 T

Heating types
- Direct flame gas burners
- Radiant tubes (inert atmosphere)
- Electric heating elements

Energy saving
- Centralized heat recovery system
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring via supervision system

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration with customer management system



Bogie hearth furnace with regenerative burners #1251

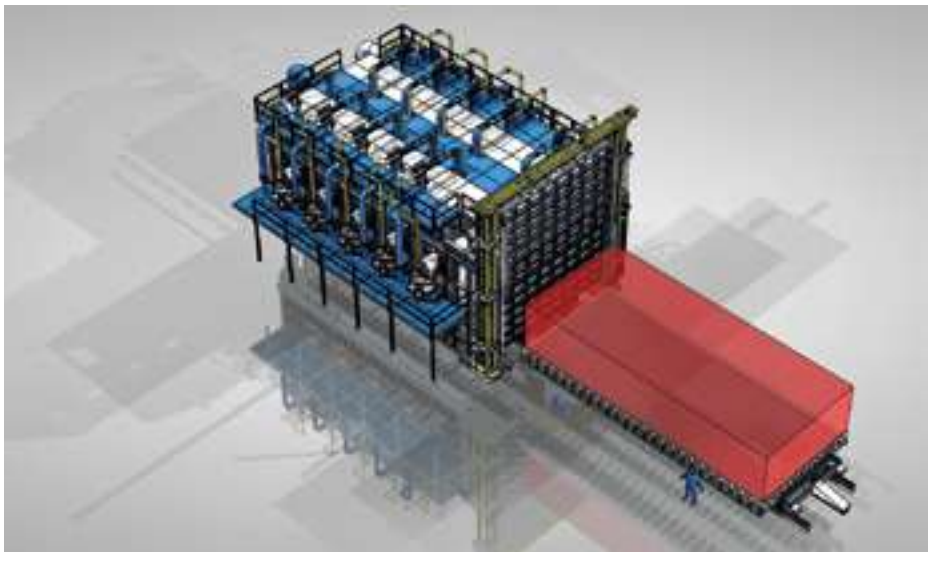
360.000 Kg 1.300°C

Description

Forging bogie hearth furnace with 5 couples of regenerative burners able to work flameless for lower NOX emissions and greater efficiency. The furnace can reheat ingots up to 50 T/each. The top of the furnace is walkable for easy maintenance.

Overall specifications

Width:	5.400 mm
Length:	12.500 mm
Height:	2.500 mm
Load weight:	360.000 Kg
Max temperature:	1.300 °C
Temperature uniformity:	from 900 °C to 1.250 °C ± 14 °C



Bogie hearth furnace #1298

40.000 Kg

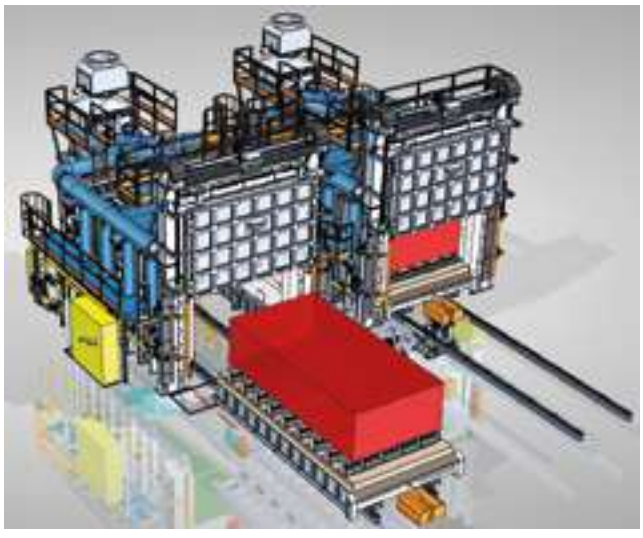
1.300°C

Description

Forging/heat treatment bogie hearth furnace with centralized heat recovery system. Heating via high speed gas burners for improved performance at lower temperatures.

Overall specifications

Width:	3.000 mm
Length:	6.000 mm
Height:	1.500 mm
Load weight:	40.000 Kg
Max temperature:	1.300 °C
Temperature uniformity:	from 550 °C to 1.250 °C ± 10 °C



Bogie hearth furnace #1237

80.000 Kg

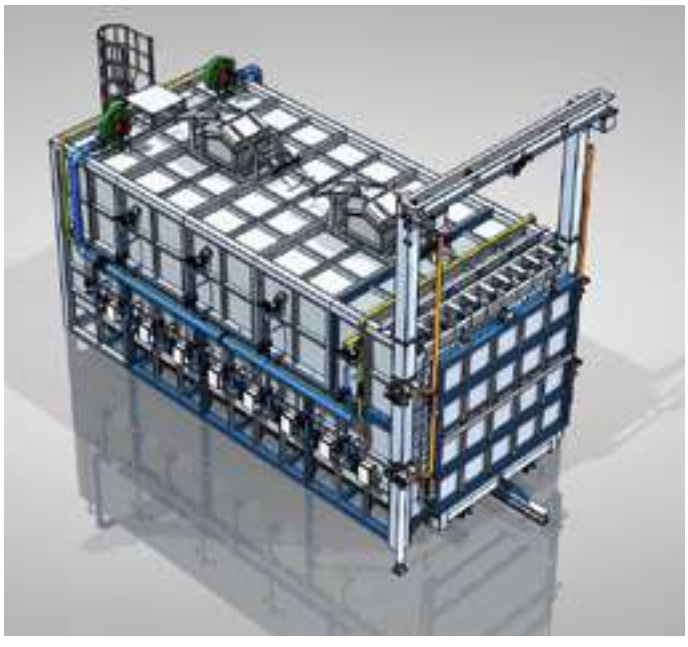
1.150°C

Description

Heat treatment bogie hearth furnace. Heating is via high speed gas burners.

Overall specifications

Width:	3.000 mm
Length:	9.200 mm
Height:	2.500 mm
Load weight:	80.000 Kg
Max temperature:	1.150 °C
Temperature uniformity:	from 600 °C to 1.100 °C ± 8 °C



Bogie hearth furnace #1150

360.000 Kg 900°C

Description

Stress relieving bogie hearth furnace for 360 T, high volume load. Heating is via high speed gas burners.

Overall specifications

Width:	9.000 mm
Length:	10.000 mm
Height:	8.000 mm
Load weight:	360.000 Kg
Max temperature:	900 °C

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 first quality refractory materials reduce thermal losses to a minimum. In chamber forced cooling could be offered as an option.

