Business model

What we do

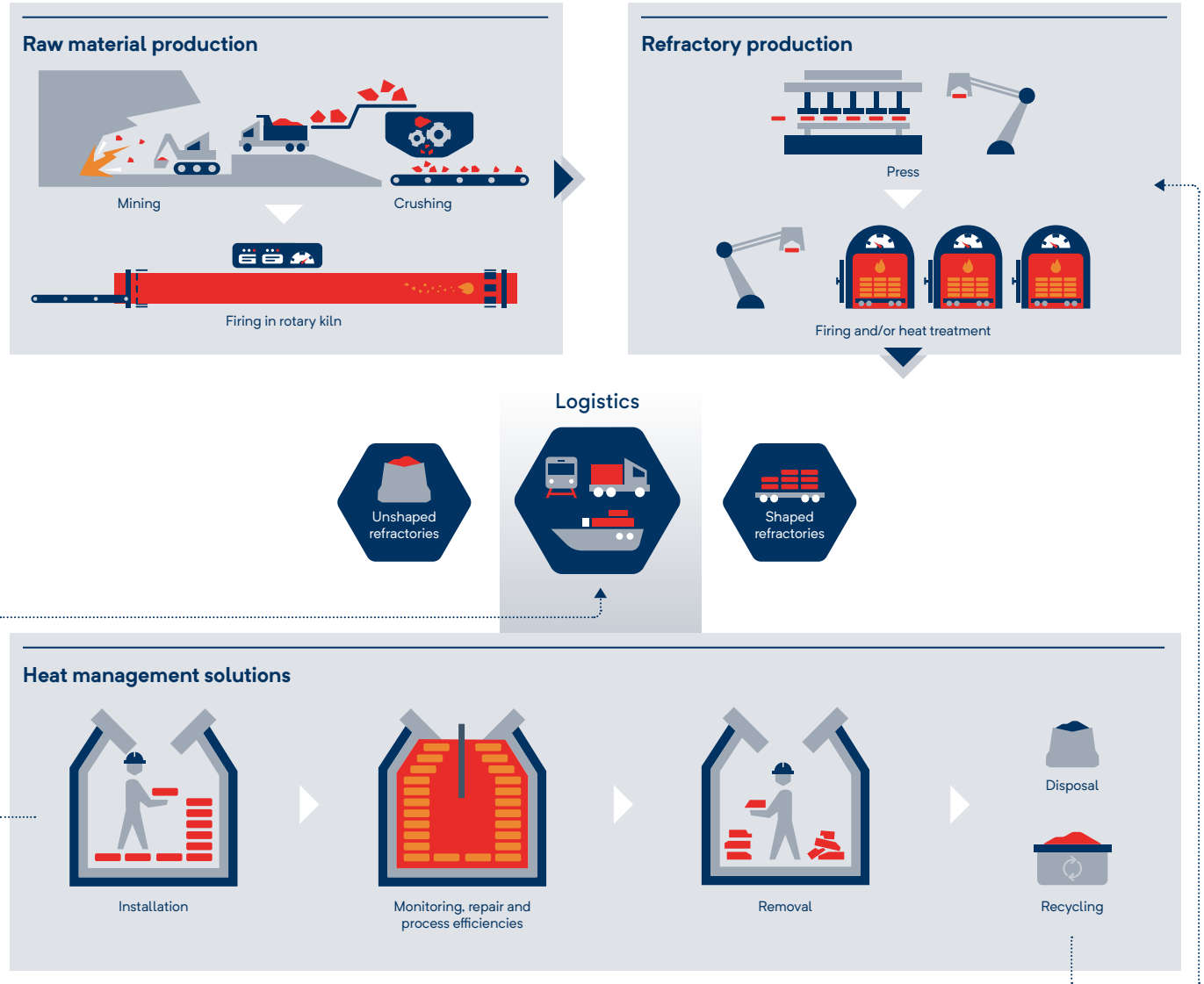
We offer our customers high-quality refractory products, supported by industry-leading R&D and underpinned by our vertically integrated structure which provides certainty of supply of low-cost, high-quality magnesite-based raw materials.

