

**LOI Italimpianti**  
TENNOVA



## Reheating Furnaces

A complete product line of furnace equipment providing proven and innovative technologies

TENNOVA is a worldwide supplier of advanced technologies, products and services for the metal and mining industries.



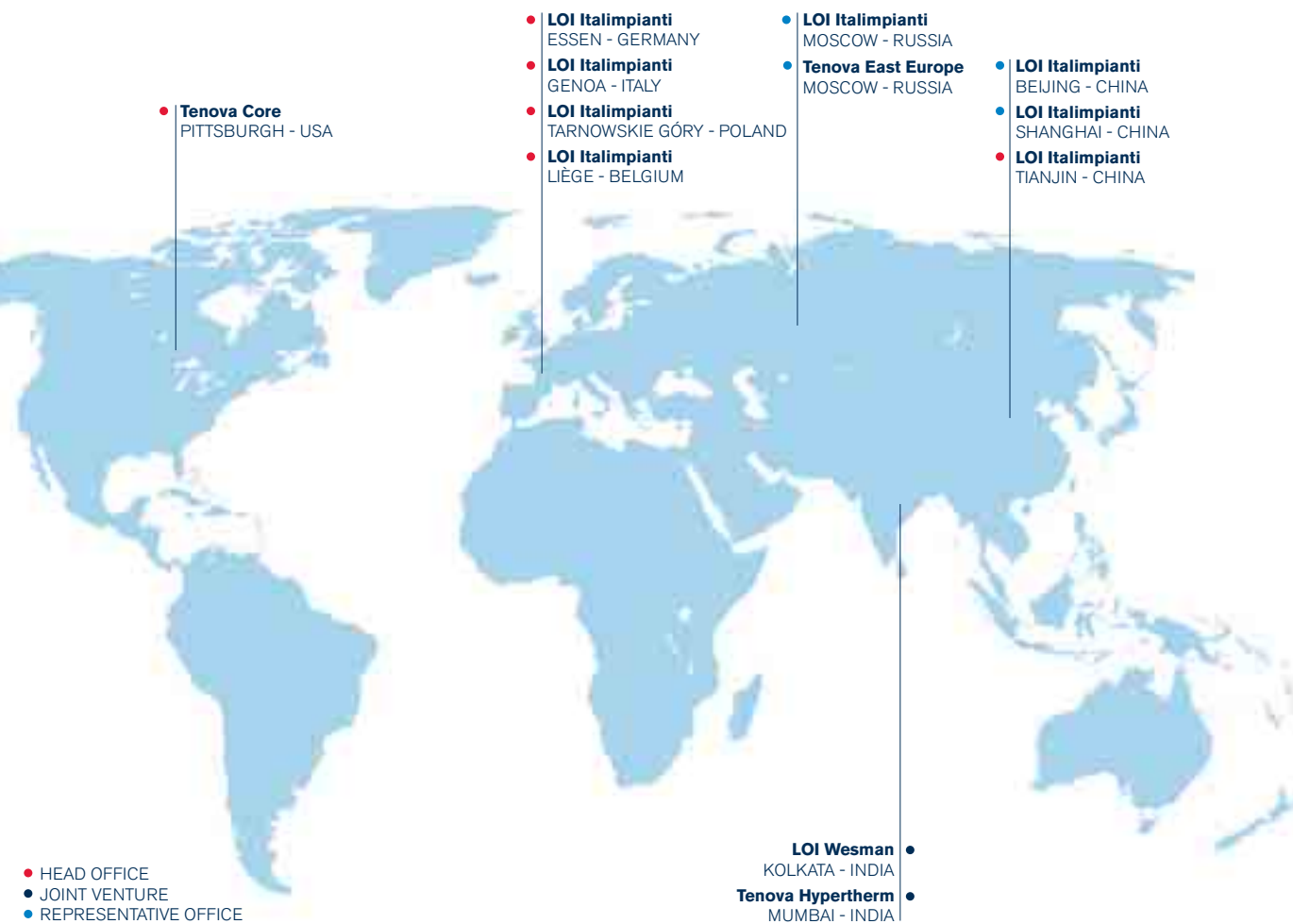
Tenova is a worldwide supplier of advanced technologies, products and services for the metal and mining industries providing innovative integrated solutions.