Technical specifications

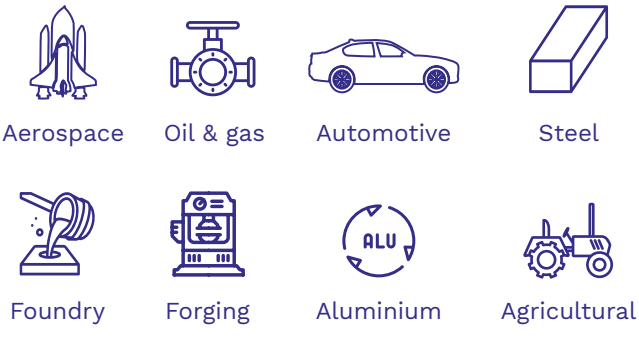
Dimension
- Size and productivity tailored on customer needs

Heating types
- Direct flame gas burners
- Radiant tubes (inert atmosphere)
- Electric heating elements

Energy saving
- Centralized heat recovery system
- Self-recuperative burners
- Regenerative burners
- High quality refractory materials
- Continuous monitoring through supervision system

Temperature uniformity standard
- API 6A
- AMS2750E (Aerospace)
- NORSOK (Oil and gas)
- CQI-9 (Automotive)

Supervision system
- Custom made supervision system ready for full integration with customer management system



Chamber furnace #1284

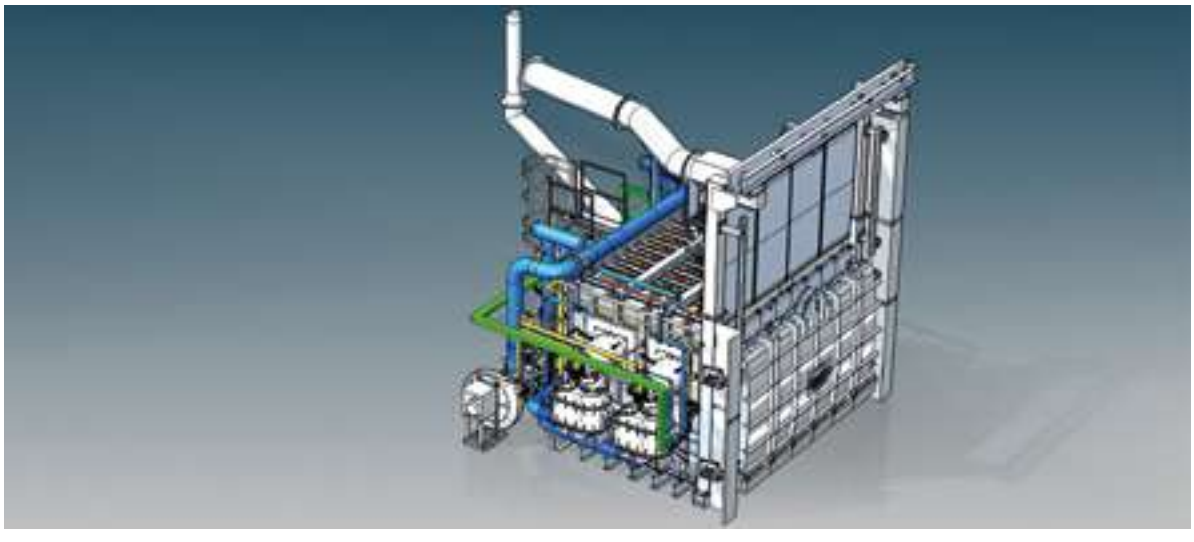
5.000 Kg 1.300°C

Description

Forging chamber furnace with regenerative burners able to work flameless for greater efficiency and low NOX emissions.

Overall specifications

Width:	3.300 mm
Length:	2.700 mm
Height:	2.000 mm
Load weight:	5.000 Kg
Max temperature:	1.300 °C
Temperature uniformity:	from 900 °C to 1250 °C ± 10 °C



Chamber furnace #1240

5.000 Kg

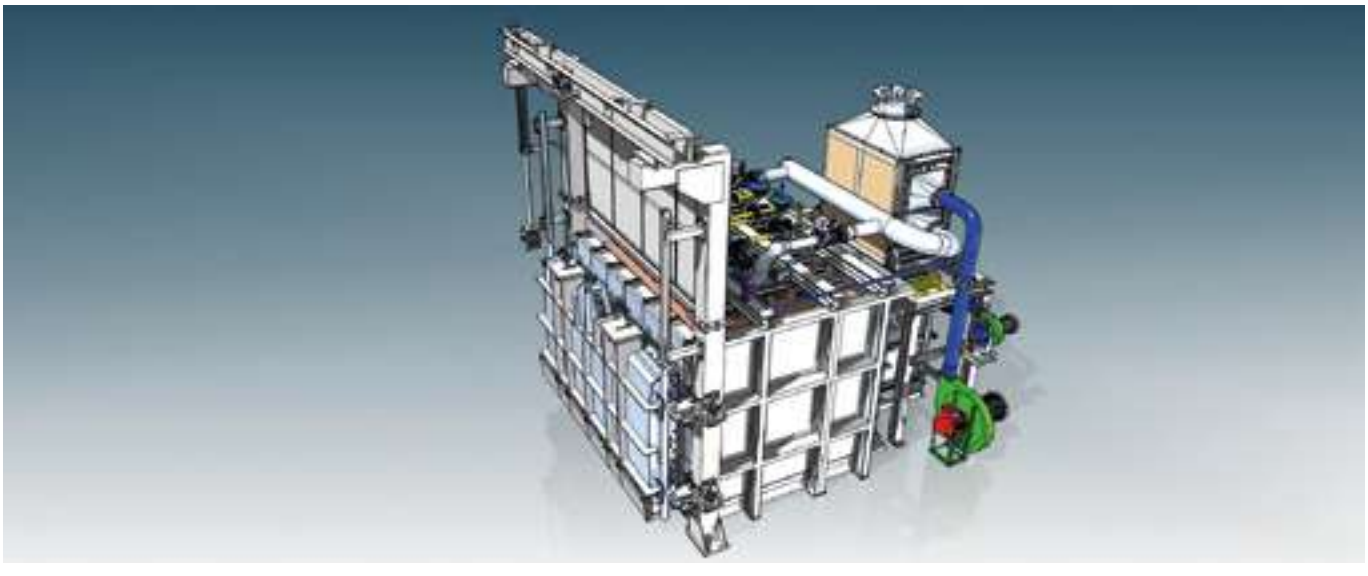
1.300°C

Description

Forging chamber furnace with centralized heat recovery system that pre-heats oxidizing air up to 550 °C for improved efficiency. Heating is via radiant flame, low NOX burners.

