

# RIEDHAMMER

A BURNING PASSION SINCE 1924





**RIEDHAMMER**

Enter the world of thermal processing technology



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## WHO WE ARE

**RIEDHAMMER GmbH, located in Nuremberg, Germany, is the world's leading manufacturer of industrial kiln plants.**

In 1924 Ludwig RIEDHAMMER started up his own company to develop and build industrial furnaces for carbon products. In the following decades the product portfolio expanded to include all kinds of kilns for the ceramic tableware, sanitaryware, refractory and electronics industries.

Today the company is part of the SACMI Group, an Italian multinational specialising in machine and plant engineering, headquartered in Imola, Italy, with an annual turnover of over 1.4 billion euros.

RIEDHAMMER is a medium-sized company with approx. 140 employees. Over 90% of its business is accounted for by exports. Extensive experience, expertise and nearly 100 years of success ensure the company is able to offer innovative, efficient technology, not just in traditional areas but also for the manufacture of advanced materials.

Through its worldwide network of representatives and branch offices in China and Japan, RIEDHAMMER ensures outstanding customer service, providing professional support whenever and wherever needed.

## OUR PHILOSOPHY

**Fulfilling our customers' requirements** by combining tradition and progress. Extensive expertise allows us to develop optimal solutions for all kinds of heat treatment applications in close cooperation with our customers, all in full compliance with regulations and safety standards.

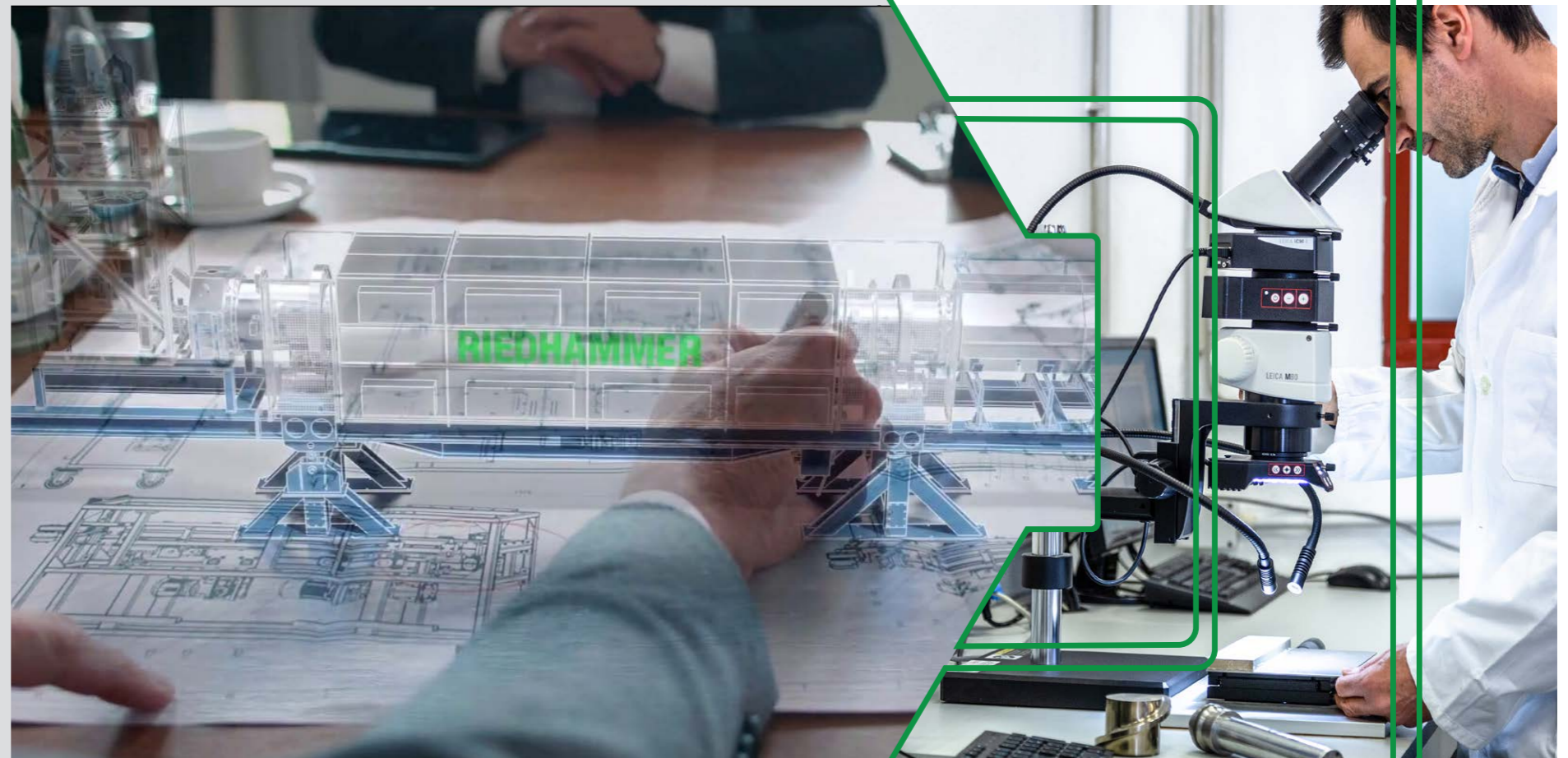
**Innovation through research.** Unrivalled product quality is ensured by continuous development of our firing technology, achieved via the thermal analyses and firing tests performed at the RIEDHAMMER Application Center (RAC), ensuring we keep pace with fast-changing markets.