Combined process automation and metallurgical know-how enhance the value delivered to the customers. Tenova is committed further to develop its technology in the areas that mostly impact the future of the industries it serves: quality of the products delivered by the customers, energy saving and environmental safeguard.

Tenova LOI Italimpianti is the leading global supplier of reheating and heat treatment equipment for the steel, aluminum, and automobile industries. It ensures a high degree of innovation, experience and know-how in all phases of the thermal process by offering complete, state-of-the-art and environment-friendly furnace systems.

## Global Presence

Tenova LOI Italmimpianti is a true global player. With over 800 skilled professionals and 10 operating companies in Europe, China, India (through Tenova Hypertherm and LOI Wesman Thermprocess), USA (through Tenova Core), and other countries, Tenova LOI Italmimpianti is present in all the world's key markets and closely serves its customers.



## Heritage

As a leader in reheating furnaces, Tenova LOI Italmimpianti draws on the long-standing experience and knowledge inherited from:

Italmimpianti, an Italian engineering company founded in Genoa in 1957. A leading integrated supplier of technology and turnkey industrial plants, Italmimpianti specialized in reheating furnaces and relevant thermal equipment.

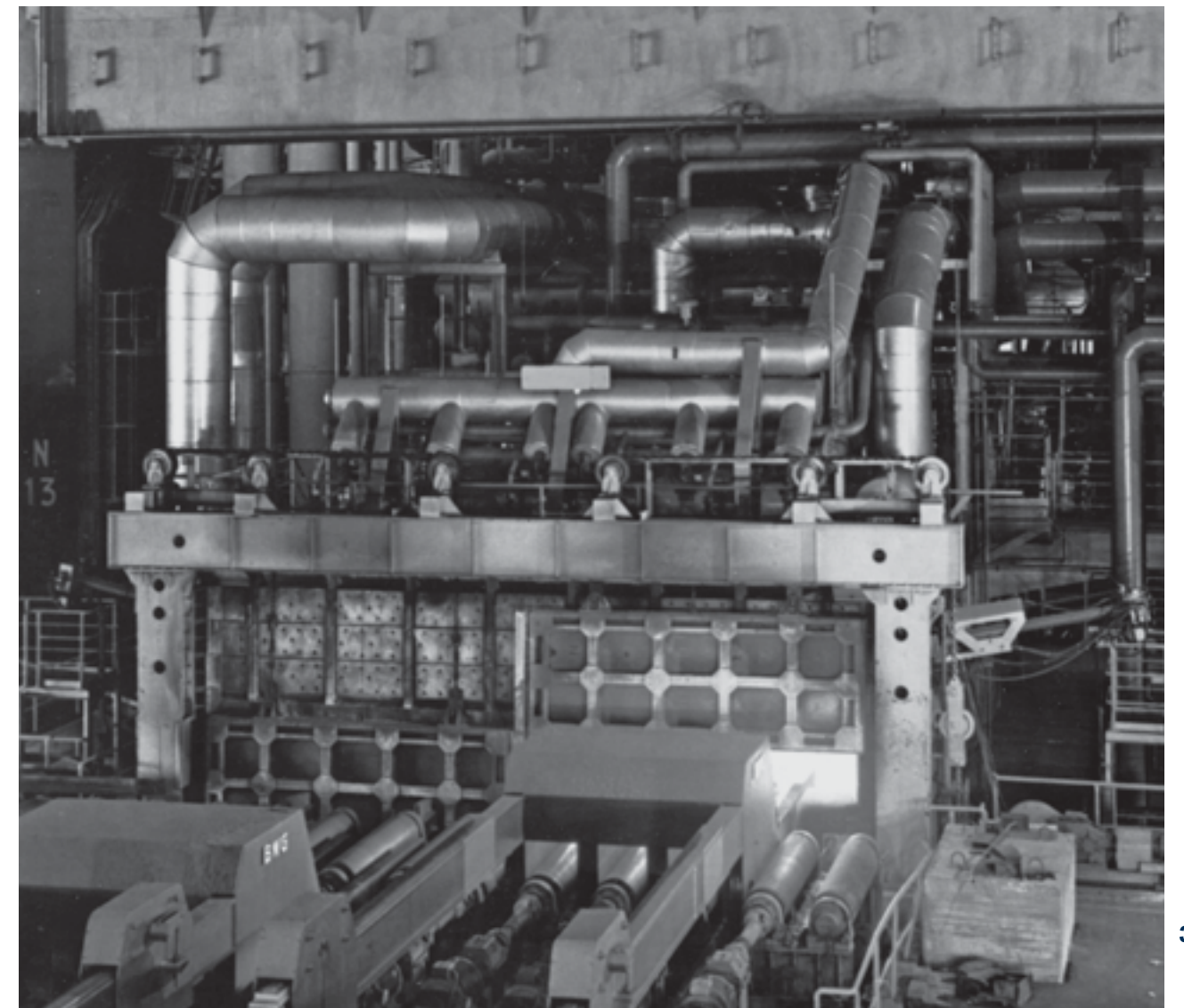
It became a reference company in the market thanks to its continuous R&D activity and technological innovation.