Chamber dimension

Width:	2.600 mm
Length:	2.300 mm
Height:	1.200 mm
Load weight:	5.000 Kg
Max temperature:	1.300 °C
Temperature uniformity:	from 900 °C to 1250 °C ± 10 °C



Chamber furnace #1246

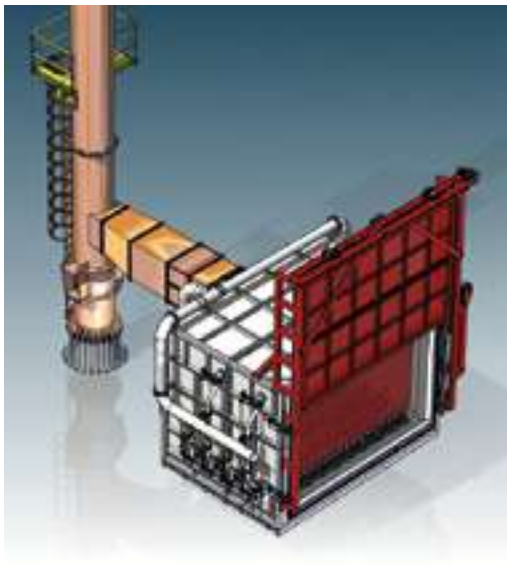
25.000 Kg 1.150°C

Description

Heat treatment chamber furnace with high speed burners.

Overall specifications

Width:	4.500 mm
Length:	3.000 mm
Height:	2.500 mm
Load weight:	25.000 Kg
Max temperature:	1.150 °C
Temperature uniformity:	from 300 °C to 450 °C ± 14 °C
Temperature uniformity:	from 450 °C to 600 °C ± 8 °C
Temperature uniformity:	from 600 °C to 1100 °C ± 5 °C



Chamber furnace #1256

12.400 Kg

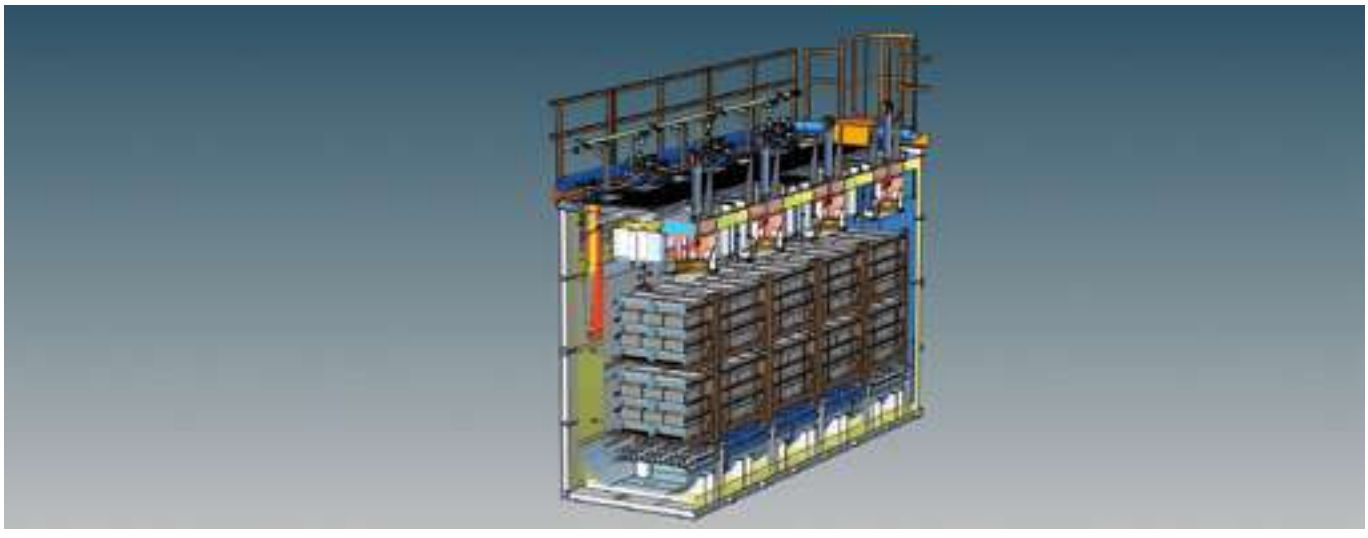
280°C

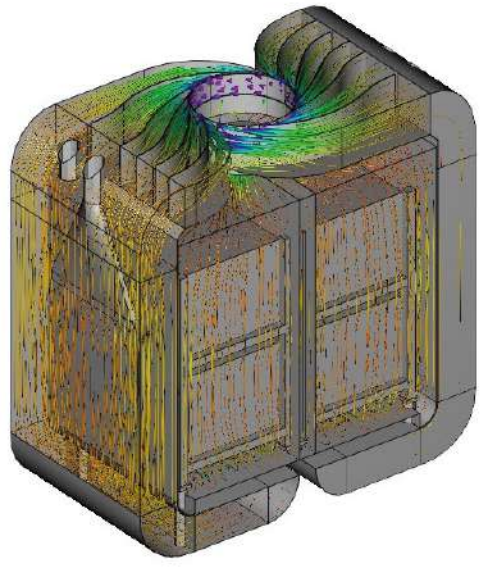
Description

Heat treatment chamber furnace to perform aging (T 5 treatment) of aluminium casting load. Heating is via high speed gas burners with special stainless-steel diffusing pipes, High speed air circulation, optimized by CFD, assures high temperature uniformity.

