VESUVIUS PLC

Company overview

March 2021

LEADING THE WORLD OF MOLTEN METAL FLOW ENGINEERING

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Who we are

We are a **global leader in molten metal flow engineering** and technology, primarily serving the global steel and foundry industries.

We offer **customised products, solutions and services** to help our customers increase their efficiency and productivity, enhance quality, improve safety and reduce their costs and their environmental impact.

>95% of our **products are consumable in nature** and therefore linked to the volume of steel or metal castings which our customers produce.

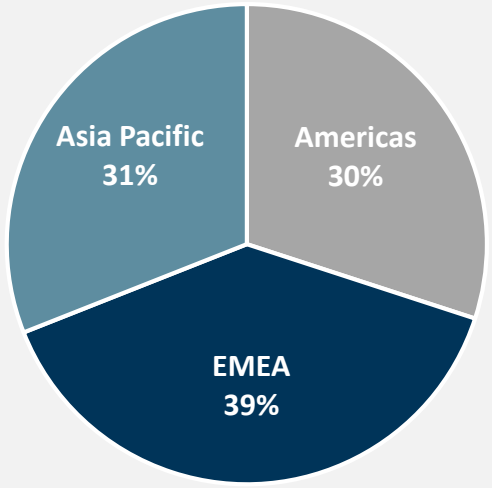
#1
in Steel Flow Control & Foundry consumables

Technological leader with **6** main R&D centres

53
Production sites

c.10,300
Employees worldwide

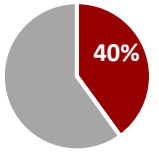
A worldwide presence (Turnover 2020)



VESUVIUS

Steel division overview – Flow Control

Revenues[1]



Offering:

- **Flow Control:** Products, systems and services to regulate and protect the flow of steel in the continuous casting process

Market Position:

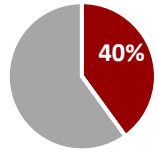
- Global market leader in Steel Flow Control, significantly larger than next closest competitor

- Our customers are steel producers
- Structurally growing crude steel production and the above average market growth of 'high-technology steel' are key drivers of demand for our Flow Control products
- Our products help our customers increase their efficiency and productivity, enhance quality, improve safety and reduce their costs and their environmental impact

Note: 1. Based on FY 2020 Revenues

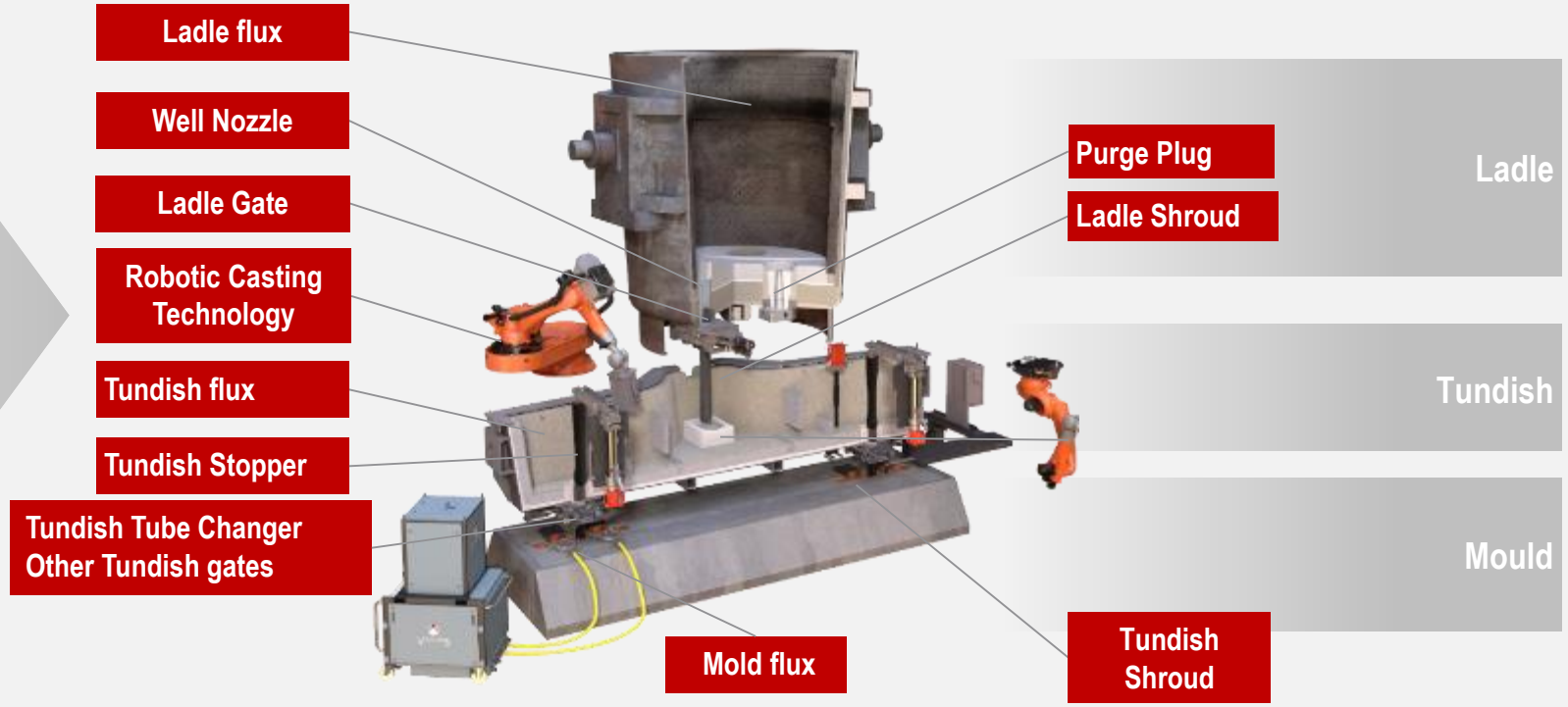
Steel division overview – Flow Control

Revenues[1]



- Vesuvius Steel Flow Control products are highly specialised products used in the continuous casting part of the steel process

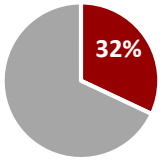
Mechatronics: Vesuvius has a unique value proposition that is based on perfect collaboration between **Robotics**, **Flow Control Systems** and associated **Refractory Consumables**



Note: 1. Based on FY 2020 Revenues

Steel division overview – Advanced Refractories

Revenues[1]



Offering:

- **Advanced Refractories:** Installation expertise and materials that withstand extreme temperatures and offer corrosion resistance at customers' facilities

Market Position:

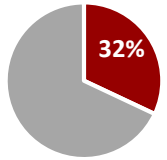
- One of the Top-5 players in Advanced Refractories

- We supply specialist refractory materials for lining steel-making vessels which are subject to extreme temperatures, corrosion and abrasion
- We provide advanced installation technologies including robots, computational fluid dynamics capabilities and laser systems for measuring refractory wear
- Our main customers are steel producers, representing c. 80% of the revenue of the business unit, and other industries operating at high temperatures such as aluminium, cement, etc., representing c. 20% of the revenue of the business unit