LOI, a German group headquartered in Essen established in 1970. Over the years it has promoted an M&A strategy, while establishing at the same time companies in key countries, that have brought the group to become one of the major industrial furnaces company in the market.

Core, based in the U.S.A. is a leading provider of industrial furnaces and related equipment. The company has established itself as a source for advanced technology and reliable deliveries. Offering fully integrated operational capabilities, Core is the main supplier of large reheating furnaces in the NAFTA market.

Hypertherm, based in Mumbai, is specialized in the design and supply of industrial furnaces. The company focuses its operations mainly on the SAARC market providing a deep furnace industry experience supported by numerous installation in the Country and abroad.

With more than 4,000 furnace installations, Tenova LOI Italmimpianti is the name behind some of the largest, most technologically advanced and most efficient reheating furnace plants in the world.



## Business

Tenova LOI Italmimpianti designs and installs a wide variety of ferrous and non ferrous reheating furnaces for long and flat products, furnaces for glass, petroleum coke, carbon products and direct reduced iron, as well as for metal reclamation and waste oxide recycling. Its expertise covers the full range of projects, from traditional applications to thin slab and direct rolling concepts.

Tenova LOI Italmimpianti's success is based on its acknowledged ability to develop reheating furnaces providing outstanding efficiency and reliability, excellent temperature uniformity, fully automatic operation, and low product variability. Tenova LOI Italmimpianti excels at delivering high-quality furnace product lines to meet the exacting installation and schedule requirements of the customer.



## Products

Tenova LOI Italmimpianti reheating furnaces provide excellent quality and productivity for processing slabs, billets, blooms, beam blanks and rounds.

Tenova LOI Italmimpianti designs include:

- Walking Beam and Walking Hearth Furnaces
- Roller Hearth Furnaces for Thin Slab
- Pusher Type Furnaces
- Rotary Hearth Furnaces
- Specialty Furnaces for Calcining processes and Carbon products
- Heat Treatment Furnaces for Pipes
- Burners
- Level 1 and Level 2 Automation

### Walking Beam and Walking Hearth Furnaces

As a long-time player in reheating furnaces, Tenova LOI Italmimpianti has installed some of the world's largest walking beam reheating furnaces.

It has designed walking beam furnaces for reheating:

- billets
- blooms
- slabs
- thin slabs
- beam blanks
- pipes

and any kind of material, including:

- copper
- carbon steel
- stainless steel
- oriented grain steel
- titanium
- special alloys



### Roller Hearth Furnaces for Thin Slab

The latest plants implementing direct rolling technology use a new furnace concept suitable for slab lengths up to 30-50 m and, in special cases, endless rolling for bar lengths up to 300 m. Tenova LOI Italimpianti roller hearth furnaces for these applications are designed to meet the specific requirements of direct rolling technology, with a special focus on critical components such as rollers and burners.

### Pusher Type Furnaces

Most of the pusher type furnaces built in the 1970s and 80s are still in operation today. Modern design techniques and solutions adopted in new furnaces can give fresh life to old plants. New offset skid systems, new hot rider designs, burners with low NOx emissions are some of the advances applied to older furnaces to boost production capacity, improve temperature uniformity, enhance surface quality and save energy.