**Building long-term partnerships with customers and suppliers.** We provide customers with first-rate service, working alongside them to carry out timely maintenance and modernisation, or implement new projects. Partnerships with experienced, reliable suppliers are vital to us as they ensure our kilns are of only the highest quality.

**Social commitment.** We seek to create and safeguard jobs and invest in employees' skills, boosting *their* strengths to increase *our* competitiveness and so create an encouraging, positive workplace.

**RIEDHAMMER is green:** We develop integrated energy-saving and energy-efficient solutions to minimise environmental impact and contribute to a cleaner world. We support sustainability by providing heat treatment applications for waste processing and recycling.

**Expansion of the technology portfolio:** We strive to expand the SACMI Group's Industry 4.0/smart manufacturing technology portfolio by focusing on more efficient, flexible, computer-integrated manufacturing processes, intelligent automation and supply chain process optimisation etc.





## WHAT WE DO

Since 1924 RIEDHAMMER has been producing industrial furnace plants with a clear strategy: to provide individual solutions for ever-more demanding customers and an ever-expanding number of applications. Following the design, engineering and construction of furnaces for carbon products, the company has constantly expanded its product portfolio and earned an excellent global reputation.

Today, the various RIEDHAMMER Business Units offer innovative kiln plants and other cutting-edge solutions for all kinds of heat treatment applications. These include complete solutions for upstream and downstream processes, the revamping and modernisation of existing kiln plants, plus new turnkey plants and related services – all with cutting-edge technology and in compliance with the latest standards.

## OUR BUSINESS UNITS



### Advanced Materials

Advanced Materials are defined as oxide and non-oxide ceramic products and also include numerous non-ceramic materials for various technical applications, such as lithium ion battery components, foam glass, oxygen sensors, ferrites, MLCC and PTC parts, catalyst carriers, grinding media, various powders, pigments and granulates, and many more. This set of Advanced Materials plays a pivotal role in many areas and its application range is steadily growing.

RIEDHAMMER know-how provides vital support for the implementation of firing process technology. It ensures efficient production and continuous customer process development thanks to optimised solutions vis-à-vis firing atmosphere, temperature homogeneity, heating/cooling rates, outstanding product quality and resistance to chemicals.