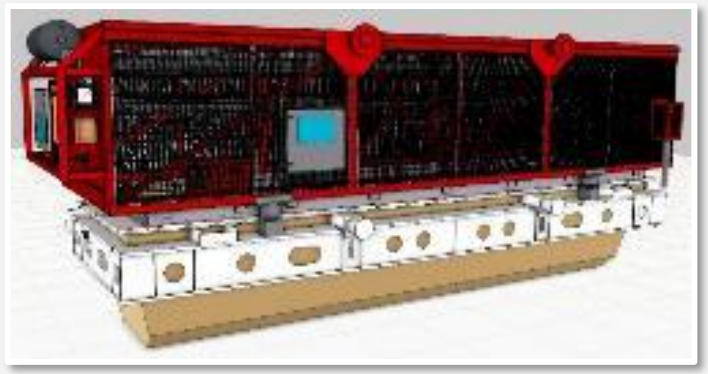
Note: 1. Based on FY 2020 Revenues

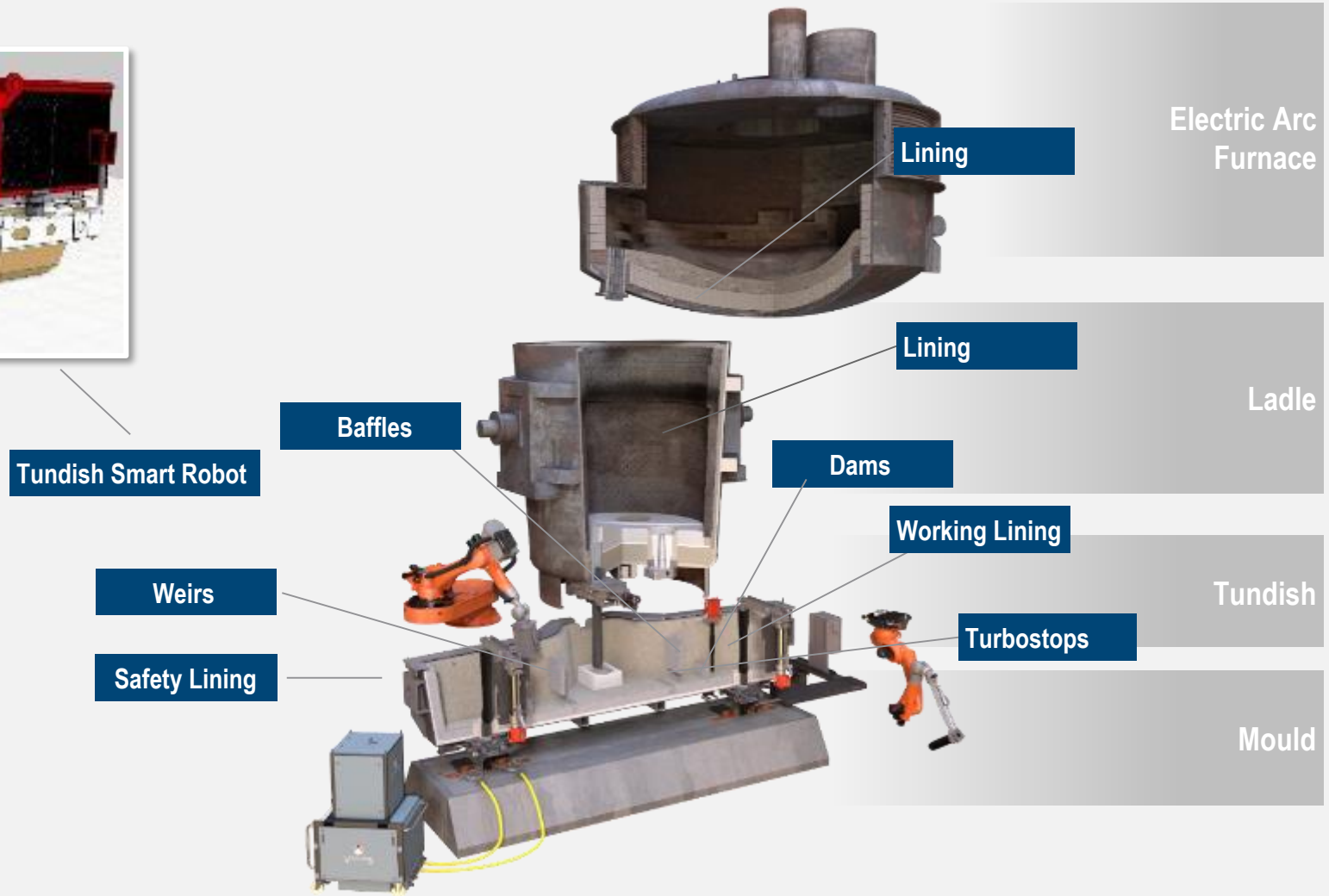
Steel division overview – Advanced Refractories

Revenues[1]



Vesuvius Advanced Refractories products

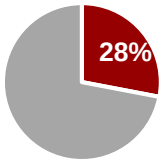




Note: 1. Based on FY 2020 Revenues

Foundry division overview

Revenues[1]



Offering:

We are a solutions provider for our customers, supplying a combination of products, technical advice and application support to improve performance and quality of ferrous and non-ferrous castings

Market Position:

- Market leader in the key core product lines of filters; feeding systems; and coatings

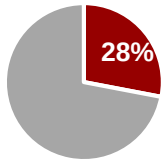
Vesuvius uses the Foseco brand in the Foundry markets

- We provide a comprehensive range of ceramic and other consumables used in foundry processes
- Our products make up less than 5% of the total cost of manufacturing, yet are critical to the overall quality and yield of the final casting
- Worldwide presence and excellence in product innovation from network of technology centres
- Some examples of our solutions delivering clear performance improvements
  - **Truck OEM customer.** Our filters reduced scrap by 75%
  - **Iron elevator housing customer.** Our feeding systems increased yield from 55% to 74%
  - **Aluminium customer**. Energy saving of 13% by adopting our energy saving crucibles
  - **Automotive OEM customer.** Introduction of our automated metal treatment for casting of pistons, minimized defects and improved mechanical properties

Note: 1. Based on FY 2020 Revenues

Foundry overview – key products

Revenues[1]



FEEDING SYSTEMS

Help avoid shrinkage defects and improve casting yields, reducing the amount of non-productive metal

CRUCIBLES

Containers that can withstand very high temperatures, used to melt/store metals

FILTERS

Remove impurities from molten metal in the casting process

METAL TREATMENT

Equipment and materials for cleaning and treating aluminium

COATINGS

Act as a barrier between molten metal and a core or mould surface

REFRACTORIES

High temperature resistant materials

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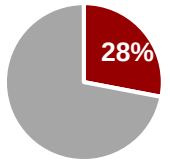
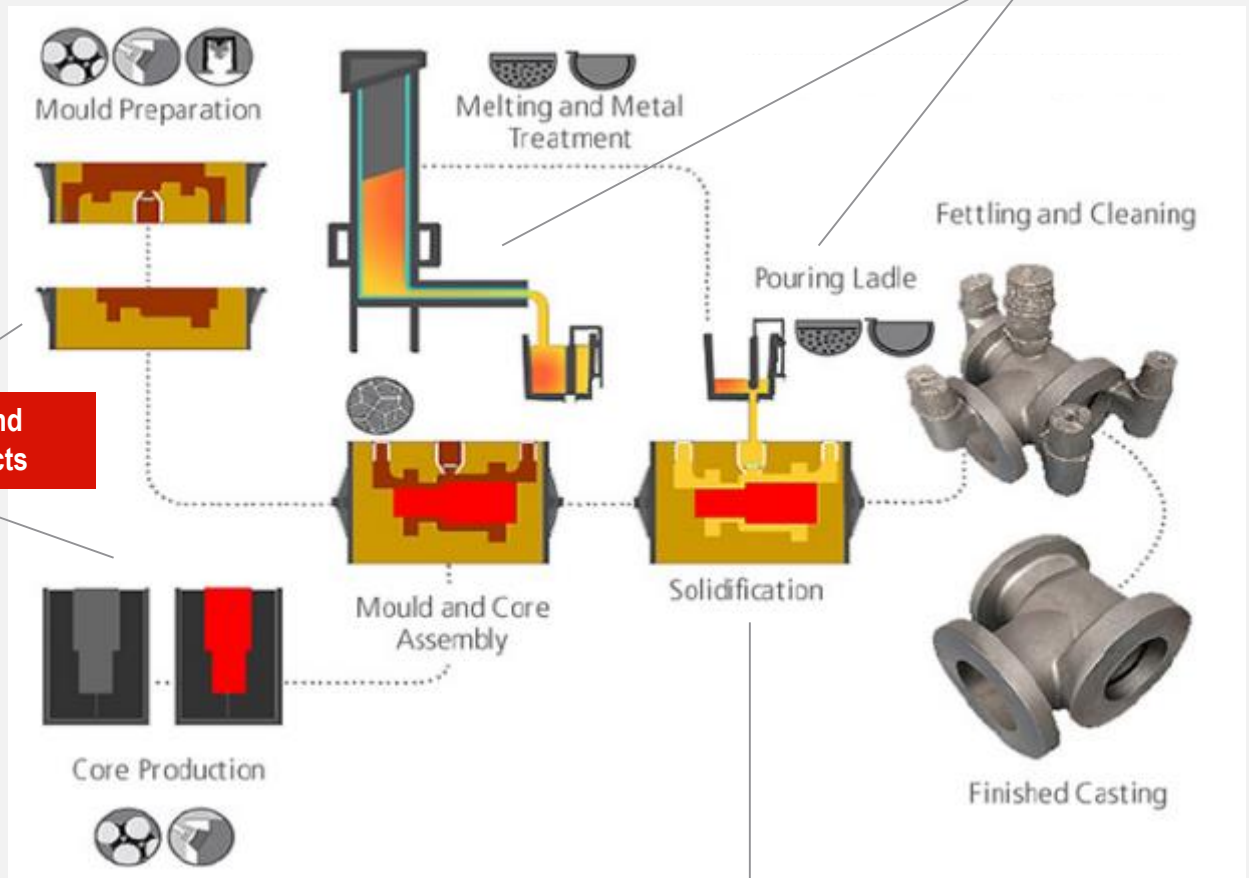
Foundry division overview

Revenues[1]