We mine and process c.50% of the raw materials used in our production facilities from internal sources. At our production facilities, the mixing, pressing, and firing of refractories takes place. In addition to the refractory product itself, we offer solutions to our customers including logistics, design, installation, monitoring, recycling and disposal. Our suite of digital products provides our customers with intelligence and insights into the refractory lifecycle at their plants, improving productivity and driving efficiencies. Our comprehensive product range and expertise enables us to offer full heat management solutions to customers who are seeking to improve production efficiency and lower their costs and environmental impacts. This unique service offering is one of our key differentiators. Heat management solutions contracts made up 32% of revenue in 2022 (2021: 29%).

Refractory products are used in all high-temperature industrial processes to protect equipment in a plant from hot molten metal. Without refractories, key industries such as steel, cement, metals, glass, energy and chemicals could not operate. Refractories withstand hostile conditions including heat and chemical corrosion, maintaining their form and function at temperatures over 1,200 °C. They protect equipment such as furnaces and kilns against thermal, mechanical and chemical stress.

RHI Magnesita has customers all over the world, and serves them through its global footprint, spanning North and South America, Europe, China, India, the rest of Asia and the Middle East. Around 70% of revenue is generated from selling refractory products and solutions to our steel customers, with the remaining c.30% of revenue generated from other industrial customers (including industries such as cement, non-ferrous metals, glass and industrial applications).

The main product groups include refractory bricks or mixes, and more specialised flow control products such as slide gates, nozzles and plugs.



Our value chain

High-quality raw materials sourcing, production and recycling

We have a unique ability to cover and service every step of the value chain, through our vertical integration and we offer distinctive customer solutions based on our technological leadership, expertise and cost competitiveness.

Our low-cost raw material assets make a positive contribution to Group margins, when compared to the cost of acquiring equivalent raw materials from external suppliers. In 2022, this contributed 2.5% towards a 11.6% margin.

One of the most important raw materials for refractory production is magnesite, which the Group mines in both underground and surface mines. Magnesite ore is crushed and fired at 1,800°C in special kilns. During this process, CO_2 is released, and density is increased as $MgCO_3$ is calcined to MgO.

Production of refractories

Raw materials are mixed and combined with chemical additives to be sold as mixes, or some are further processed into shaped refractory products. Shaped refractory bricks are pressed into different sizes and shapes depending on the specific application, employing pressures of up to 3,200 tonnes.

After pressing, shaped refractory bricks are tempered at temperatures of up to 350°C and may be further subjected to firing at 1,800°C in tunnel kilns for a number of days. Unfired products are primarily used in the steel industry, whilst the main applications for fired products are in the cement, non-ferrous metals, process and mineral industries.

Installation, monitoring and complex issue solving

A key component of RHI Magnesita's ability to add value lies in our solutions offering, which includes the installation, monitoring, repair, removal and recycling of refractory products at customer sites by experienced employees.

Digital monitoring products allow us to observe refractory performance, safely extending the usable life of the refractory, whilst remote gunning solutions can carry out intermediate repairs while the refractory is in use.

After use in a customer's production process, some residual refractory linings can be removed and reused, as secondary raw materials in the production of new refractories. One tonne of secondary raw material contributes to a saving of 1.8 tonnes of CO_2, compared to if the product had used virgin raw material.

RHI Magnesita therefore operates across the entire cycle from raw material production to recycling of spent material into new finished products. Thanks to a new joint venture with Horn & Co. to form Horn & Co. RHIM Minerals Recovery GmbH ("MIRECO"), we reached our 2025 recycling target of 10% three years early.

Innovation, research and development

One of the fundamental drivers of our business model is innovation and R&D, supported by strong internal expertise in materials technology and digitalisation. RHI Magnesita continues to drive innovation, with significant opportunities identified in the fields of automation, robotics and sustainability, and aims to devote 2.2% of revenues per year to R&D and Technical Marketing. Investment in R&D and Technical Marketing in 2022 was €77 million, representing 2.3% of revenues. We are committed to protecting the integrity of our expanding intellectual property, and currently have 1,674 active patents and 1,719 active trademarks globally. New products launched in the last five years represented 19% of revenue in 2022 (2021: 16%).

Product marketing, sale and delivery

RHI Magnesita has more than 70 sales offices worldwide and services customers in more than 100 countries. We operate 33 production sites including seven raw material sites (excluding recycling centres), strategically located in order to serve our customers as efficiently as possible.

The closer we work with our customers, the greater the difference we can make for them. Having a global network of offices, research centres and production sites is important to us, and to them.

How we engage with our stakeholders
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