### Rotary Hearth Furnaces

Tenova LOI Italmimpianti is the worldwide leading supplier of rotary hearth furnaces for several process applications and product types. Tenova LOI Italmimpianti has installed some of the largest diameter and highest capacity rotary hearth furnaces in the world. This customized rotary hearth furnace technology has been applied to specialized applications including the reheating of blooms, iron processing and waste reclamation processes.

### Specialty Furnaces for Calcining Processes and Carbon Products

Tenova LOI Italmimpianti has developed advanced technologies for petroleum coke and coal rotary hearth calciners, used to process lignite, sub-bituminous coal, anthracite, brown coal, formed coke briquettes and many other carbon-based products. Its proprietary rotary hearth calciner provides better product quality and higher product yield than traditional rotary kilns.

Tenova LOI Italmimpianti deploys its superior carbon-baking process know-how to build furnaces whose superior heating and circulation systems produce the base material for the production of carbon electrodes of the highest quality. Through application of state-of-the-art combustion technology, waste heat recovery, incineration and process control as well as safety technology, Tenova LOI Italmimpianti is the provider of choice for top-quality carbon-baking equipment.



## Heat Treatment Furnaces for Pipes

From stand-alone heat treatment furnaces to complete heat treating lines, Tenova LOI Italmimpianti provides reliable equipment for the processing of pipe products. Tempering furnaces, hardening furnaces and innovative quenching systems are designed to meet the strict processing requirements of the modern pipe producing plant.



## Burners

Burners are the heart of a furnace. Tenova LOI Italmimpianti designs and supplies its own in-house advanced burner technology as a component of most reheating furnace projects. Its burners integrate the expertise of its engineering team and advanced research tools in the combustion field.

Installation of high-performance furnaces has led to the development of the Flexytech® burner product line. As the best available technology on the combustion systems market, the new generation of Tenova LOI Italmimpianti FlexyTech® flameless burners offers dramatic reductions in NOx emissions. Flameless technology is also applied to regenerative burners, to deliver top performances for both NOx emissions reduction and energy savings.



## Level 1 and Level 2 Automation

Tenova LOI Italmimpianti provides in-house development of Level 1 and Level 2 automation systems for new furnace installations or for the upgrading of existing systems. The Tenova Flexytech® Level 1 system is a microprocessor based system (PLC or DCS) that is interfaced through the HMI (Human Machine Interface) state-of-the-art display screens which provide the furnace operators with manual, automatic or Level 2 control of the furnace functions and processes.