Molten Metal Transfer and Metal Treatment Products

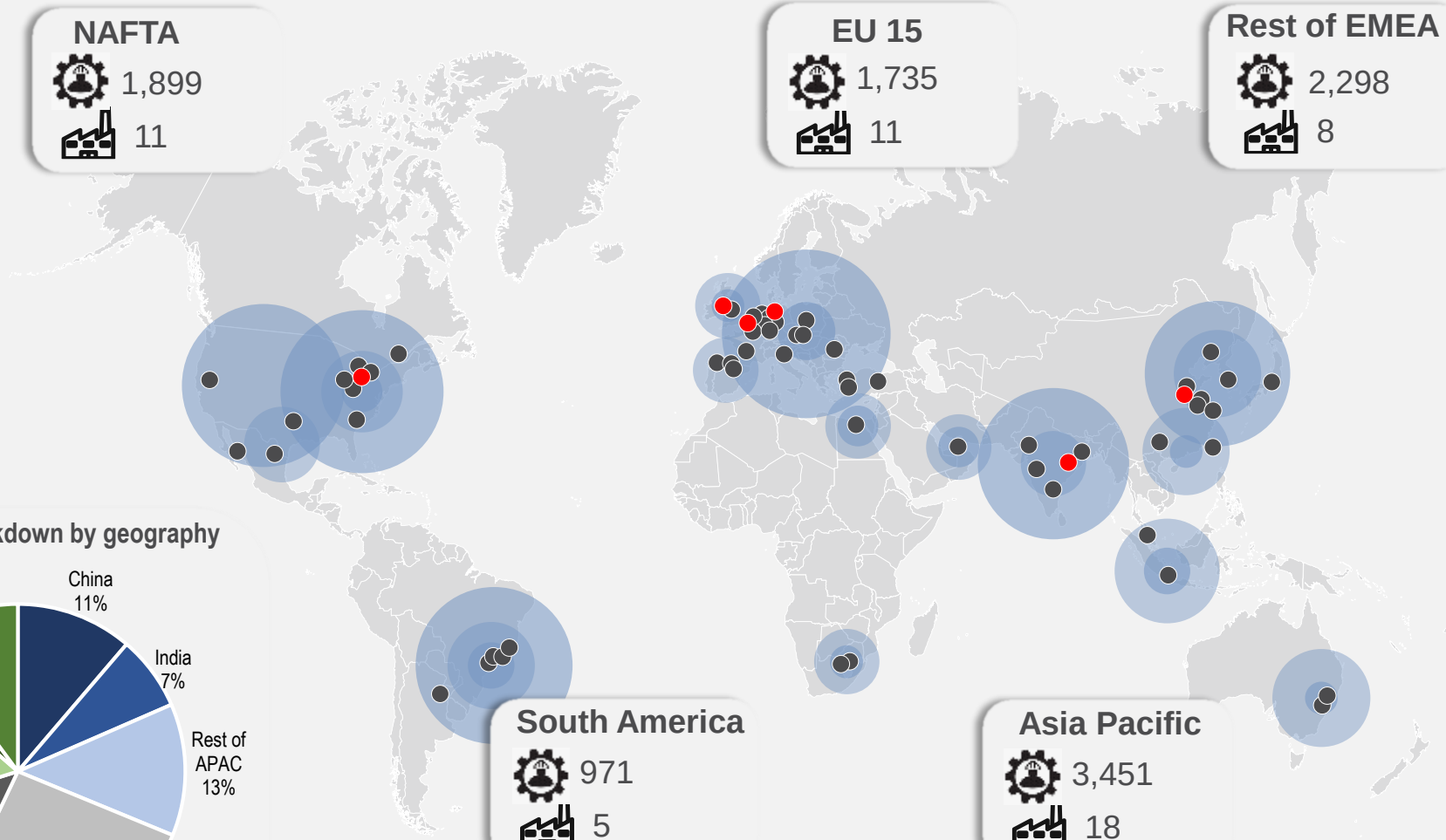
Sand Binder and Coating Products



Filter and Feeding Systems

Note: 1. Based on FY 2020 Revenues

Vesuvius: A global manufacturing and R&D footprint to serve our customers worldwide

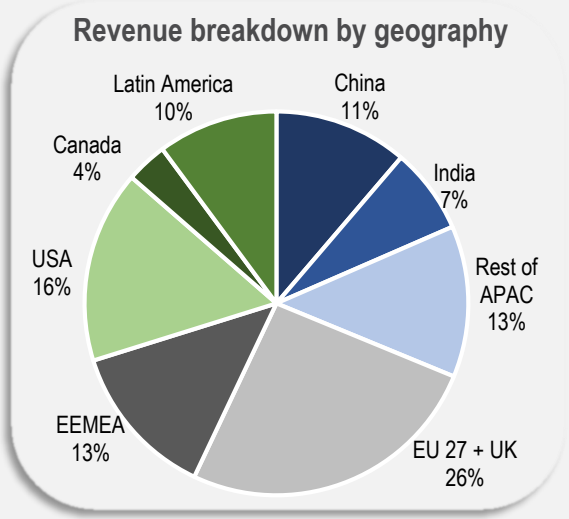


53 Production sites

6 Main R&D Centres

Operations in **41** countries on **6** continents

Production sites
Main R&D centres
Proximity to Customers
Employees
Production sites

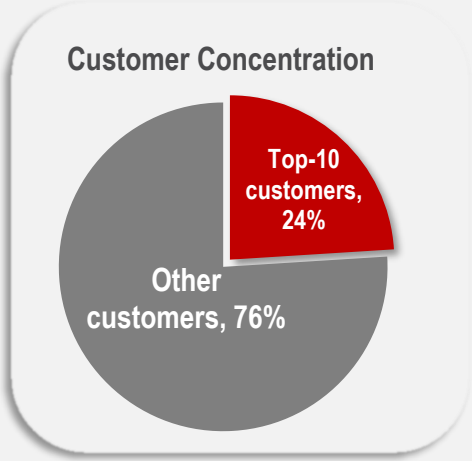


Data as of 31 December, 2020

VESUVIUS

Who our customers are

- Long standing partnerships with industry leaders
- Average length of relationships: 15+ years
- Solid and diversified customer base



Steel Division

AHMSA Altos Hornos de Mexico
AK Steel
ESSAR STEEL
ANSTEEL
Magnitogorsk Iron & Steel Works
BlueScope Steel
DANIELI
USS
ArcelorMittal
EVRAZ
NUCOR
SSAB
Severstal
USIMINAS
TATA STEEL
vallourec
JSW
thyssenkrupp
SIEMENS VAI

Foundry Division

CAT
WEIR MINERALS
COMPONENTA Casting Future Solutions
DAIMLER
IVECO
AGC
+GF+
Vestas
VOLVO
Trina
SCANIA
SCHOTT glass made of ideas
TOYOTA
Teksid

Who our competitors are

- Vesuvius is the global leader in Flow Control and Foundry products
- In Advanced Refractories the market is more fragmented and we are one of the top 5 global producers

Steel Division – Flow Control

KROSAKI HARIMA
SHINAGAWA REFRACTORIES
SINOREF
TYK
IFGL REFRACTORIES LIMITED
RHI MAGNESITA

Steel Division – Advanced Refractories

MINERALS TECHNOLOGIES
calderys a member of Imerys
RHI MAGNESITA
HWI HarbisonWalker International
PN (Puyang Refractories Group)
INTOCAST

Foundry Division

SELEE CORPORATION
ASKCHEMICALS
HA GROUP (Hüttenes Albertus Group)
圣泉集团 SQ GROUP

Strategy to deliver long-term sustainable and profitable growth

Four execution priorities drive our profitable growth strategy

1. Reinforce our technology leadership
2. Develop our technical service offering and increase the penetration of our value-creating solutions
3. Capture growth in developing markets
4. Improve our cost leadership and margins

In 2020, despite the challenges brought on by the Covid-19 crisis, we made meaningful progress on our strategy:

- We maintained our industry-leading level of R&D investment through the market downturn
- Reinforced technology leadership with the expansion of our Mechatronics Centre of Excellence and our VISO Research Centre in Belgium. We launched 10 new products and installed 3 mechatronics systems during the year
- Delivered strong performance in the growing markets of India, Vietnam, Turkey, Russia, Ukraine and South America
- Successfully completed our restructuring programme to optimise our production network and delivered higher than expected recurring cost savings from the programme

Focus on value-creating solutions: A few examples

Business unit	The product	Key product feature	Value creation for customer
Flow Control	**Duraflex ladle shrouds**	Multiple reuse and long-lasting refractory material	▪Improve safety ▪Reduce raw materials consumption ▪Reduce CO_2 emissions
Advanced Refractories	**NextGen Tundish Smart Robot**	Fully-integrated spray application system solution enabling digital data recording, tracking and remote diagnostic features	▪Improves quality ▪Increases operator safety ▪Reduces waste
Foundry	**Diamant degassing rotors**	Patented rotor design for optimised hydrogen removal from aluminium melts	▪up to 200% longer service life ▪Reduces gas consumption ▪Reduces waste ▪Lower cost per treatment

Experienced senior management team

John McDonough CBE
Chairman

- Appointed Director and Chairman of Vesuvius on 31 October 2012
- John was group Chief Executive Officer of Carillion, the support services and construction firm for 11 years until he retired in 2011
- Prior to joining Carillion, John spent nine years at Johnson Controls working for the automotive systems division
- John served as Chairman of the Remuneration Committee of Tomkins from 2007 to 2010 and as a Non-executive Director of Exel from 2004-2005