Producing Advanced Materials involves a variety of processes such as drying, calcining, pre-sintering, sintering and heat treatment or tempering of materials as well as recycling and waste treatment. In addition to the temperature profile, precise atmospheric conditions in the kiln are essential for achieving the required product quality. With extensive experience and a broad product portfolio, RIEDHAMMER is the world's only supplier to offer a full range of kilns and the relative accessory equipment - up to and including turnkey solutions - for Advanced Materials/ Technical Ceramics. That range also includes automatic handling systems as well as waste gas scrubbing and post-combustion systems.



### Tableware



The first RIEDHAMMER tunnel kiln for the glost firing of porcelain was built in 1938, and in 1965 RIEDHAMMER designed and delivered the first fast firing kiln for porcelain!

RIEDHAMMER continues to play a leading role in this traditional industry, with comprehensive process solutions for porcelain, smart porcelain, stoneware, vitreous china and bone china.

Our cutting-edge porcelain firing technology covers a full range of tableware production processes: drying, biscuit firing, glost firing, single firing and decoration firing. RIEDHAMMER offers a vast variety of combustion systems and kiln plants (shuttle, roller, tunnel and conveyor belt kilns), providing numerous state-of-the-art solutions for all processes to ensure optimal results that meet today's technological, economic and environmental requirements.



## Sanitaryware

RIEDHAMMER know-how enables energy-efficient production of all sanitaryware articles of the highest quality, no matter how complex they may be. In doing so, it ensures high performance, reliability and ultra-low energy consumption. We offer the most comprehensive range of sanitaryware firing plants on the market, providing new solutions for everything, from shorter firing cycles to reduced gas/electricity consumption, from optimisation of space to simplified adjustment procedures and greater plant flexibility.

All our ceramic sanitaryware kiln types - shuttle, tunnel and roller - can be operated flexibly, even allowing for frequent shut downs (e.g. at weekends).

The RIEDHAMMER portfolio includes Energy Management Systems (EMS) with cutting-edge energy saving solutions, preheated combustion air, pulse fire burners and REKO burners. Such solutions include the design and delivery of fully automatic robotised loading/unloading solutions in cooperation with other Sacmi Group companies, again on a turnkey basis.

Moreover, to meet today's environmental sustainability requirements, we also focus on skills and innovation for clean exhaust technology systems.



