RHI MAGNESITA

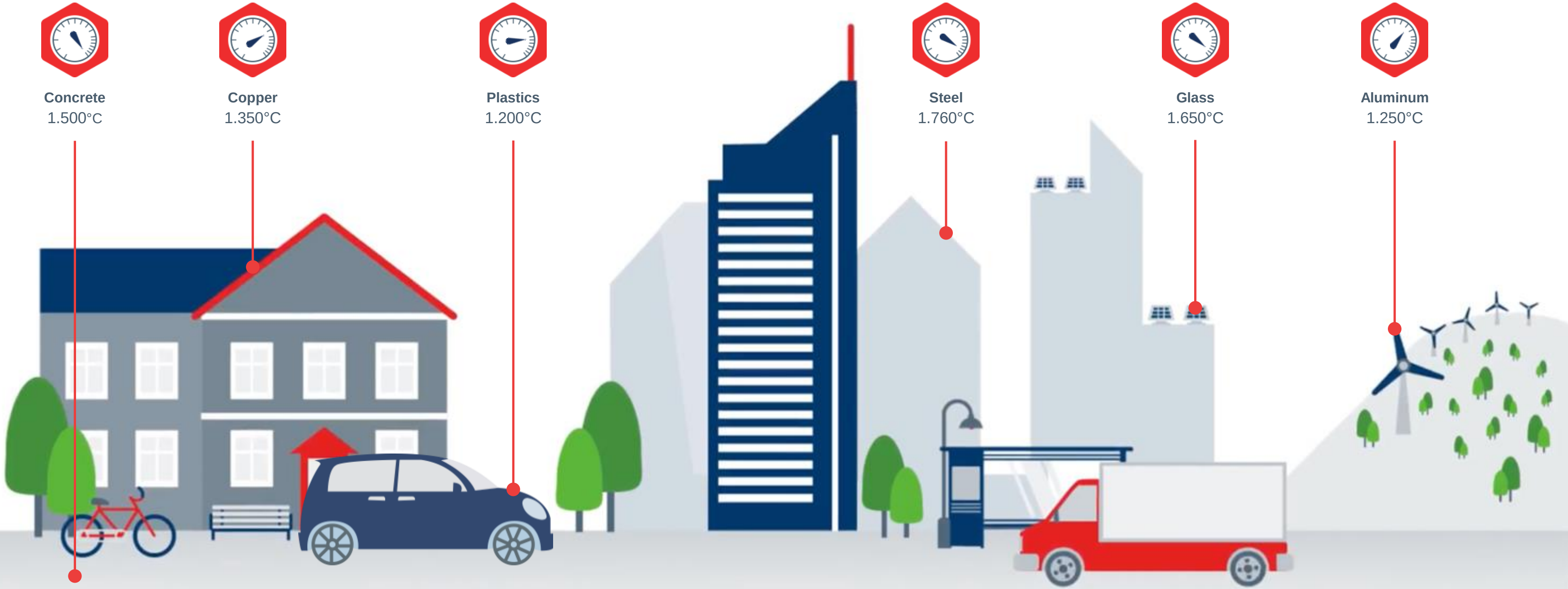
The future of refractories in Europe.

26th September 2018

Can we stand the heat?

Why do refractories matter?

Essential for almost everything surrounding us!



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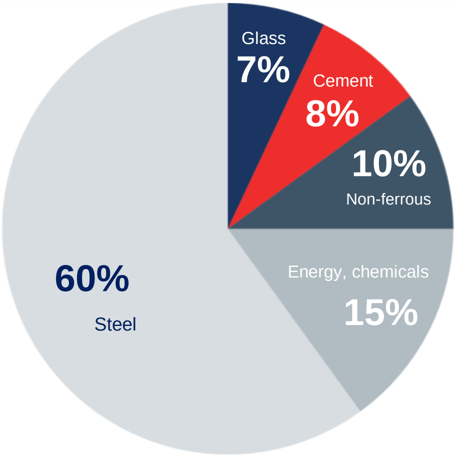
Refractories