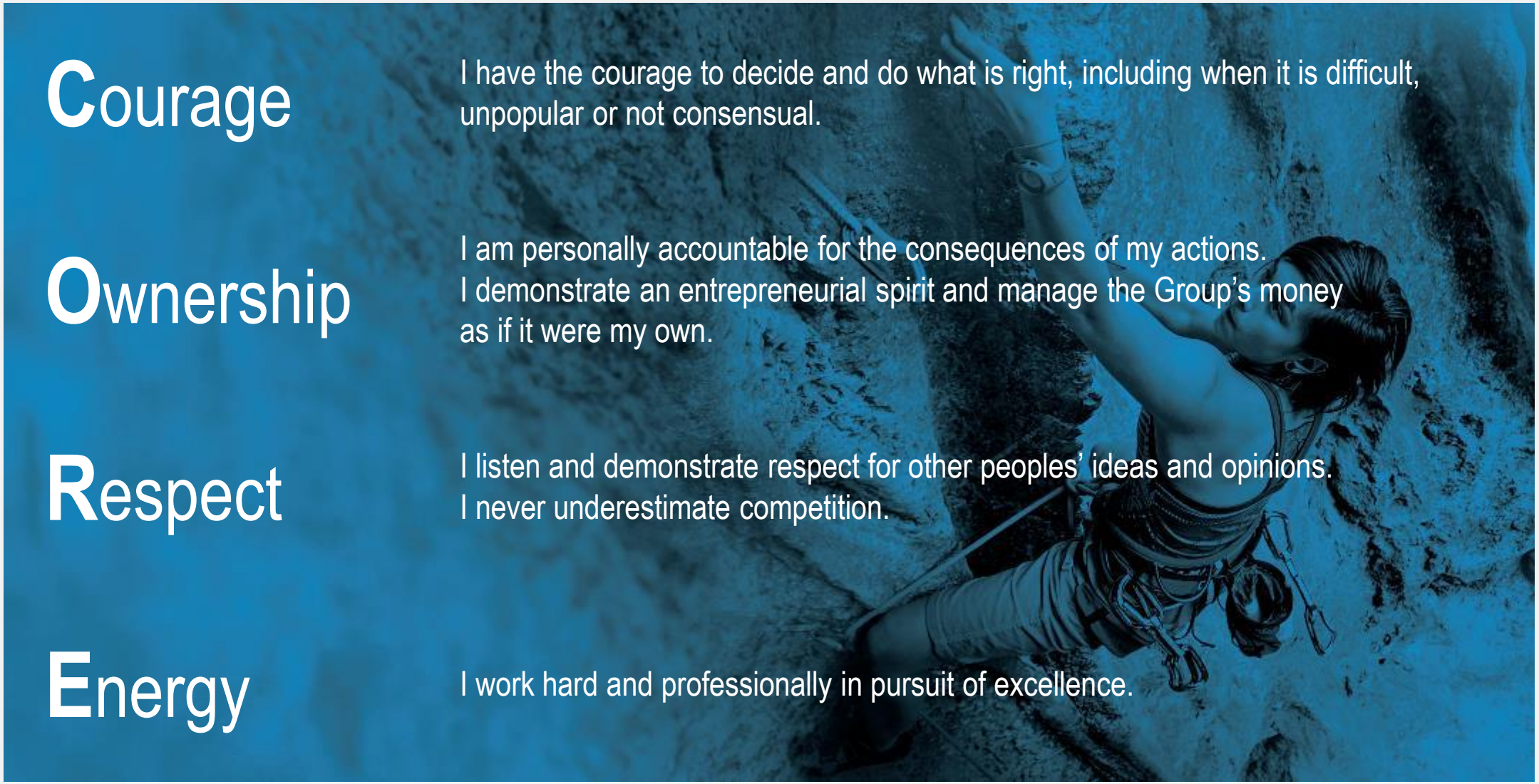
Patrick André
Chief Executive

- Appointed Chief Executive in September 2017
- Joined Vesuvius in February 2016 as President of the Flow Control Business Unit
- Prior to joining Vesuvius, Patrick worked at Lhoist, world leader in lime production, where he was the Executive Vice President Strategic Growth, CEO for Europe and CEO for Asia, CIS and Africa
- Previously, Patrick was CEO of both the Nickel and the Manganese divisions of Eramet Group

Guy Young
Chief Financial Officer

- Joined Vesuvius as CFO in November 2015
- Prior to joining Vesuvius, Guy served as CFO of the British building materials company Lafarge Tarmac
- Previously, Guy held a number of senior financial and business development positions within Anglo American and Scaw Metals Group, where he held the position of CFO from 2004-2007

Corporate values to deliver our strategy



Courage

I have the courage to decide and do what is right, including when it is difficult, unpopular or not consensual.

Ownership

I am personally accountable for the consequences of my actions.
I demonstrate an entrepreneurial spirit and manage the Group's money as if it were my own.

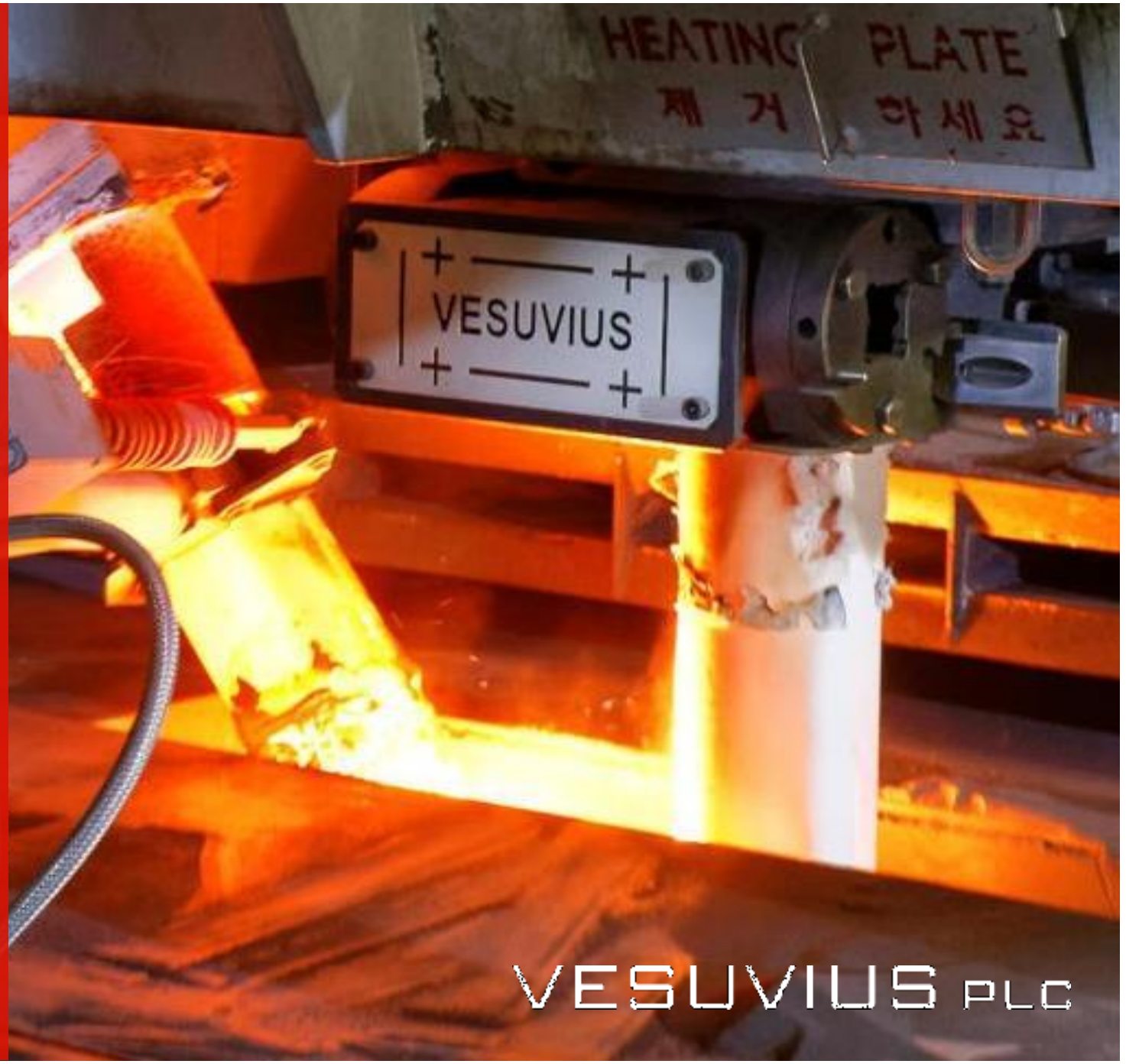
Respect

I listen and demonstrate respect for other peoples' ideas and opinions.
I never underestimate competition.