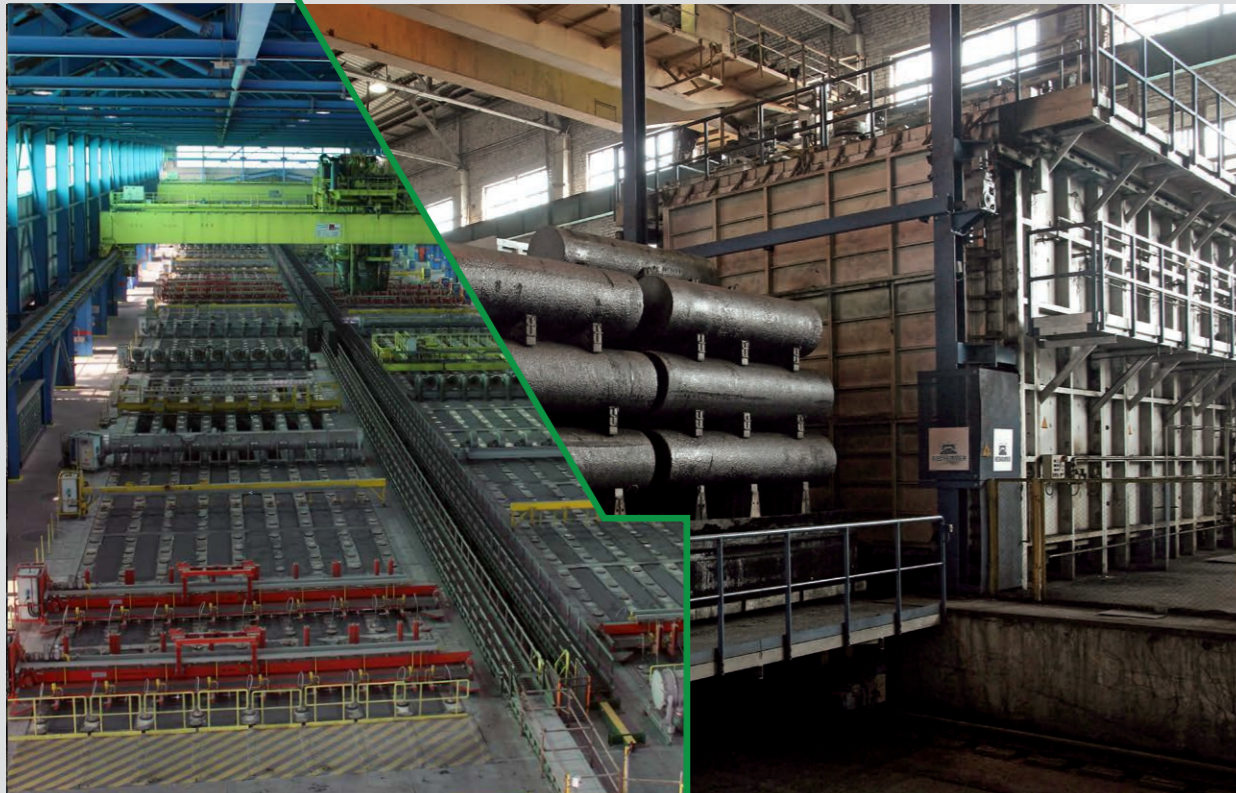
## Refractories

By integrating two of the oldest kiln engineering companies - Mendheim in 1991 and Kerabedarf in 2004 - RIEDHAMMER was able to access an enormous pool of experience in the manufacture of all kinds of refractory products: high-temperature tempering of carbon-containing products, high-temperature firing of basic products like MgO, MagChrome, Spinel or Dolomite and high-alumina products.

We offer a wide range of plants, tunnel kilns, shuttle kilns, tempering kilns, and customised exhaust gas combustion plants for all types of fuel, for any refractory product, no matter how complex or sensitive they may be.

The production of high-grade refractory bricks demands outstanding performance and reliability. This requires the use of modern RIEDHAMMER firing technologies and state-of-the-art solutions for the different firing processes, thus ensuring optimal results with the lowest energy consumption.





## Carbon

The first RIEDHAMMER project - a ring pit furnace for carbon baking, built in 1924 - marked the beginning of the company's outstanding technological success in the carbon industry. Nowadays, we serve this specialised market with world-beating technology for baking anodes and cathodes for the aluminium industry, electrodes and nipples for the steel industry, plus special carbon products with various applications in other industries.

Our carbon furnace 'family' consists of the Open Top model for anode baking, the Closed Type for cathode and electrode baking, and the Car Bottom type for first bake and re-bake of special carbon products and electrodes/nipples. Highly flexible furnace configurations and dimensions ensure each application is a customised, ultra-performing solution that operates under optimal environment-friendly conditions.

With their proven, long-lasting refractory design, excellent temperature distribution, optimised temperature profiles, low specific fuel consumption, low emissions, excellent working safety and many other features, our baking furnace plants combine reliability, economic efficiency and product quality for customers all over the globe. Our technology solutions range from the supply of engineering packages to the execution of turnkey projects and the provision of long-term service contracts.



## Revamping

RIEDHAMMER kiln plants are long-lasting investment goods that remain true to our principle:

*"Sometimes it's only one little thing, sometimes a completely new concept, that can bring many advantages"*