Overall specifications

Width:	2.100 mm
Length:	6.200 mm
Height:	1.800 mm
Load weight:	12.400 Kg
Max temperature:	280 °C
Temperature uniformity:	± 3 °C @ 225 °C





Chamber furnace #1295

2.000 Kg

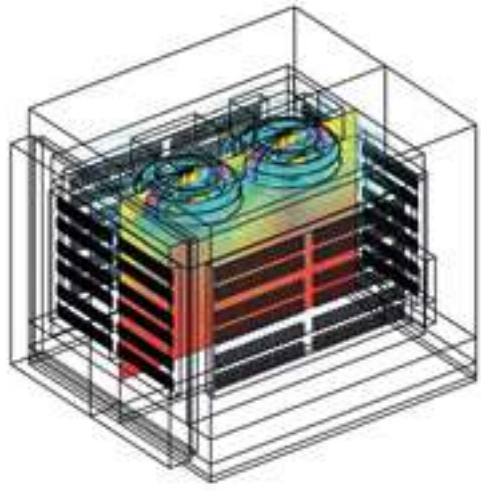
1.000°C

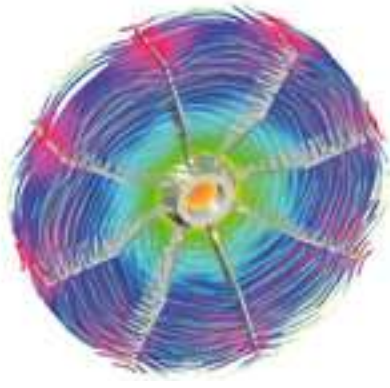
Description

Heat treatment chamber furnace with inert gas atmosphere for aerospace alloy annealing. The parts to be treated are handled by an automatic loading machine. Heating is via Kanthal ROB resistors. High speed air circulation, optimized by CFD, assures high temperature uniformity. All components are easily removable for maintenance purposes.

Overall specifications

Width:	1.200 mm
Length:	1.800 mm
Height:	1.000 mm
Load weight:	2.000 Kg
Max temperature:	1.000 °C
Temperature uniformity:	from 190 °C to 400 °C ± 14 °C
Temperature uniformity:	from 400 °C to 800 °C ± 3 °C
Temperature uniformity:	from 800 °C to 1.000 °C ± 5 °C





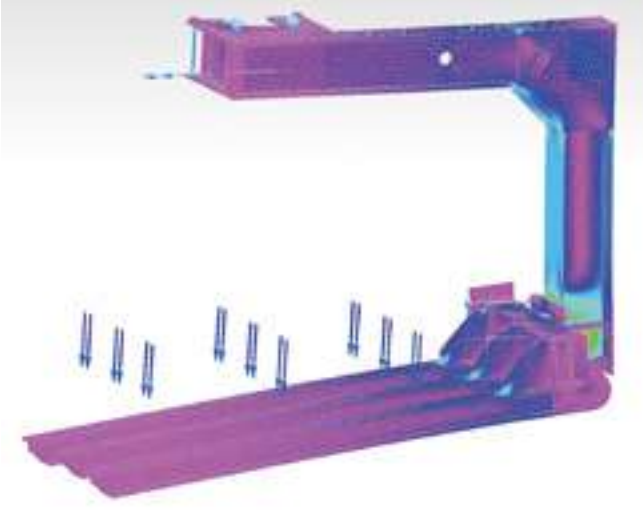

ALS-G20

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 interfaces 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.



Design optimization through extensive use of Finite Element Analysis (FEA) ensures the desired durability and reliability of Gadda group products.

Quality tested

Tailor made

Made in Italy

Safety

Aerospace

Oil & gas

Automotive

Steel

Foundry

Forging

Aluminium

Agricultural

Ground runways automating loading machine #1212

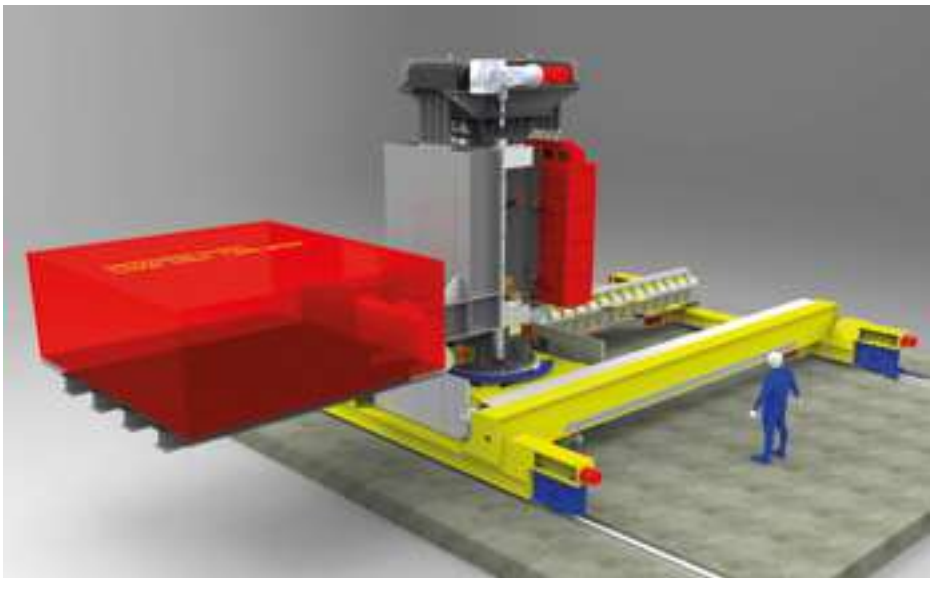
20.000 Kg

Description

4 axis automatic loading machine with ground runways for loads up to 20 T.

Axis strokes and speeds

X axis (along the rails):	80 m | 40 m/min
Y axis (perpendicular to rails):	5,5 m | 40 m/min
Z axis (elevation):	0,5 m | 3 m/min
J axis (rotation):	180° | 360°/min
Load weight:	20.000 Kg



High quality machined fittings and mechanical interfaces allow high precision movements and positioning

Ground runways automating loading machine #1236

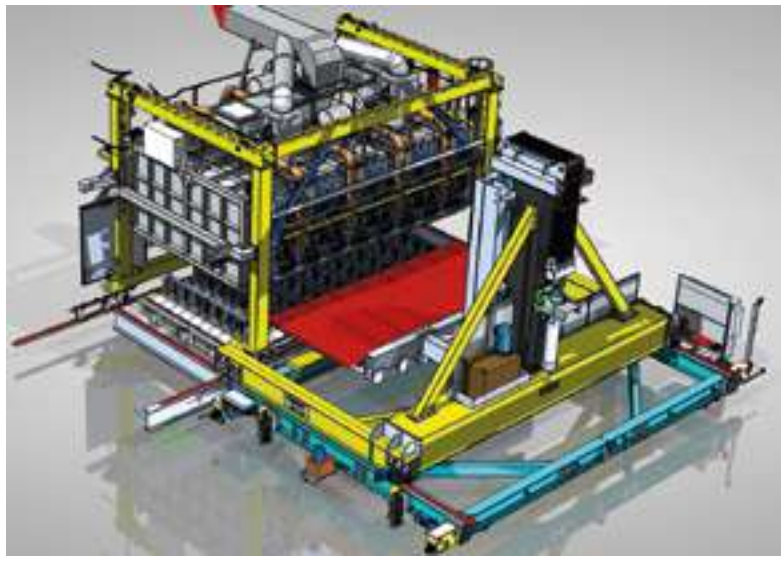
20.000 Kg

Description

3 axis automatic loading machine with ground runways for loads up to 20 T.