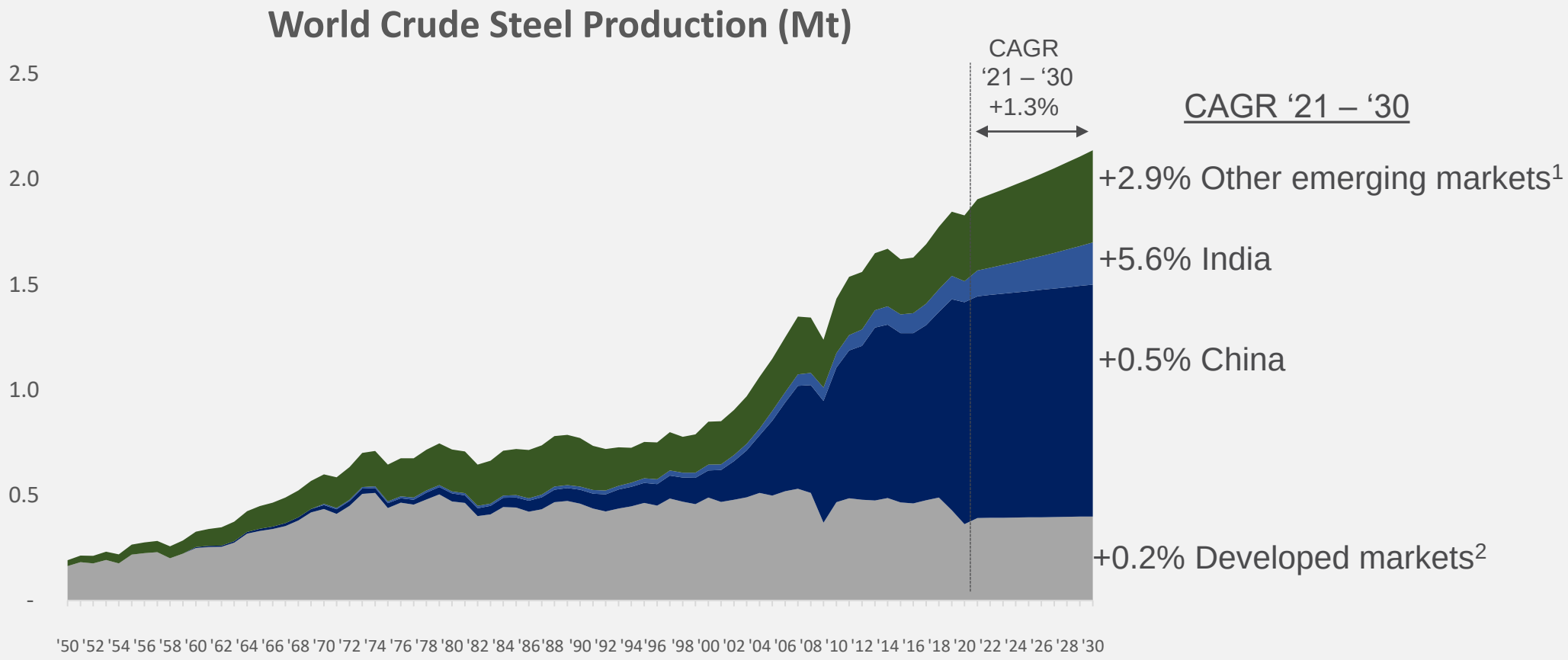
Energy

I work hard and professionally in pursuit of excellence.

Structurally growing end markets



Structural growth opportunity in steel



Sources: Historical data and 2021 forecast from World Steel Association. Forecasts from 2022 are management estimates

Notes:
1. CIS, Middle East (incl. Turkey), Africa, Latin America and SE Asia
2. EU 27 + UK, USA, Canada and North Asia

“High technology steel” is growing faster than crude steel

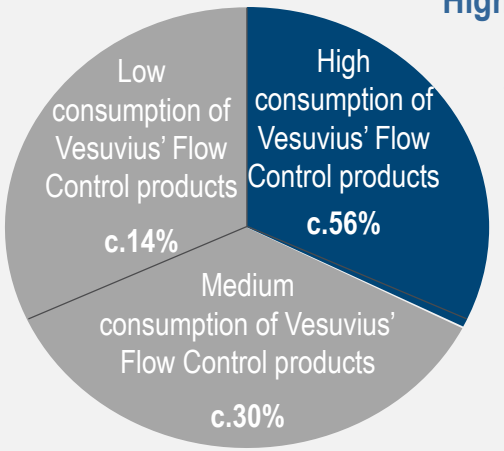
POSITIVE MIX EFFECT SUPPORTS OUTPERFORMANCE OF FLOW CONTROL GROWTH RELATIVE TO CRUDE STEEL PRODUCTION

VESUVIUS’ CRUDE STEEL PRODUCTION SEGMENTATION

(World crude steel production 2020: 1,829 mt)

“Commodity steel”
~34%
of steel production

Selected example:
- Basic rebar for concrete reinforcement



“High technology steel”
~33%
of steel production

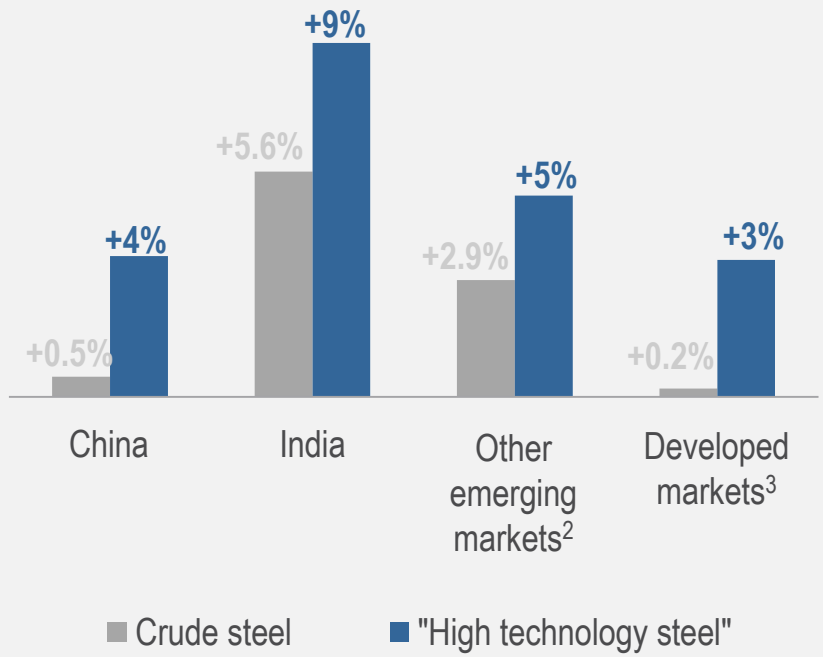
Selected examples:
- Near Net Shape production process[1]
- Stainless steel
- Engineering steel (bearing, shafts, tools,…)
- Automotive

“Medium Technology steel”
~33%
of steel production

Selected examples:
- Construction sheets (roofing, cladding,…)
- Heavy plates for ship building, pipe,…

“HIGH TECHNOLOGY STEEL” GROWTH VS. STEEL PRODUCTION GROWTH

CAGR (2021 – 2030)



Notes: 1. Continuous manufacturing process of very close to final (net) shapes
2. CIS, Middle East (incl. Turkey), Africa, Latin America and South East Asia
3. EU 28, USA, Canada and North Asia

Source: Management estimates

“High technology steel” is growing faster than crude steel

POSITIVE MIX EFFECT SUPPORTS OUTPERFORMANCE OF FLOW CONTROL GROWTH RELATIVE TO CRUDE STEEL PRODUCTION

Examples of applications of HIGH TECHNOLOGY STEEL driving growth

Wind turbines require high strength steels

Wind energy requires 8 – 10 times more steel per MWh of energy than fossil fuel derived energy

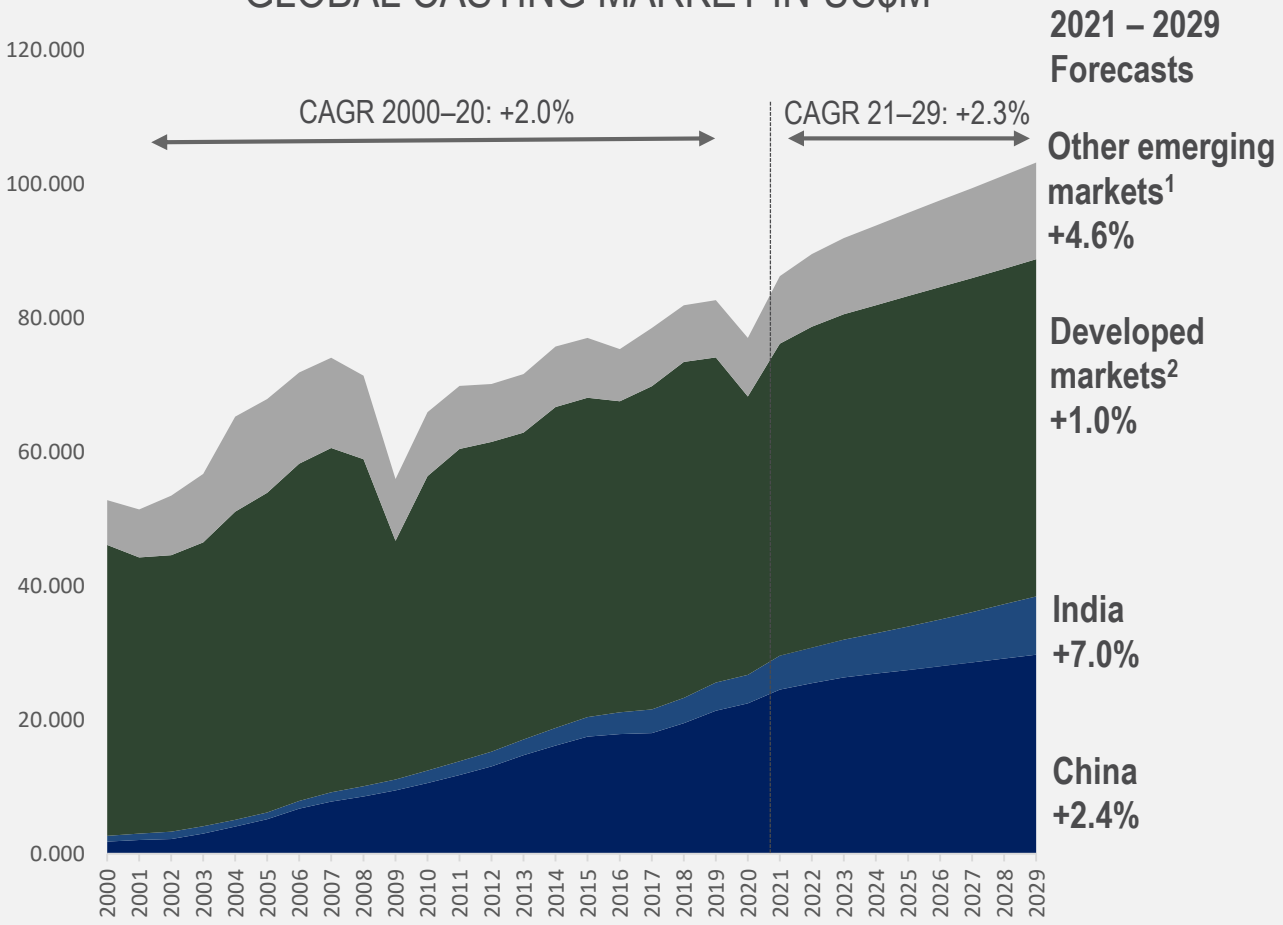
Advanced steel cans are produced from “high technology steel” because of the need to achieve a challenging combination of thin gauge and high rigidity / strength