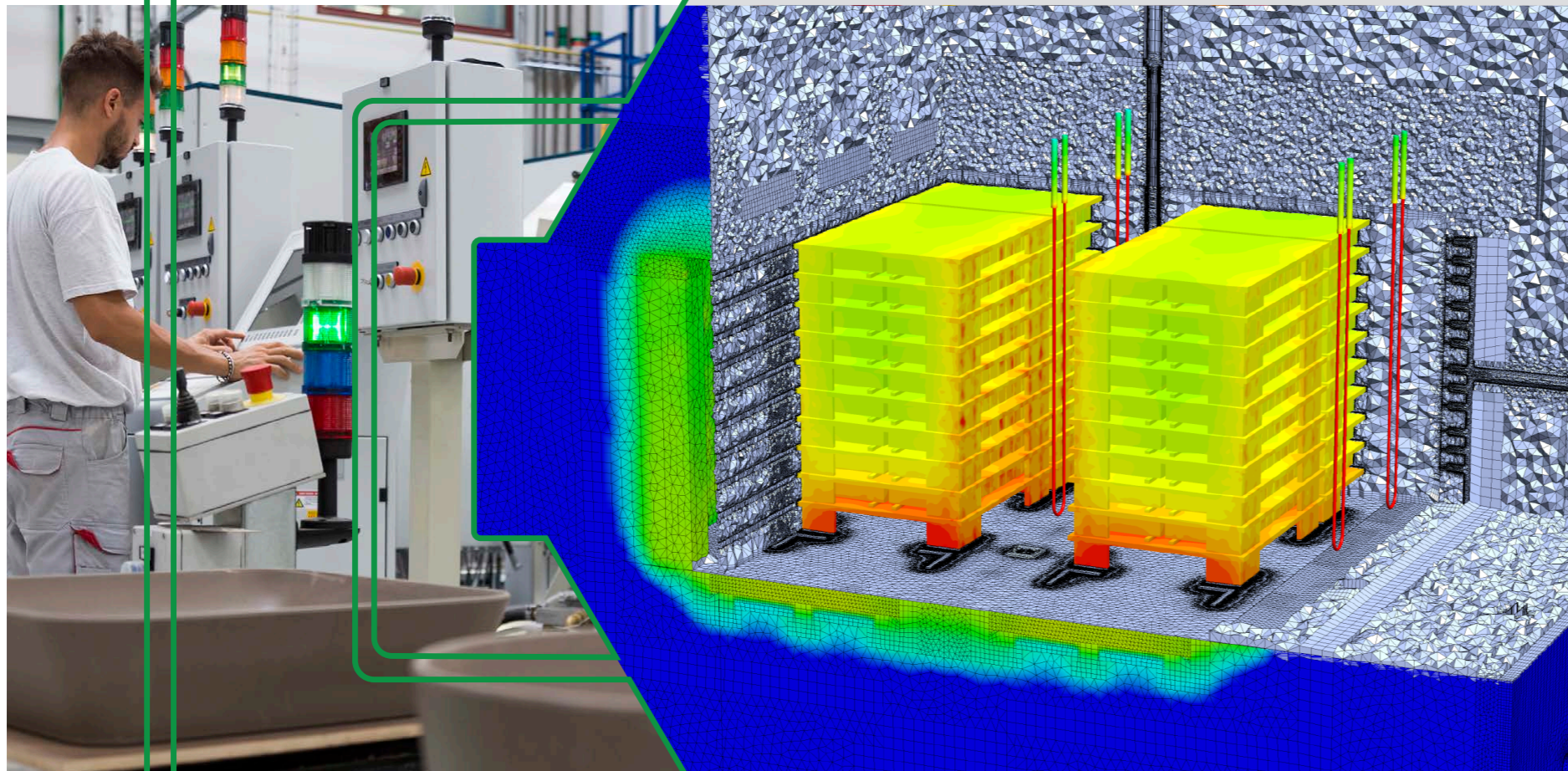
Following an initial inspection of their existing kiln plants, we offer customers an in-depth consulting service on plant maintenance or plant modernisation/optimisation, focusing on:

- Reduction of energy consumption and energy recovery
- Increased production with improved, repeatable quality
- New or improved display systems
- Automation and handling systems
- State-of-the-art MCS (Measurement and Control System) technology
- Safety equipment upgrades to EN 746 standards
- Optimisation of the entire plant
- Advice on exhaust gas scrubbing systems to meet environmental requirements