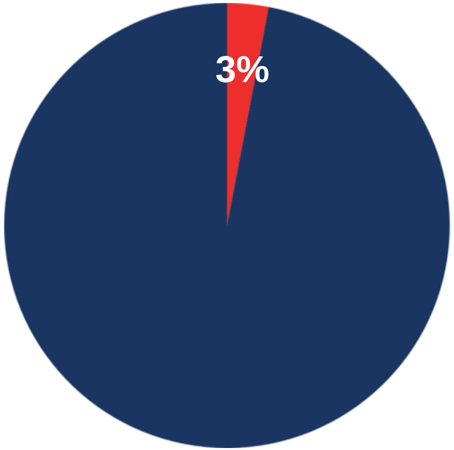
€ 20 bn

world wide
industry



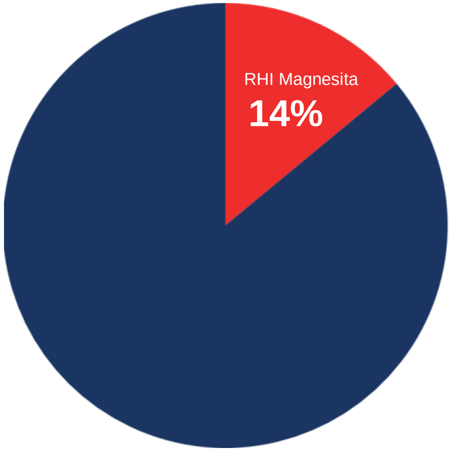
3% COGS

in Steel
manufacturing



14%

Global
market share



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RHI Magnesita – from raw materials to refractories