Increasing use of “near net shape[1]” (thin strip casting, etc...) production process because of its cost effective characteristics (i.e. reduced plant space and CO_2 emissions)

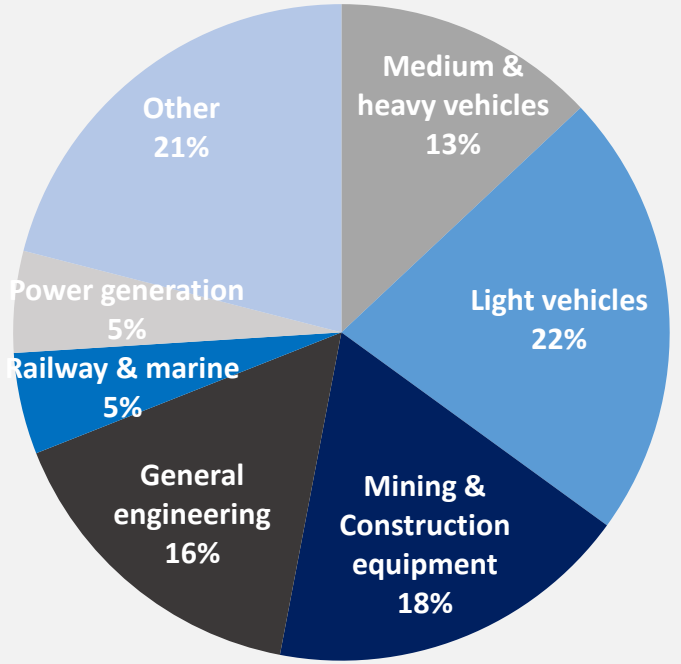
Note: 1. Continuous manufacturing process of very close to final (net) shapes

Foundry Casting production is structurally growing

GLOBAL CASTING MARKET IN US$M



VESUVIUS FOUNDRY END MARKETS



Source: Global casting market data (historical and forecasts) from Oxford Economics
Notes: 1. CIS, Middle East (incl. Turkey), Africa, Latin America and South East Asia
2. EU 28, USA, Canada and North Asia

Foundry Casting production is structurally growing

VESUVIUS OPERATES IN FOUNDRY SEGMENTS
GROWING FASTER THAN THE UNDERLYING MARKET

STRUCTURAL SHIFT IN THE FOUNDRY INDUSTRY

towards higher sophistication
and increasingly complex castings

COMPLEX CASTINGS

- ✓ Cleaner metal
- ✓ Lighter weight
- ✓ Complex shapes with thinner sections

- CUSTOMERS REQUIRE MORE VALUE ADDED PRODUCTS AND SERVICES TO MINIMISE METAL LOSS AND DEFECTS
- VESUVIUS' FOUNDRY DIVISION PROVIDES COMPUTATIONAL FLUID DYNAMICS ("CFD") SIMULATION AND CASTING DESIGN ADVICE TO ACHIEVE THE DESIRED QUALITY

Vesuvius operates in Foundry segments growing faster than the underlying market

COMPLEX CASTINGS REQUIRE INNOVATIVE PRODUCTS FROM VESUVIUS' FOUNDRY DIVISION

Examples of applications in the foundry industry driving growth

Development of more sophisticated iron alloys with better mechanical properties for heavy commercial vehicles

Increased use of wind power generation drives growth in high-value super-sized castings

Increasing demand for complex light weight castings to compensate for heavy batteries in hybrid and electric vehicles

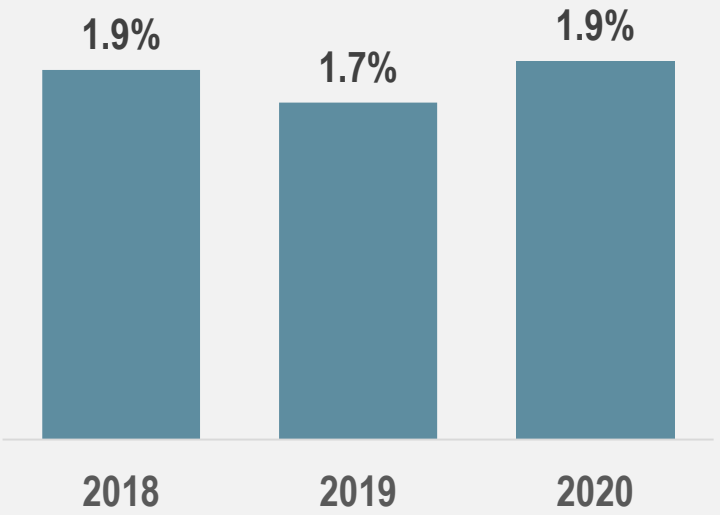
Increasing use of turbochargers in internal combustion and hybrid vehicles

Vesuvius' technological leadership enables outperformance of underlying markets

- R&D reinforces our product pipeline with new innovative products and solutions which will support our future organic growth
- We are focused on combining developments in robotics, automation and data analytics capabilities with our well-established material science research
- In 2020, we maintained our industry-leading level of R&D spend as a percentage of revenue at 1.9%
  - Going forward we remain committed to spending c.2% of sales on R&D

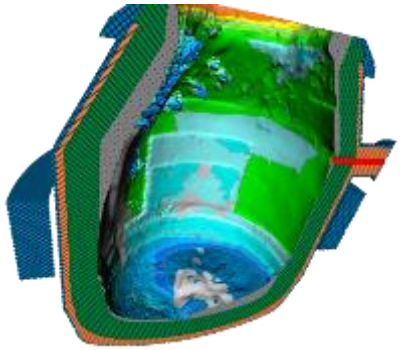
Main R&D Centres of Excellence

R&D Spend as % of Sales



Vesuvius' technological leadership enables outperformance of underlying markets

Selected examples of Vesuvius' advanced products and solutions



LASERS

Scanned image of a basic oxygen furnace created by one of Vesuvius' lasers showing the refractory wear spots in the lining

Enables targeted repair, delaying need for costly full replacement

MATERIAL SCIENCE

New generation of Vesuvius Flow Control refractories

The new design and material recipe offer enhanced performance in a large range of applications