# OUR COMMITMENT

- **Trust and reliability** – We guarantee efficient customer service, staying on schedule throughout the project via meticulous project management and close engagement with customers.
- **Quality and performance** – There can be no compromising with quality and performance. First-rate plant solutions are tailor-made to our customers' needs in full compliance with our DIN ISO 9001:2015 quality management standards.
- **Continuous development and innovation** – Plant development and optimisation is a must: it draws on all our know-how, takes into account the latest product developments and trends, makes use of any new materials or components on the market and employs cutting-edge calculation and simulation tools as a matter of course.
- **In-house skills and expertise** - Staff training and development, at both group and individual level, are essential to the company's success, enhancing social responsibility and generating value for the company over time.
- **Highest HR safety standards** - Safety measures on company premises and job sites all over the world ensure global safety for our employees and local workers.
- **Teamwork** - Regular staff events strengthen the sense of community, enhancing teamwork and creating an empowering workplace atmosphere.
- **Respect for resources and the environment** without sacrificing kiln performance is a key goal. Lower energy consumption and CO<sub>2</sub> emissions are achieved through innovative technology such as energy management systems, energy re-use, gas-saving combustion technology, intelligent heating and energy-efficient kiln insulation.
- **Customer care** – We provide customers with close support throughout the working life of the machine or plant so they can count on optimal performance at all times and continue to get the most from their investment for many years to come.





## R&D AT THE RIEDHAMMER APPLICATION CENTER

Our RIEDHAMMER Application Center (RAC) offers the following tests/analyses to find the optimal solution for each customer's specific requirements:

- Development of optimal firing and atmosphere profiles
- Thermal analysis (Dilatometry, DTA (DSC), TG – DTG)
- Assessment of physical and thermal properties
- Firing tests in various kiln types and atmospheres (oxidising, reducing or inert gas)
- CFD simulations of gas flow and heat transfer processes
- Validation tests of new components and kiln solutions

Our kiln plant design process involves the development of firing technology, evaluation of highly exposed kiln components, testing of refractory materials, burners, heating elements and other kiln components, analysis of firing defects, emissions measurement and much more.

RIEDHAMMER actively cooperates with renowned universities and research institutes and takes part in technical symposia, ensuring we are able to provide state-of-the-art innovation.