The global player in the refractory industry

13
Raw material sites

35
Main production sites

180
Countries shipped to worldwide

€ 2.7 bn
2017 pro forma revenue

10,000
Customers

>14,000
Employees

70
Sales offices

>120,000
Individual products

RHI MAGNESITA

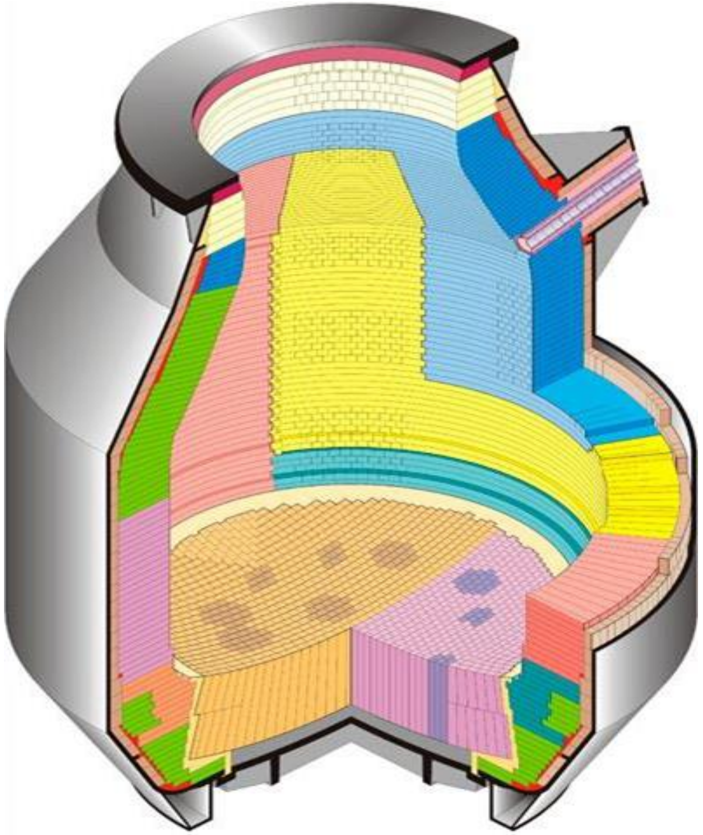
Customized product range

We keep thousands of customers in steel, cement, glass and other industries

Highly individualized products for each customer and each application

>120,000

Individual products

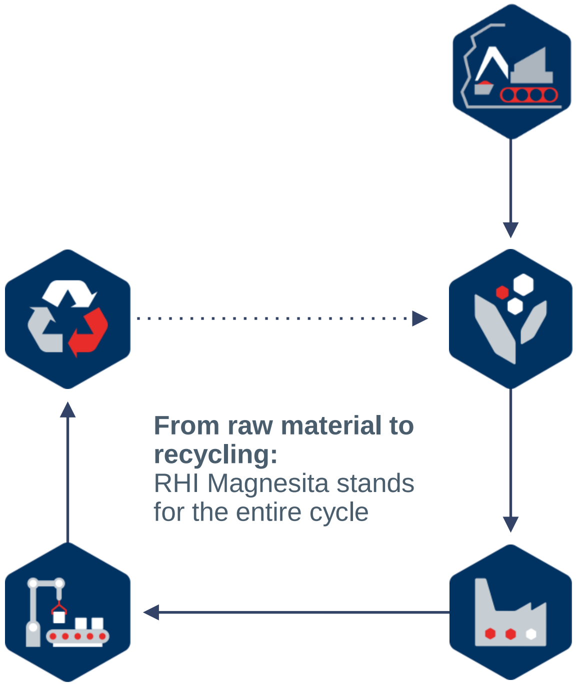


A value chain from mining to the final product **– and beyond**

Security of supply

Implementing innovations along the value chain

With a strategic approach to recycling



Unrivalled competitive advantage through vertical integration, in multiple sites

1.6 million

tonnes of raw materials produced per year

70%+

vertical integration in basic raw materials and 50%+ for all raw materials

Certainty of supply | **High quality materials** | **Cost competitiveness**

Our raw materials

What do we mine?

Raw materials

- Magnesite
- Sea Water
- Dolomite

Intermediary products

- Dead burned magnesia
- Fused magnesia
- Dead burned dolomite
- Calcined caustic magnesia

Final products

- Bricks
- Monolithics & pre casts
- Functional products

Various approaches to raw materials

How do we mine?

Open pit

Brumado (Brazil)

Uberaba (Brazil)

Underground

Breitenau (Austria)

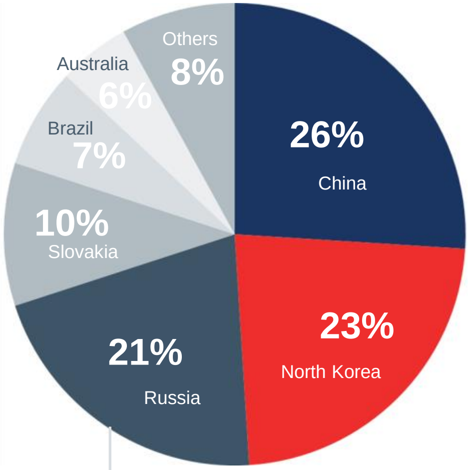
Sea water

Drogheda (Ireland)

70% of Global magnesia capacity concentrated in China, DPRK and Russia, though production focused in CN

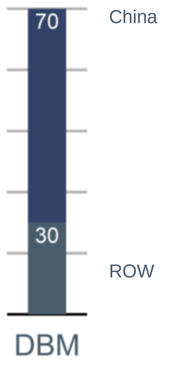
Global Magnesia resources and production capacity

Resources [m tons]



Top 3 countries
ca. 70%

Production capacity



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Do we still want **Mining in Europe?**

Do we still want Mining in Europe?