Axis strokes and speeds

X axis (along the rails):	45 m | 40 m/min
Y axis (perpendicular to rails):	5,5 m | 40 m/min
Z axis (elevation):	2,6 m | 3 m/min
Z axis (immersion):	2,6 m | 15 m/min
Load weight:	20.000 Kg



Direct immersion in quenching tank in less than 30s

Gantry lame automating loading machine #1244

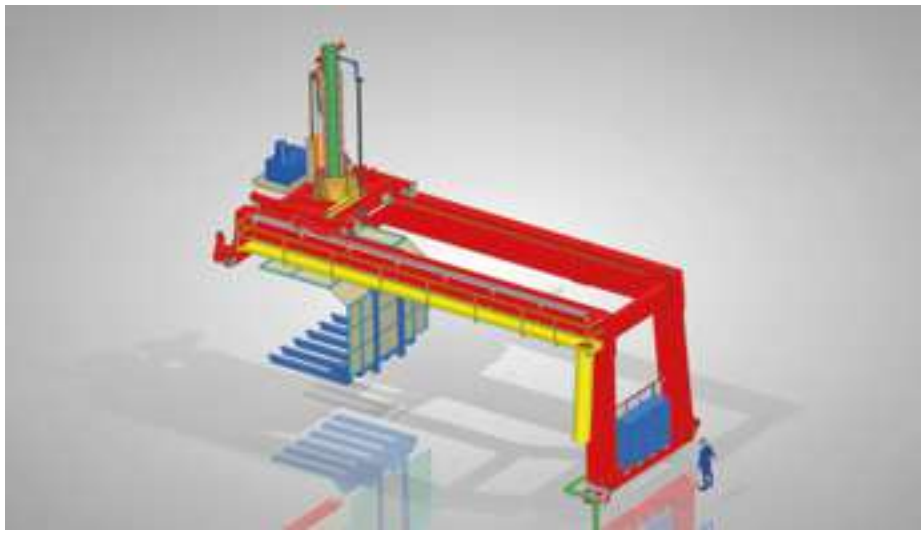
30.000 Kg

Description

4 axis gantry lame type automatic loading machine with high/low runways for loads up to 30 T.

Axis stroke and speed

X axis (along the rails):	40 m | 40 m/min
Y axis (perpendicular to rails):	15 m | 40 m/min
Z axis (elevation):	4 m | 10 m/min
Z axis (immersion):	4 m | 20 m/min
J axis (rotation):	180° | 360°/min
Load weight:	30.000 Kg



Axis control is performed using encoders on inverter controlled electric motors, position encoders and laser positioning system

Bridge automating loading machine #1259

12.000 Kg

Description

4 axis bridge automatic loading machine with high runways for loads up to 12 T.

Axis stroke and speed

X axis (along the rails):	80 m | 40 m/min
Y axis (perpendicular to rails):	5 m | 40 m/min
Z axis (elevation):	3 m | 10 m/min
Z axis (immersion):	3 m | 20 m/min
J axis (rotation):	180° | 360 °/min
Load weight:	12.000 Kg

Ground or aerial runway architecture is available in order to accommodate individual customer needs

Bridge automating loading machine #1322

3.000 Kg

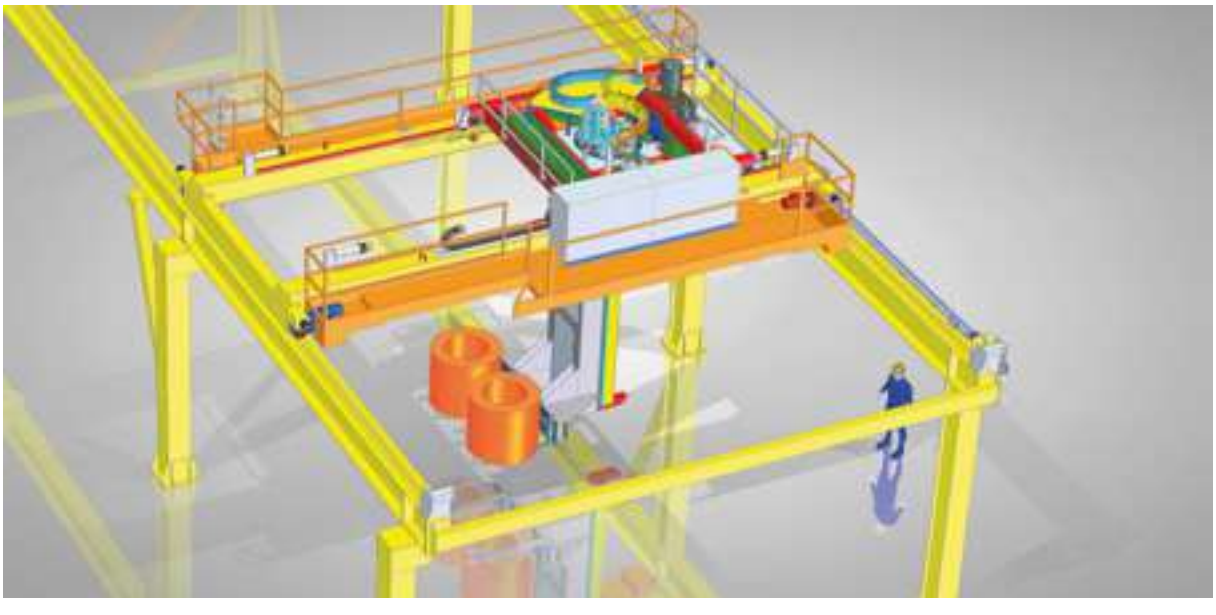
Description

4 axis bridge automatic loading machine with high runways for loads up to 3 T.