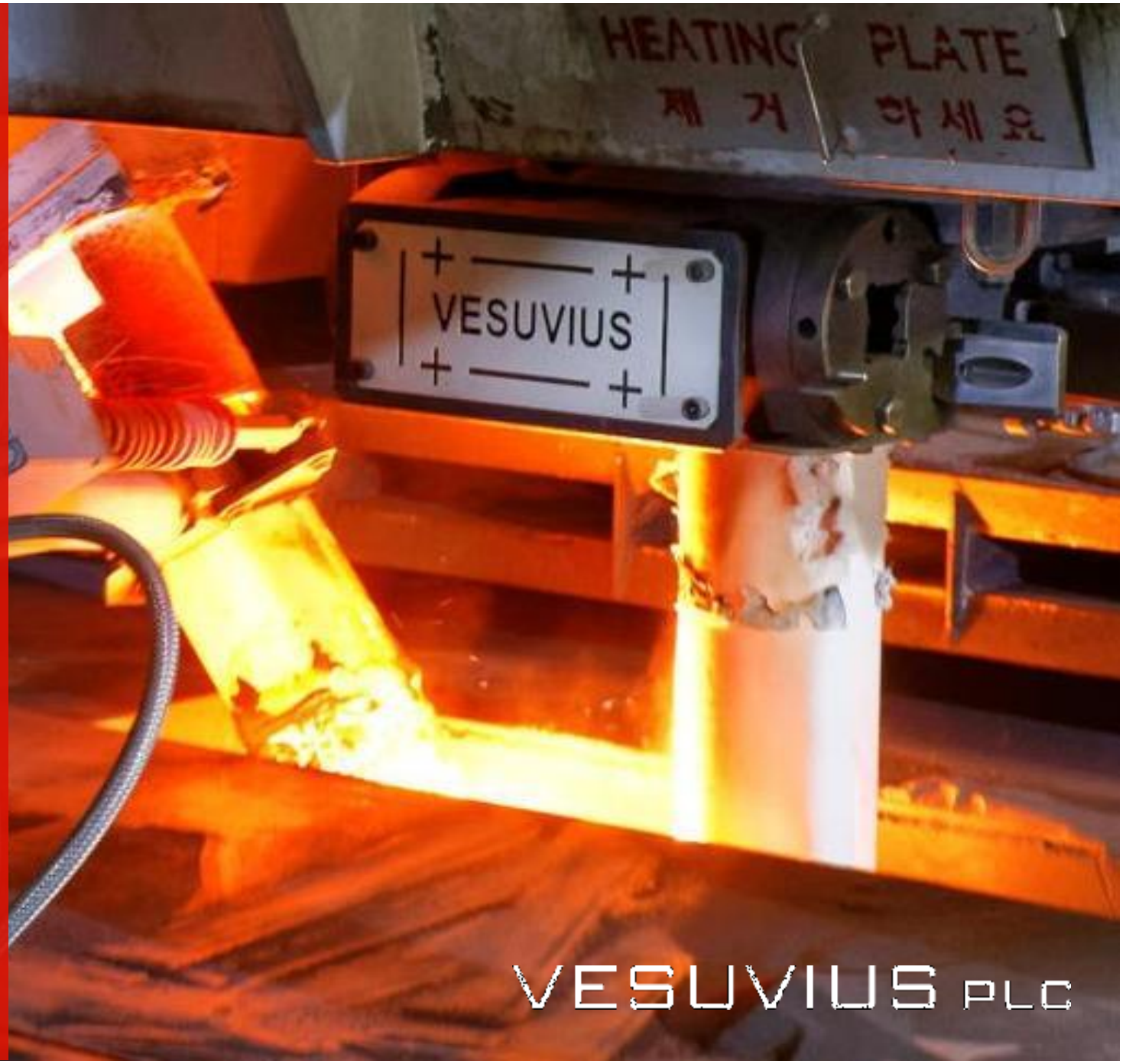
ROBOTICS

Combined (robotics and consumables) patented solutions offered to our customers worldwide to install and replace Vesuvius' consumables

COMPUTATIONAL FLUID DYNAMICS ("CFD") CAPABILITIES

Optimises casting or refractory design and helps deliver the highest possible quality casting or steel

Group Sustainability Initiative



Sustainability at Vesuvius

Objective to reach NET ZERO carbon footprint by 2050 at the latest

Progress follow-up:

- 9 intermediate targets
- 56 KPIs monitored
- Establishment of the **Vesuvius Sustainability Council**

Intermediate Targets

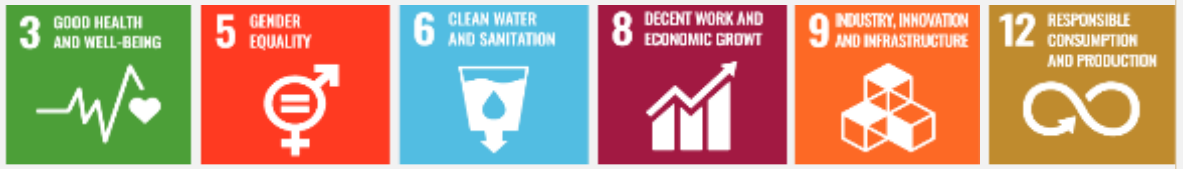
1 Energy consumption	2 Energy CO_2e emissions	3 Wastewater
4 Solid waste	5 Recovered & recycled materials	6 Safety
7 Gender diversity	8 Supplier sustainability assessments	9 Compliance training

WE SUPPORT UN GLOBAL COMPACT

UN Global Compact

Reflects our commitment to the UN principles in the areas of human rights, labour, the environment and anti-corruption

Our targets directly support 6 of the UN SDGs

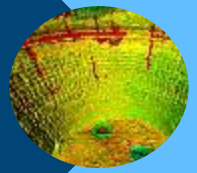


Sustainable Development Goals

Positive momentum on our intermediate ESG targets

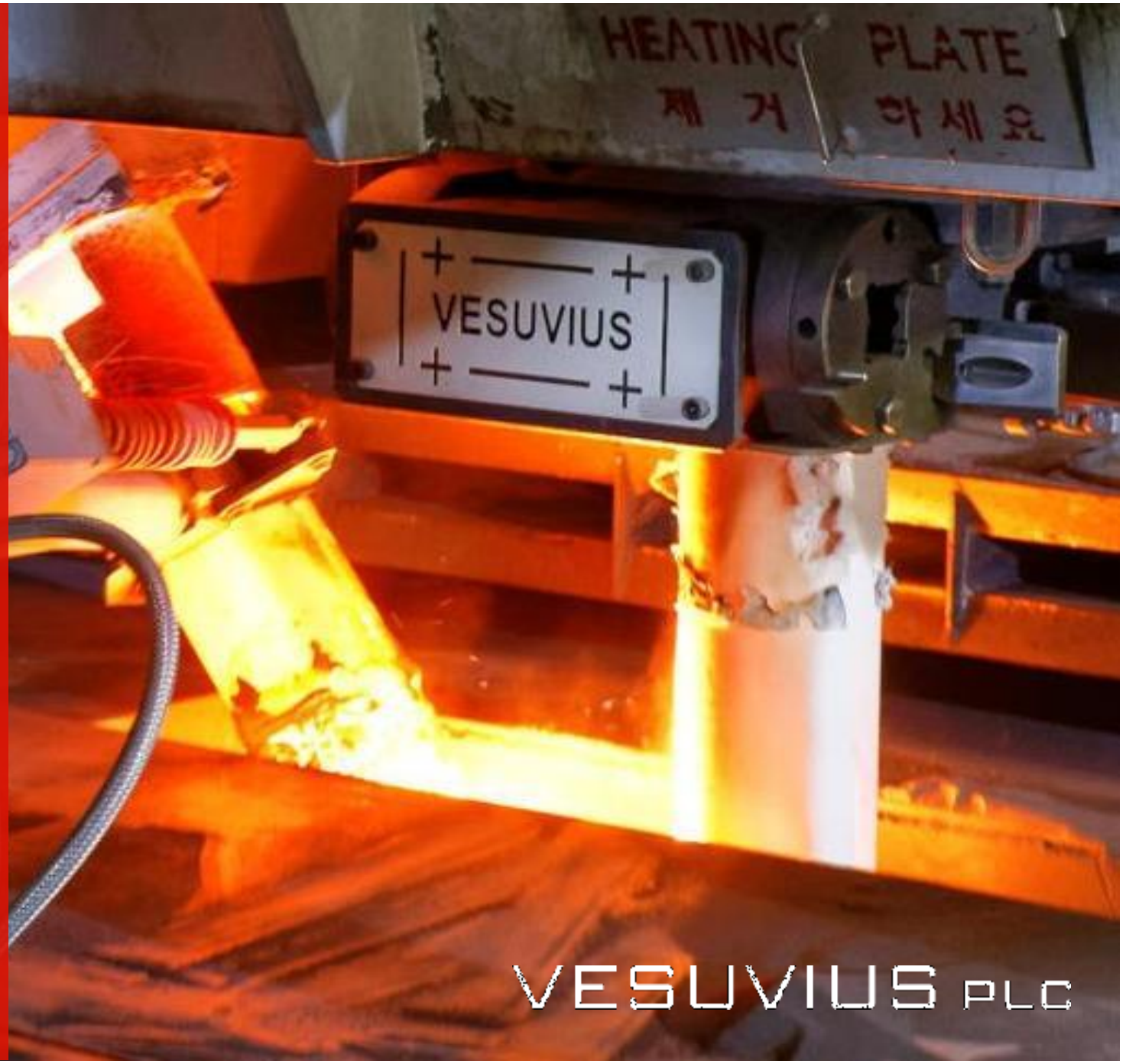
KPI	Target	Progress in 2020	SDG Supported
Energy Consumption Energy consumption per metric tonne of product packed for shipment	10% reduction by 2025 (vs 2019)	-3.4%	
CO_2 Emission Energy CO2e emissions per metric tonne of product packed for shipment	10% reduction by 2025 (vs 2019)	-3.9%	
Waste Water Waste water per metric tonne of product packed for shipment	25% reduction by 2025 (vs 2019)	-7.5%	
Solid Waste Solid waste (hazardous and sent to landfill) per metric tonne of product packed for shipment	25% reduction 2025 (vs 2019)	-16.1%	
Recovered and Recycled Material Recovered or recycled materials from external sources	7% to be used by 2025	5.8% (2019: 6.2%)	
Safety Lost Time Injury Frequency Rate (per million hours worked)	Zero accident	1.12 (2019: 1.54)	
Gender Diversity Female representation in Top Management (GEC plus key direct reports)	30% by 2025	20% (2019: 12.5%)	
Supply Chain Sustainability assessments of raw material suppliers	50% of Group spend by the end of 2023	Programme launched	
Compliance Training Percentage of targeted staff completing Anti-Bribery and Corruption training	At least 90% annually	100%	