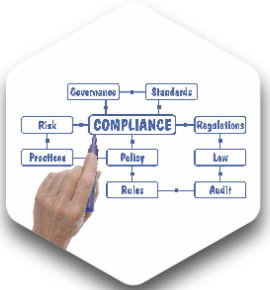
Digitization

Competitiveness

Security of supply

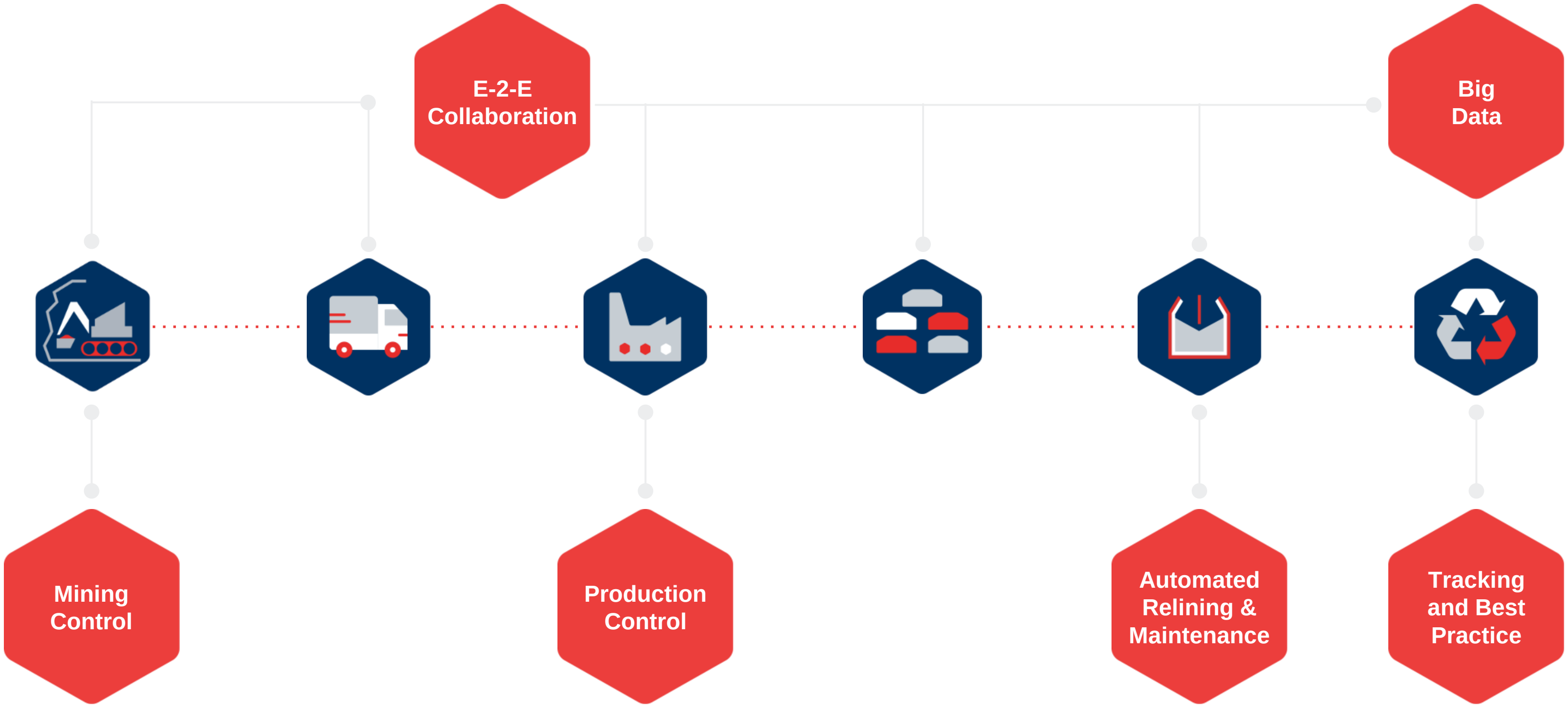
Independence for Europe

Regulatory framework



Long-term perspective

Digitization – Where we are heading to



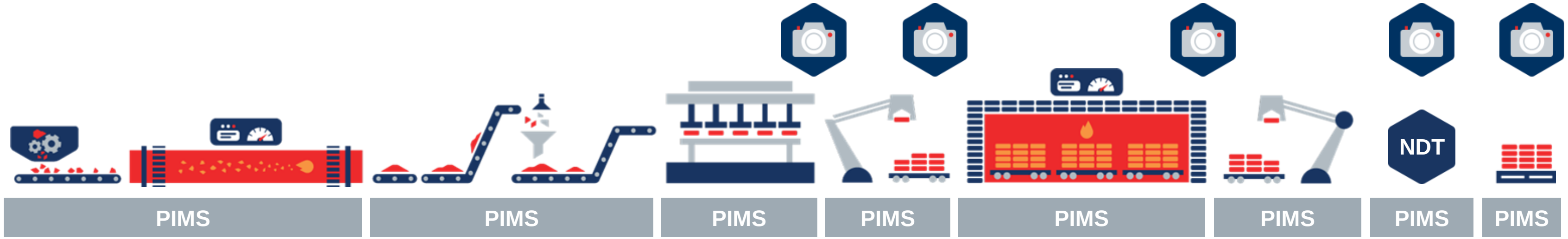
Example Digitization: Digital Fingerprint

Idea:

- Full traceability
- Connection of products and production process

Benefits:

- Deep understanding of product quality
- Improved production processes
- Live-monitoring of product quality
- Digital Twin
- Long-term vision: Self learning value chain from mine to recycling

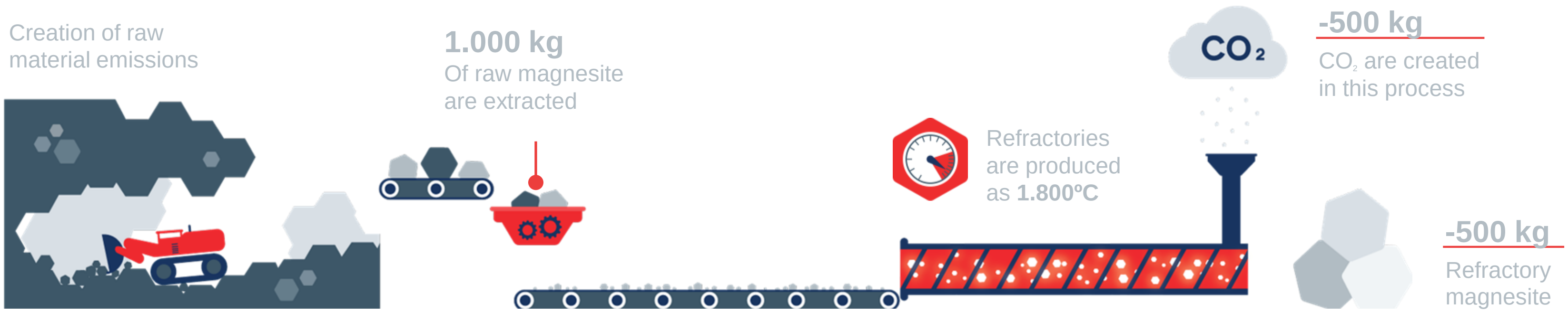


Regulatory Framework

Are we just a collateral damage?

Example CO_2

- Natural geogenic emissions are unavoidable by nature
- Recycling cannot replace mining
- Europe has to make a choice: Do we want a strong industry in Europe or somewhere else?



$MgCO_3 \rightarrow MgO + CO_2$

Regulatory Framework

High regulatory burden – a barrier to resource efficiency

Potential

1t = -1t

In general, **each ton** of recycled refractory products would save approx. **1 ton of CO_2**

Three topics

End of waste

Harmonized interpretation of the **end-of-waste** criteria in the member states for the refractory industry, similar to the area of construction waste.

Cross-border waste shipments

Inclusion of carbon-bonded refractories in the "**Green List**" for **non-hazardous waste.**

Ecotoxicity assessment - HP14

Uniform application of the **calculation method** for the assessment of **ecotoxicity** and uniform bio-test throughout the EU - or at least mutual recognition of the methods of the member states.

Uniform regulations for a single market.

For effective recycling and an optimized value chain, a **harmonization** of the **legal framework conditions** is urgently needed.

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Can Europe stand the heat?

Get in touch

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