Axis strokes and speeds

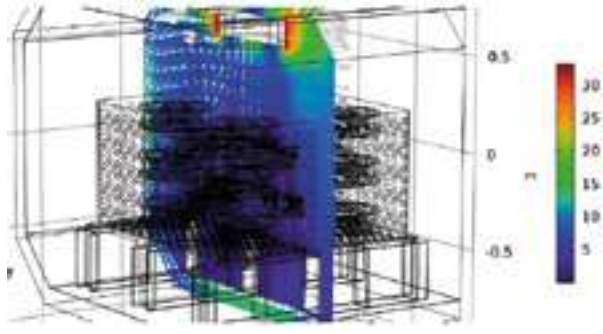
X axis (along the rails):	30 m | 120 m/min
Y axis (perpendicular to rails):	6 m | 75 m/min
Z axis (elevation):	3 m | 12 m/min
Z axis (immersion):	3 m | 36 m/min
J axis (rotation):	180° | 360°/min
Load weight:	3.000 Kg

4 wheels drive for high speed movements

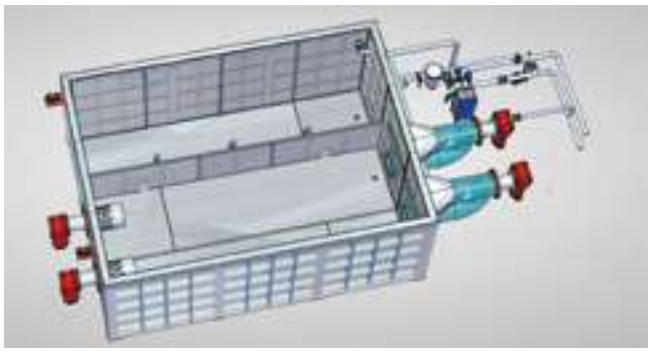


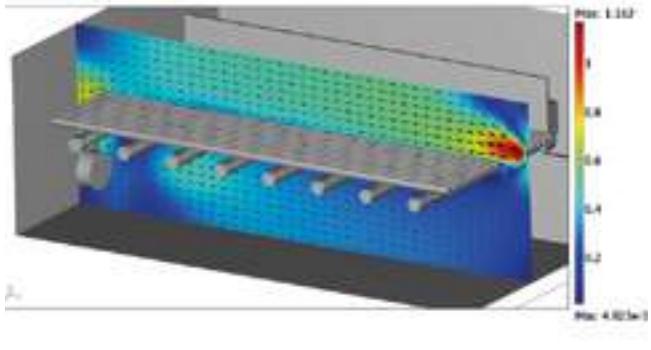
Cooling Systems

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. Isothermal annealing treatment chamber are manufactured. When forced cooling is not needed, free air normalization stations with optional smoke aspiration and thermal shields are offered.



Water, 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 direction solution (horizontal/vertical) with Kaplan duct fans or diffuser nozzles under the load are available. Quenching can be performed: with the load still sustained 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 m³ to 400 m³.