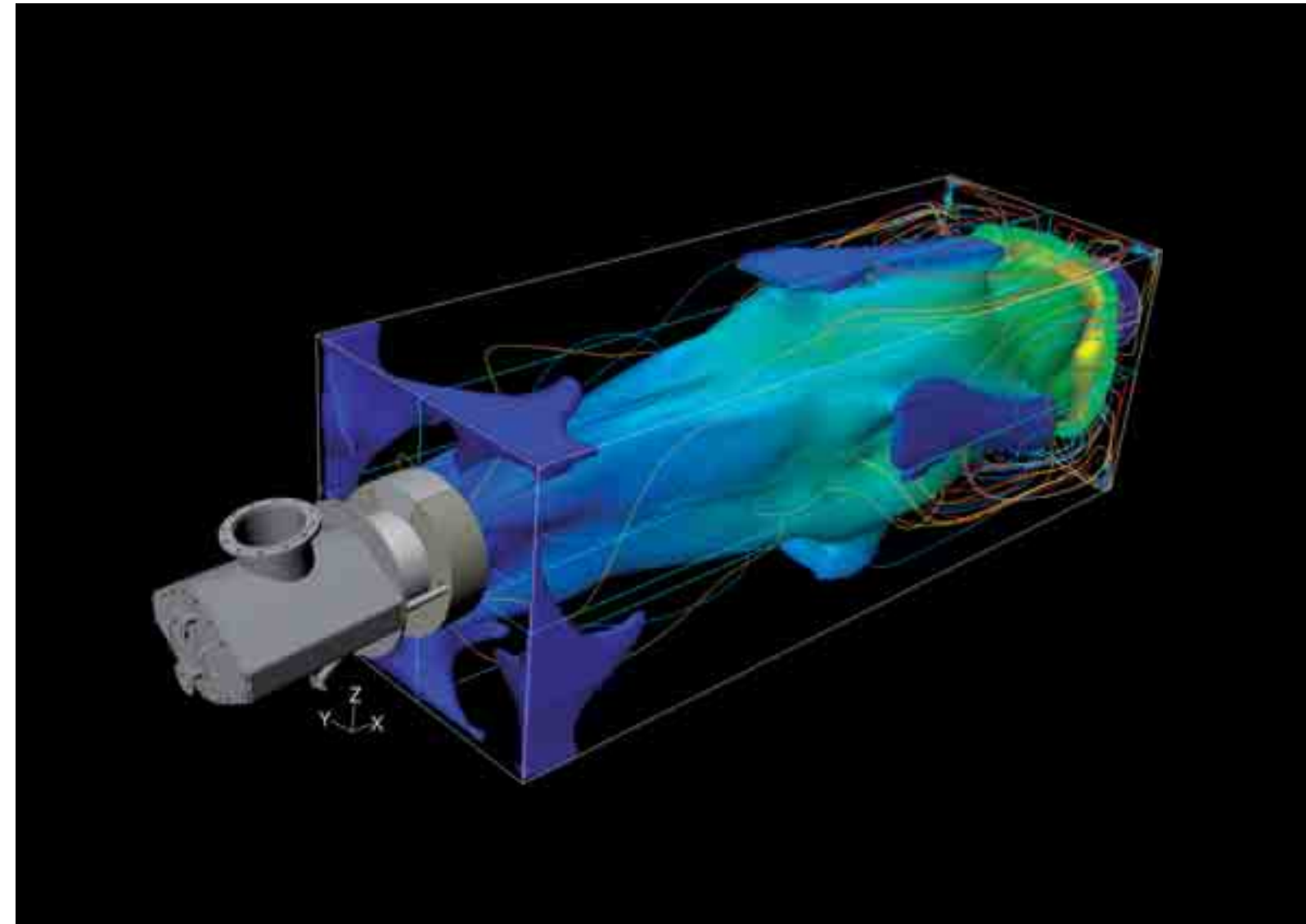
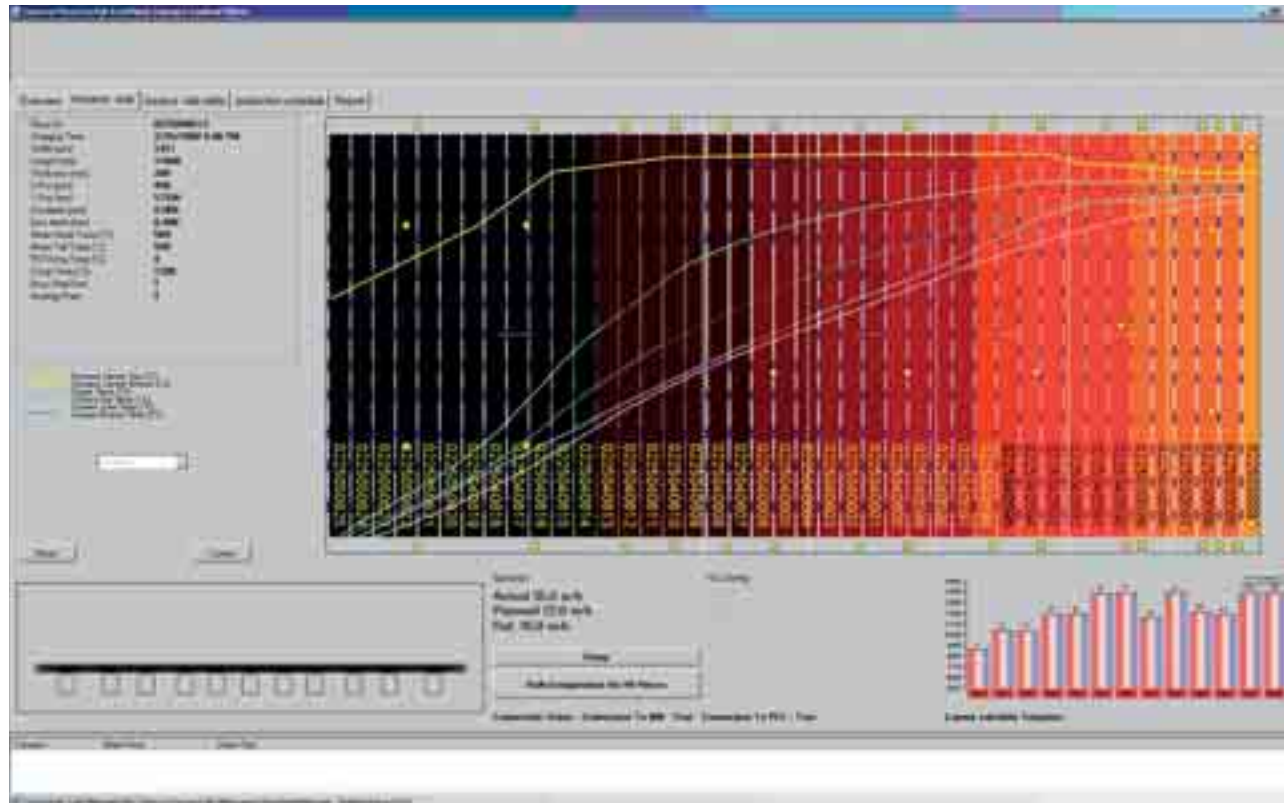
In 1981, Tenova LOI Italmimpianti was the first company that utilized on-line mathematical models to automatically control the operating functions of a reheating furnace. These mathematical models have been continuously tested and improved through more than one-hundred reheating furnace performance evaluations and are now crucial components of the Tenova Flexytech® Level 2 system. The Flexytech® Level 2 system provides vital furnace performance advantages such as reduced specific fuel consumption and improved product temperature uniformity as well as improved mill production rates.