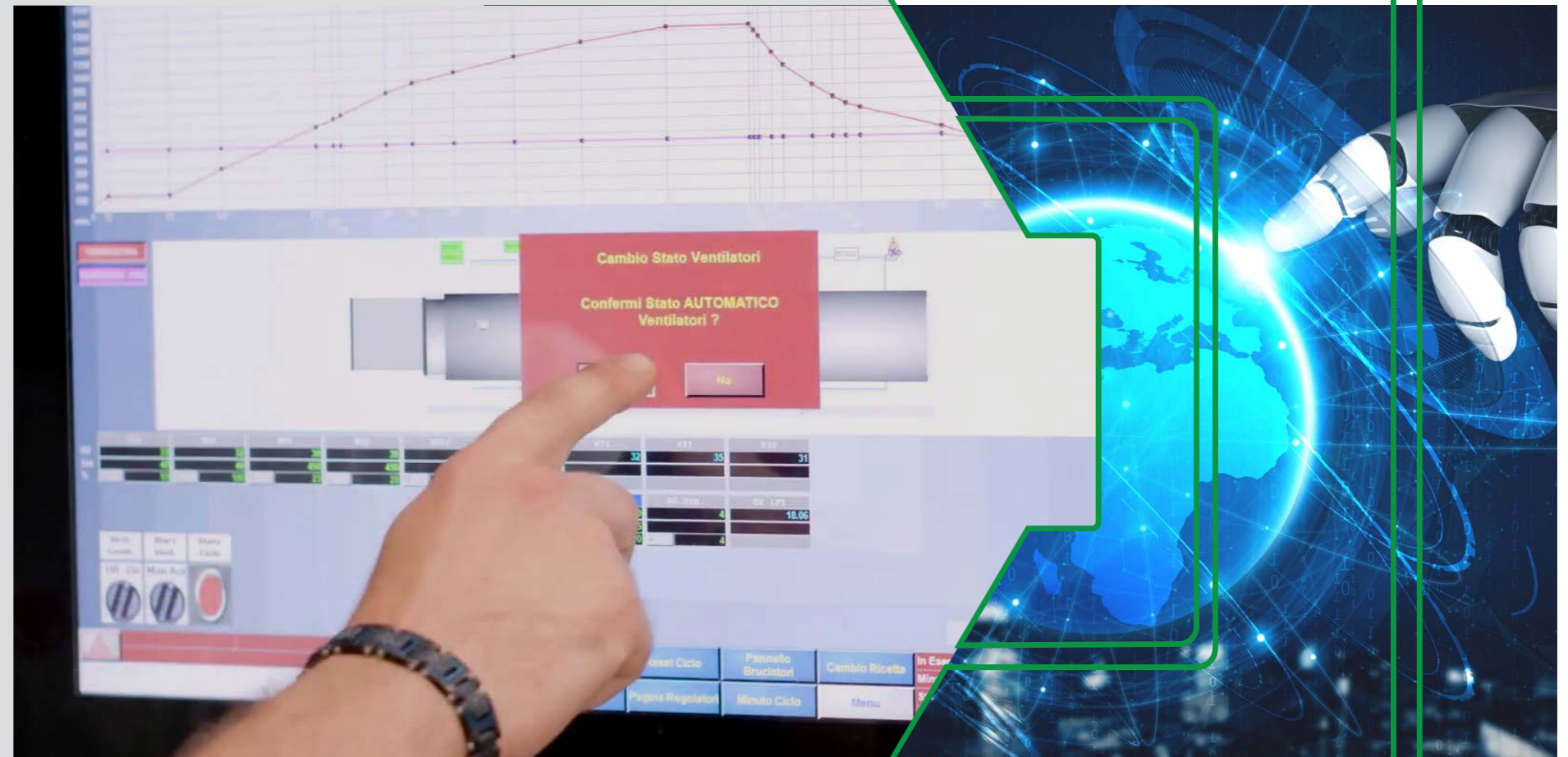
# OUR VISION

## Our 4.0 VISION FOR SMART KILN PLANTS

- Optimised spare parts management
- Remote maintenance
- Monitoring of component wear
- Device operation tutorials
- Data transfer to mobile media
- Data logging of key information
- Kiln monitoring and control
- Collection and analysis of kiln signals/alarms
- SACMI Group-integrated smart factory

## ADVANTAGES

- Increased data availability for customers
- Better kiln/production management
- Enhanced safety
- More accurate production
- Maximised productivity, premium quality
- Optimised plant engineering and kiln output efficiency
- Greater flexibility
- Higher quality





## SERVICE AND CUSTOMER CARE

**RIEDHAMMER guarantees ongoing support and professional advice during and after kiln assembly and start-up, ensuring customers can optimise manufacturing conditions for their respective businesses.**