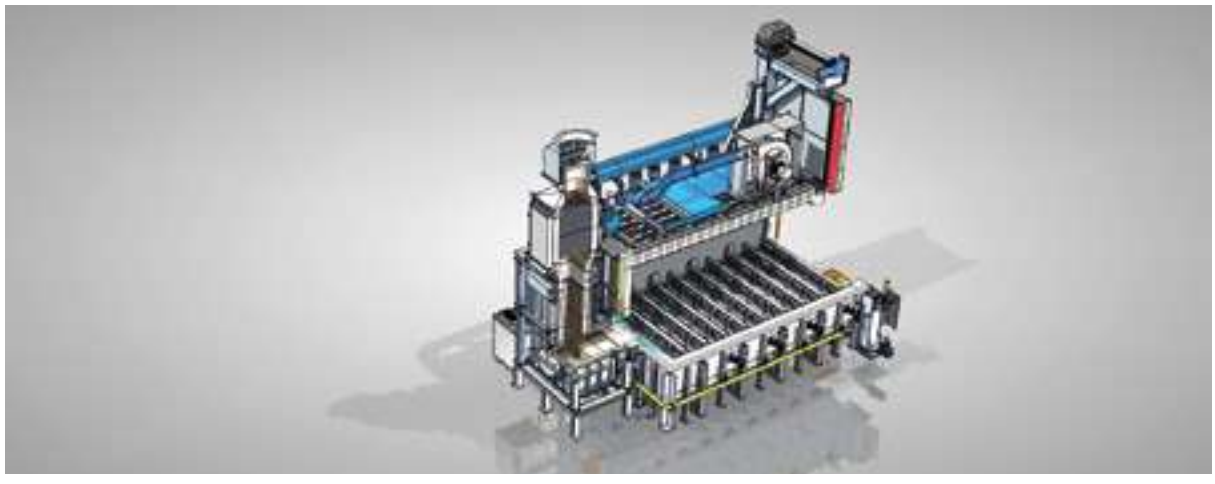
Energy Saving

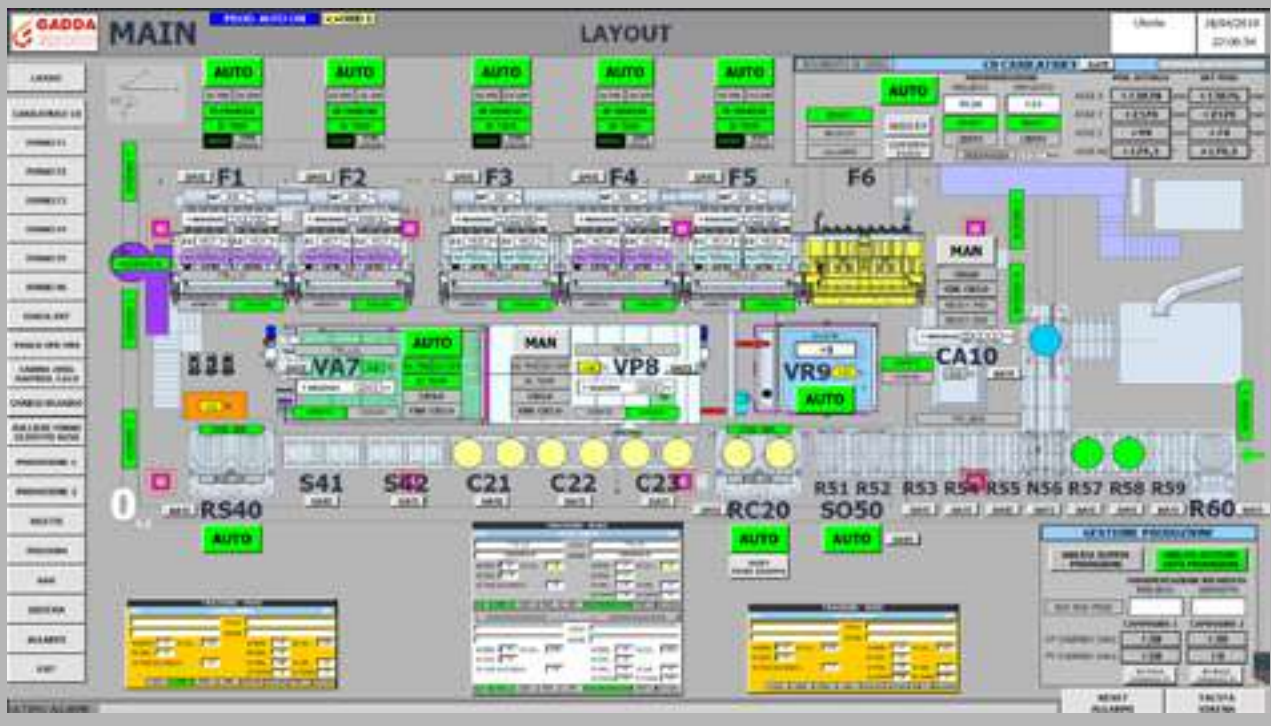
When high working temperatures must be maintained for a long time, improved burner efficiency and reduced thermal losses are key factors in the design. Different heating technologies are proposed in order to satisfy this requirement such as **self-recuperative burners, regenerative burners or exhaust 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.

Centralized heat exchanger

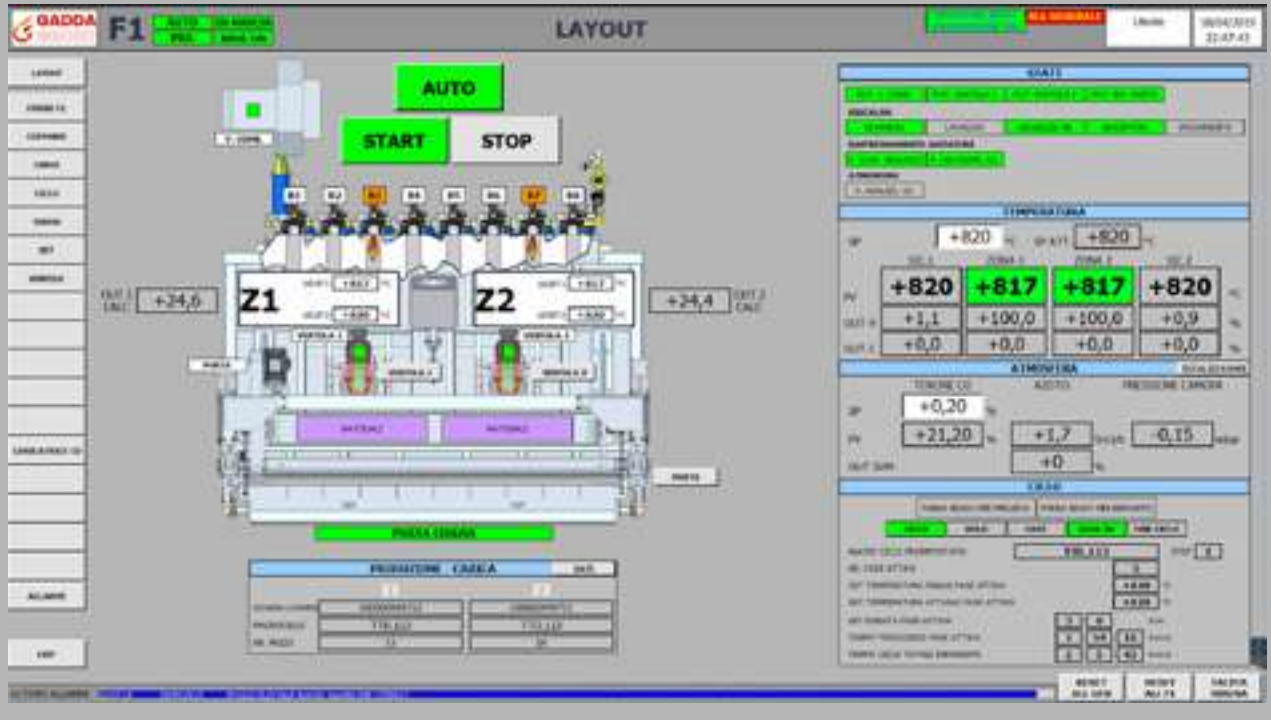
Description

The Gadda group is specialized in the design and manufacture of highly efficient centralized heat exchangers.
This system pre-heats combustion air up to 500 °C, extracting heat from exhaust gasses, increasing the global efficiency.
Internal furnace pressure is controlled by a double flap valve on the chimney. The heat exchanger is protected from overheating by the controlled mixing of cold air in the exchange chamber.





The status of the entire plant is displayed in the supervisor system, such as: the status of the various stations, the type of treatments in progress in the furnaces and loader position.



On station pages detailed relevant data are shown, such as: physical states and temperatures (by numeric and graphic format), treatment states and the possibility to send direct commands to the utilities. Temperature graph can be displayed and expanded for easy curves reading, data could be printed or exported on files for reporting purposes.

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 controls through interface with customers management systems already in place or data acquisition systems for data storage in relational database equipped with ODBC and OLEDB interface (e.g. ACCESS, MS SQL SERVER).

Our clients

“I want to express my full satisfaction with Gadda group, we look forward to our continued partnership with Gadda as a potential supplier for our future projects around the world. I can confirm that over the course of our partnership Gadda group proved their flexibility to handle individual customer requests, demonstrating proactivity in managing various questions, fast and friendly support, with a qualified team of engineers and technicians. I can confidently recommend Gadda group as a reliable supplier in their field.”