## Research and Sustainable Development

Technological innovation is the main pillar of Tenova LOI Italmimpianti competitiveness. Energy savings, environmental protection and product quality are the drivers of its in-house R&D. Ongoing burner and combustion system developments make Tenova LOI Italmimpianti furnaces some of the most technologically advanced installations in the world.

Tenova LOI Italmimpianti uses an incremental innovation approach based on extensive testing, development of modeling software, metallurgical know-how and process technology. Involvement in international R&D projects together with collaboration with customers are key factors in Tenova LOI Italmimpianti product innovation. Thanks to its solid background, Tenova LOI Italmimpianti is able to offer the most advanced solutions to meet customer requirements.

As the shareholder of one of the industry's most prestigious international research centers, Tenova LOI Italmimpianti develops in-house in its combustion testing facilities the forefront of combustion technology such as flameless regenerative burners.



## Technical Services

Tenova LOI Italmimpianti engineering services range from existing equipment upgrades to the design and turnkey installation of integrated systems.

Services:

- Feasibility Studies
- Energy Surveys
- Plant Surveys
- Equipment Revamps
- Complete Project Management
- Construction and Start-up Supervision
- Training
- Maintenance Assistance
- Spare Parts
- Process Control and Automation Upgrades

## Quality

Tenova LOI Italmimpianti is focused on quality and committed to continuously improving services to meet or exceed customer expectations by following the best practices and standards in the industry.

Tenova LOI Italmimpianti has introduced an excellence path involving a number of companies in the Business Area with ISO 9001 certification and others that plan to obtain certification with primary certifying bodies.