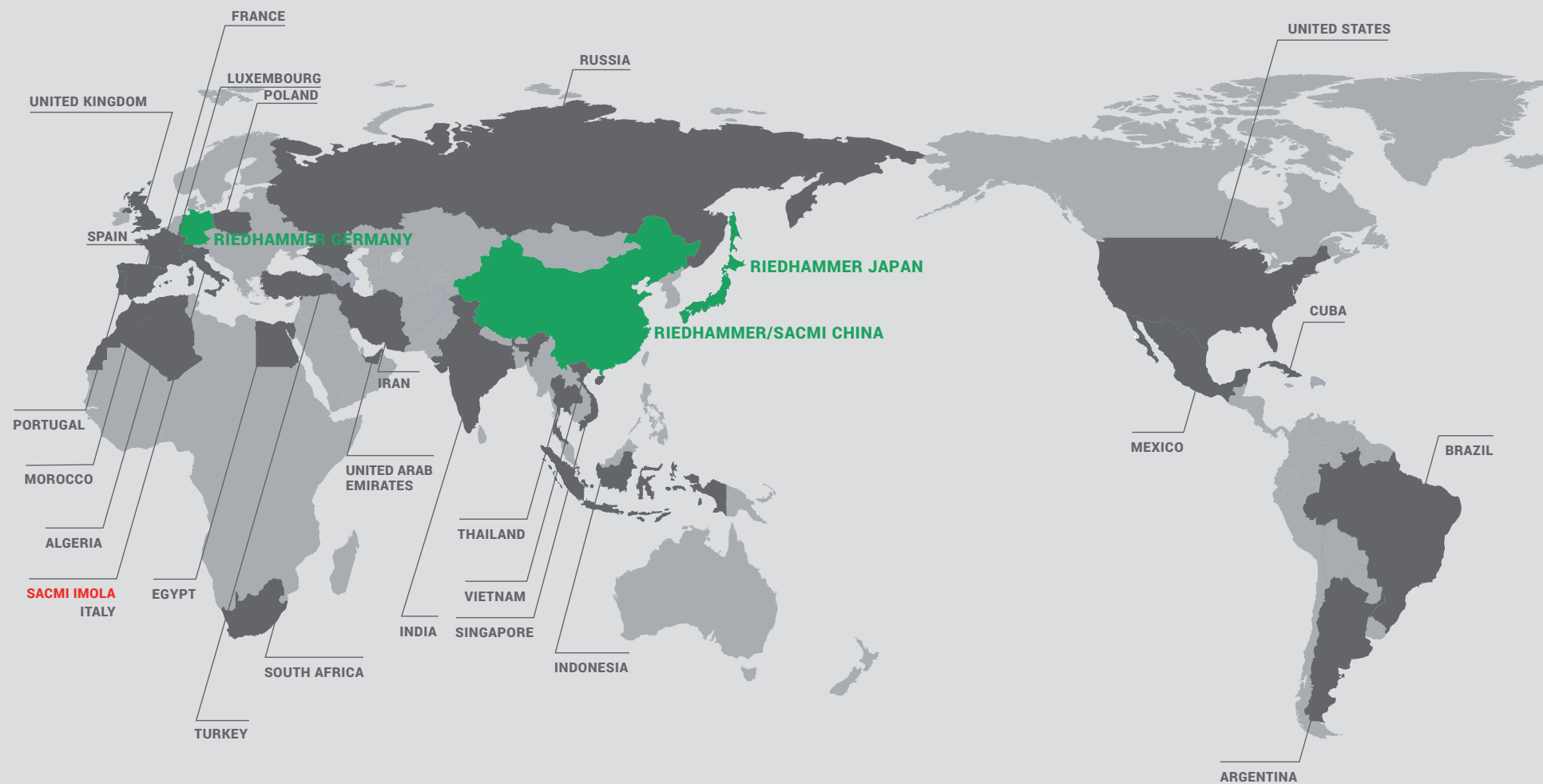
Our global Technical Assistance team, Spare Parts team and worldwide network of representatives - not to mention the branch offices in China and Japan - offer highly efficient customer and spare parts services whenever and wherever required:

- Technical assistance during plant assembly and start-up to ensure attainment of quality and quantity goals
- Training courses for customers' technicians at RIEDHAMMER or on-site
- Troubleshooting and optimisation of products/processes thanks to assistance from specialised technicians directly at the production plant
- Regular kiln inspections and preventive maintenance to ensure routine maintenance and repair work is performed properly, thus minimising the risk of unplanned kiln stoppages which could lead to significant costs
- Remote assistance to establish a direct link between RIEDHAMMER staff and the customer's workers or interact directly with the machine to optimise performance in real time or solve problems
- Definition of an initial spare parts stock plus fast delivery of original spare parts to ensure kilns are always working efficiently

Our RIEDHAMMER teams ensure kiln plants are always fully operational. This is done by organising all assembly, commissioning, training, optimisation, maintenance and repair work, all in close collaboration with the customer, and supplying all necessary spare parts, even at short notice.

## RIEDHAMMER & SACMI GROUP IN THE WORLD

We are where you are





## **RIEDHAMMER**

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