“I want to express my full satisfaction of Gadda group who supplied Vetrerie Riunite with a new furnace to reheat the mould for glass in 2017.
All Vetrerie Riunite team involved in this project appreciated the Gadda group staff’s Technical know-how and capabilities, availability and Flexibility, respect for the contractual time schedule, customer orientation and professionality in the project management. The new furnace has a transportation system performed by conveyor rollers and it is equipped with indirect reheating with radiant tubes and two recirculation fans.
Two years after the installation, the furnace is still running smoothly and without maintenance issues. The temperature uniformity and efficiency are being kept according to the contractual technical specification. I can fully recommend Gadda group as a reliable supplier for heat treatment furnaces.”

“We hereby communicate our full satisfaction with the production and quality performances obtained by the heating treatment plant for bars you supplied. In particular, the furnace allows us to produce with the requested quality and within the set times all the steel objects of our strategic development plan.

“For nearly 20 years we have been a customer of Gadda group. We are satisfied with the furnaces from Gadda; to date, we have 10 furnaces implemented at our site in Offenbach. An additional one is in the planning-phase. Particularly praiseworthy is their flexibility to handle individual customer’s wishes, fast and friendly support, and new developments are possible. We’re sure that we will have further good cooperation in the future.”

“I hereby want to express my satisfaction with Gadda product’s. The plant applies in a more than adequate manner the temperature tolerances requested and, as a whole, the supply stands out for a high level of quality of the finish.”

“We confirm our full satisfaction achieved with the forging and heat treatment furnaces produced and supplied by Gadda group. In particular we have detected significant improvements in term of:

- Thermal Homogeneity
- Heating performance with related cost saving
- Lower needs of maintenance compared to other similar furnaces.

The above facts support our competitiveness and possibility to secure our customers high profile performances from a technical and quality prospective.”

НОВЫЕ ФИТИНГОВЫЕ ТЕХНОЛОГИИ

"During the past 4 years our company has been working with Gadda group on an important project for us. Gadda group offers high quality services. We can say with certainty that we have always been satisfied with their work.
I would like to suggest you consider the Gadda group if you are looking for a good partner regarding design, construction and marketing of plans for the heat treatment and heating of both ferrous and non-ferrous materials.
Gadda group products have become established thanks to their high-technological content and their level of reliability. I am looking forward to working with this company again for future heat treatment lines and not only."

CENA

"We want to express our full satisfaction achieved with the fully automatic heat treatment furnace made and supplied in 2018 by Gadda group.
We feel very satisfied in terms of:

- Heating performances
- Thermal homogeneity
- Flexibility to handle customers requests
- Proactivity on a large spectrum of topics
- Qualified Engineers and Technicians
- On-Time delivery
- No need for extraordinary maintenance: since the very first day of operation we have never faced unexpected problems or a production stop.

The above being said, as proof we can confirm our will to go further with Gadda group."

B.F.E. S.r.l. Bonney Forge

officine ambrogio melesi 70°

FOMAS GROUP

l'union des forgerons

OMS s.p.a. STAMPAGGIO ED ESTRUSIONE A CALDO DELL'ACCIAIO

AIA Engineering Ltd.

FRISA

M.E.G.A.

GALPERTI close to energy since 1740

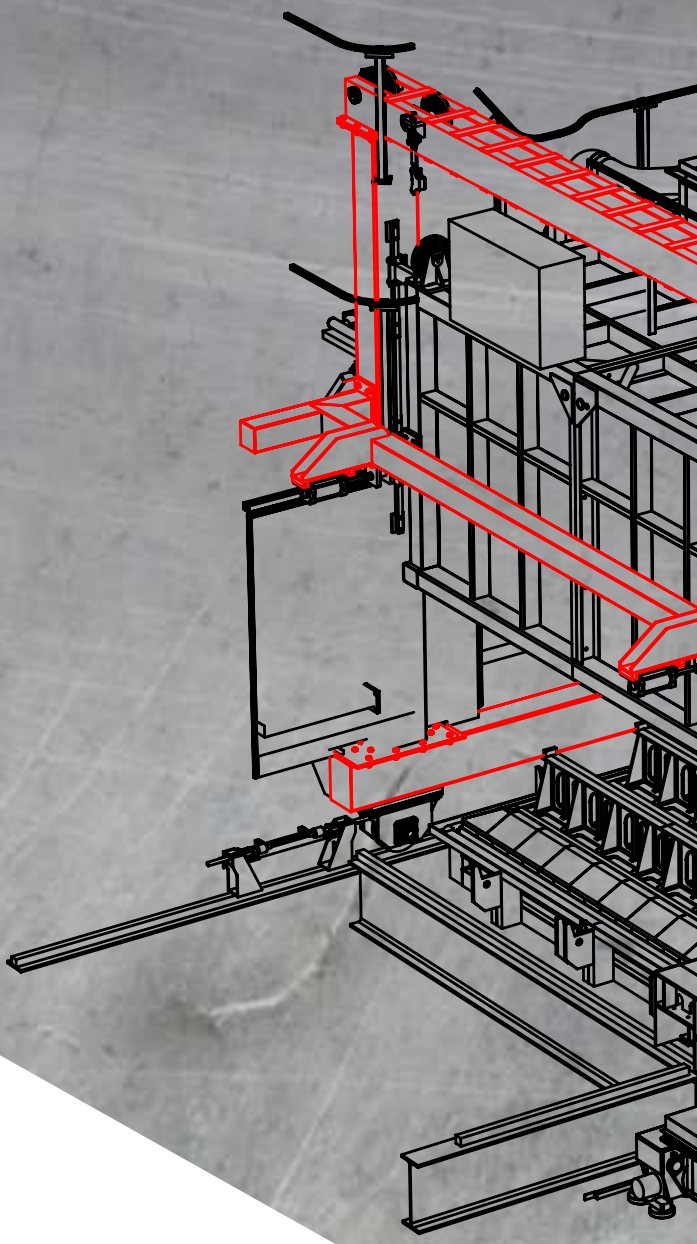
LINAMAR Power to Perform

TRAFILSPEC·ITS competenza d'acciaio

MBA

GADDA GROUP

MAKING YOUR FUTURE STRONGER



GADDA GROUP

MAKING YOUR FUTURE STRONGER

Gadda industrie S.r.l.
Viale A. Olivetti, 13
10010 Colleretto Giacosa
TO ITALY
Ph +39 0125.564045
Fax +39 0125.538331
info@gadda.com

Gadda Engineering S.r.l.
Via I. Calvino, 7 – D
20017 Rho – MI ITALY
Ph +39 02.9301660
Fax +39 02.93181555
engineering@gadda.com

www.gadda.com