## Environmental Responsibility

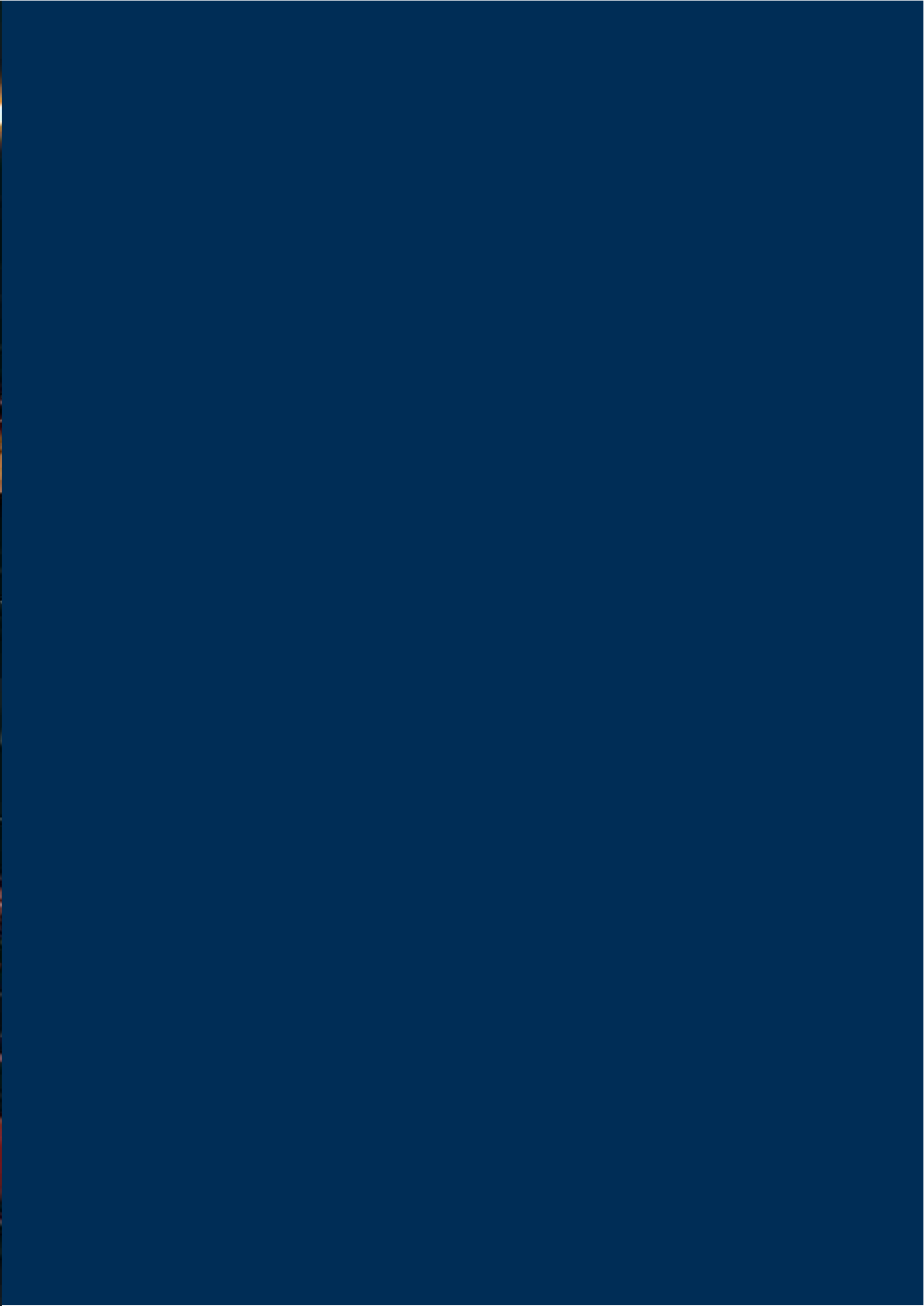
Respect for the environment is a core value of Tenova LOI Italmimpianti projects. Its commitment to the environment also takes the form of investment in thermal process simulation models and combustion systems to improve product efficiency and optimize control systems.



## Focus on People

People are vital to success and growth at Tenova LOI Italmimpianti. Over 300 qualified engineers are the lifeblood of the company network. Outstanding technical and management expertise in every area of activity, a strong customer focus, a passion for innovation and continuous flexibility: these are the features that distinguish Tenova LOI Italmimpianti professionals. With their different nationalities and varied operating experience, Tenova LOI Italmimpianti specialists execute projects all over the world. Their multicultural backgrounds equip them to take on new challenges in any location. Tenova LOI Italmimpianti enhances and optimizes the talents of the individual for the good of the team and to the benefit of the customer. By supervising every stage of professional growth and providing on-going knowledge and skills training, Tenova LOI Italmimpianti guarantees the expertise of its people.







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