We help our customers improve their sustainability performance

Our area of expertise	The product	Key product feature	Value creation for customer
Material Science	**Duraflex ladle shrouds**	Multiple reuse and long-lasting refractory material	▪ Improve safety ▪ Reduce raw materials consumption ▪ Reduce CO_2 emissions
Application engineering	**Pattern redesign with Feedex sleeves**	Metal yield increase	▪ Reduce CO_2 emissions
Digital solutions	 **Laser Contouring System**	Increase ladle lining lifetime Increase ladle capacity	▪ Reduce raw materials consumption ▪ Reduce CO_2 emissions
Mechatronics	**Robotic Tube Changer**	Eliminate exposure to hot metal	▪ Improve safety

VESUVIUS

2020 Performance update



2020 operational highlights: ready for growth

Safety: our top priority

- Our best year ever with an LTIFR of 1.12
- Goal remains to become a zero injury company

Optimised plant network geared for growth after successful restructuring

- £20.6m of recurring savings in 2020 with a further £4.3m to be realised in 2021
- Global production capacity preserved, ready to follow market demand ramp-up

Leaner and more efficient, with new ways of working

- £39.0m of temporary cost savings in 2020 – more than £8m are expected to become permanent

Future top-line growth drivers protected during the crisis

- Maintained industry-leading level of R&D investment, supporting top-line growth
- 10 new products launched in 2020 with 22 new product launches planned in 2021

Strong cash management supported by entrepreneurial, decentralised business model

- Working capital / sales (12m average) improved to 23.2% versus 24.0% at the end of 2019

"We are emerging from this difficult period stronger than before and are ideally positioned to seize the opportunities offered by positive market trends."

Patrick Andre
Chief Executive

Group Financial Performance FY 2020

Revenue
£1,458.3m
2019: £1,710.4m

Trading profit
£101.4m
2019: £181.4m

Return on Sales
7.0%
2019: 10.6%

Profit before tax
£64.5m
2019L £118.6m

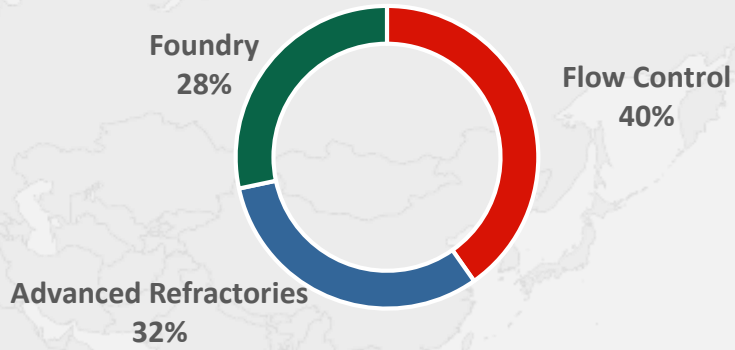
Headline earnings per share
23.2p
2019: 45.1p

Group full-year dividend
17.4p
2019: 6.2p

Adjusted Operating Cash Flow
£175.2m
2019:£217.7m

Cash conversion ratio
173%
2019: 120%

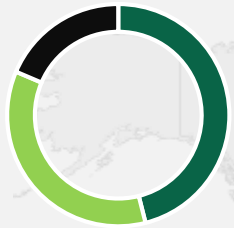
Divisional Performance



Flow Control	Advanced Refractories	Foundry
£561.3M	£458.6M	£412.9M
2019: £626.3M	2019: 539.8M	2019: £515.1M

Regional Profiles FY2020

Americas



£437.8m
Revenue

- 46% Flow control
- 35% Advanced Refractories
- 19% Foundry

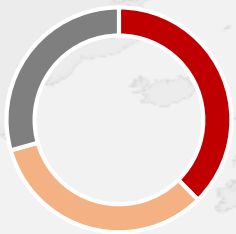
16
Production sites

1
R&D centre of excellence

2,879
Employees

19
Sales offices

EMEA



£578.5m
Revenue

- 38% Flow control
- 33% Advanced Refractories
- 29% Foundry

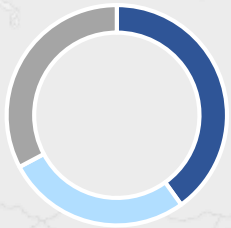
19
Production sites

3
R&D centres of excellence

4,030
Employees

29
Sales offices

Asia-Pacific



£442.0m
Revenue

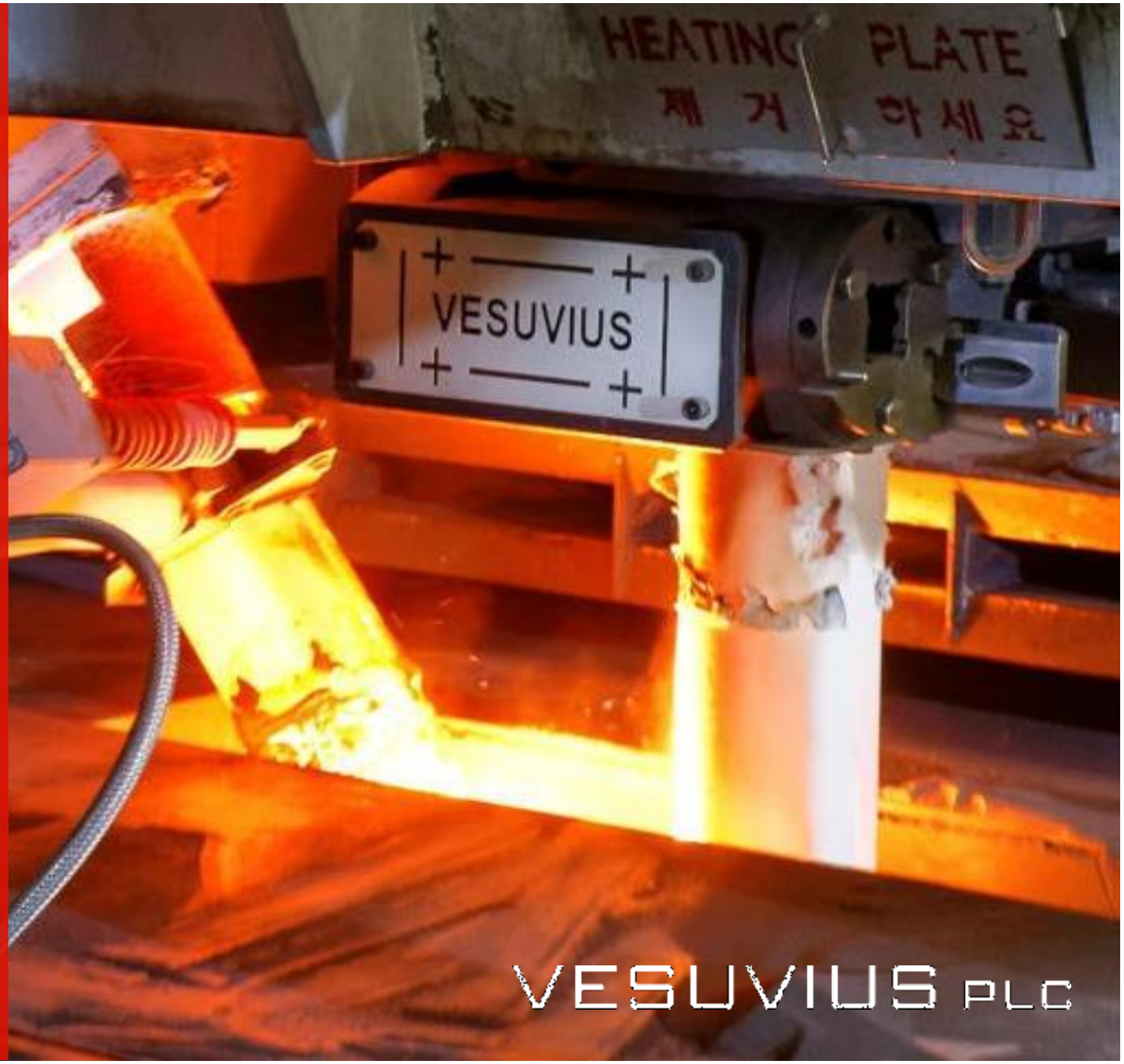
- 40% Flow control
- 27% Advanced Refractories
- 33% Foundry

18
Production sites

2
R&D centres of excellence

3,450
Employees

28
Sales offices


HEATING PLATE
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LEADING THE WORLD OF MOLTEN METAL FLOW ENGINEERING