



**CALDERYS**

FORGED  
IN LEGACY.  
FUELED BY  
EXCELLENCE.

 calderys



**2**

Editorial

**4**

Calderys at a Glance

**8**

Our Products & Services

**14**

Supporting our partners  
building a better world

**16**

A People Business

**18**

Health & Safety

**20**

A World of Innovation

**22**

A Universal Approach  
to Sustainability

# WE ARE THE VITAL PARTNER OF ALL HIGH TEMPERATURE INDUSTRIES.

## WE SUPPORT THEM BUILDING A BETTER WORLD THROUGH SUSTAINABLE SOLUTIONS.



**High temperature manufacturing processes require large and reliable energy inputs. With rising costs and increased environmental pressures, industries around the world must find new and innovative ways to reduce both their energy consumption and their carbon emissions. Caldeys can play an important role in helping to reduce this footprint with high quality, sustainable and energy-efficient solutions, thus enabling manufacturers to control energy consumption and reduce the environmental impact of their operations.**

As a leading global provider of products and services for high temperature applications in the field of refractories, steel casting, metallurgical fluxes, and molding processes, our materials know-how allows us to offer the right solution for our customers, whatever their high temperature challenge. We draw on our global network of experts, our application labs and innovation and technology centers, to find new and creative ways to unearth the value of minerals through market-driven product developments.

**We are forged in legacy.** Leveraging over 150 years of experience, a global presence, and a truly diverse team, Caldeys works closely with customers and suppliers to turn its unique process insights into effective industrial solutions.

**We are fueled by excellence.** Our business is built on continuous improvement and tireless innovation. We partner with our customers to supply tailored services to overcome the challenges they face in their operations. We aim to provide support that is exemplary, class-leading, and trustworthy.

# LEADING THE WAY



**As a world leader in high temperature solutions, Calderys has a pivotal role to play in ensuring that companies – from small-scale entrepreneurial businesses, to global industry leaders – are equipped to meet the demands of tomorrow, and in pushing the boundaries of innovation and excellence in our sector.**



Industries around the globe are rapidly implementing changes to overcome the complex challenges defining our era. With more than two-thirds of the world's population expected to live in urban areas by 2050, the demand for essential materials needed to extend buildings and infrastructure — such as high-quality steel, iron and cement — is set to soar in the coming decades.

Meanwhile, climate targets and a boom in e-commerce are pushing the transportation industry towards electrification and lighter vehicles, further driving demand for high-grade steel, aluminum and heat-resistant components.

As such, it is my conviction that the transformation of the high temperature solutions landscape calls for a new definition of expertise — one underpinned by precision, agility, sustainability and new standards of customer focus and support.

At Calderys, we strive for excellence to provide the right products, services, and solutions, to meet customer needs without compromising on safety and environmental stewardship.

## AN EXCITING NEW JOURNEY

As a privately owned company, proud of its long history and global footprint, we face this new era with optimism and aspirations but without complacency.

Our promise is founded on our global infrastructure of local plants, suppliers and distribution centers, our truly diverse team of experts and 150 years of process insights and technical know-how. But it is also propelled by our exciting new journey to support our customers building a better, cleaner world through sustainable solutions. Our investments in innovation and digitalization are a vital part of how we maintain top-notch safety standards, use our resources more efficiently and contribute to the health and climate ambitions of our partners around the world.

We're a people business — our skilled teams work closely with our customers whatever the challenge. With the combination of Calderys and HWI, we bring together the best of both businesses and set a new benchmark for the industry. Our goal is to be the best partner for our customers and, thanks to our dedicated and skilled colleagues, there are no limits to what we can achieve.



**Michel Cornelissen**  
President and  
Chief Executive Officer





# CALDERYS AT A GLANCE

**Calderys leads the global market in high temperature solutions, based on unique process insights from refractories to casting fluxes and molding solutions.**

With sales in more than 100 countries, including the Americas, where we trade as HWI, a member of Calderys, the Group boasts an international network of top local experts and over 150 years of field experience.

## INDUSTRIES WE SERVE

**Calderys serves all major players in high temperature industries, from choosing and tailoring the most effective product and equipment to designing and applying our groundbreaking installation techniques.**



### > IRON & STEEL

Our product portfolio ranges from acidic monolithics to basics and bricks, while our services include everything from ironmaking and continuous casting to the supply of equipment for the full steel process.



### > FOUNDRY

As experts in ferrous foundries, we offer an array of turnkey solutions for foundry refractories, as well as core and molding sand additives.



### > THERMAL

We offer a wide range of end-to-end refractory solutions for industrial furnaces, including projects for aluminum, cement, glass, energy and environment industries, and many others.

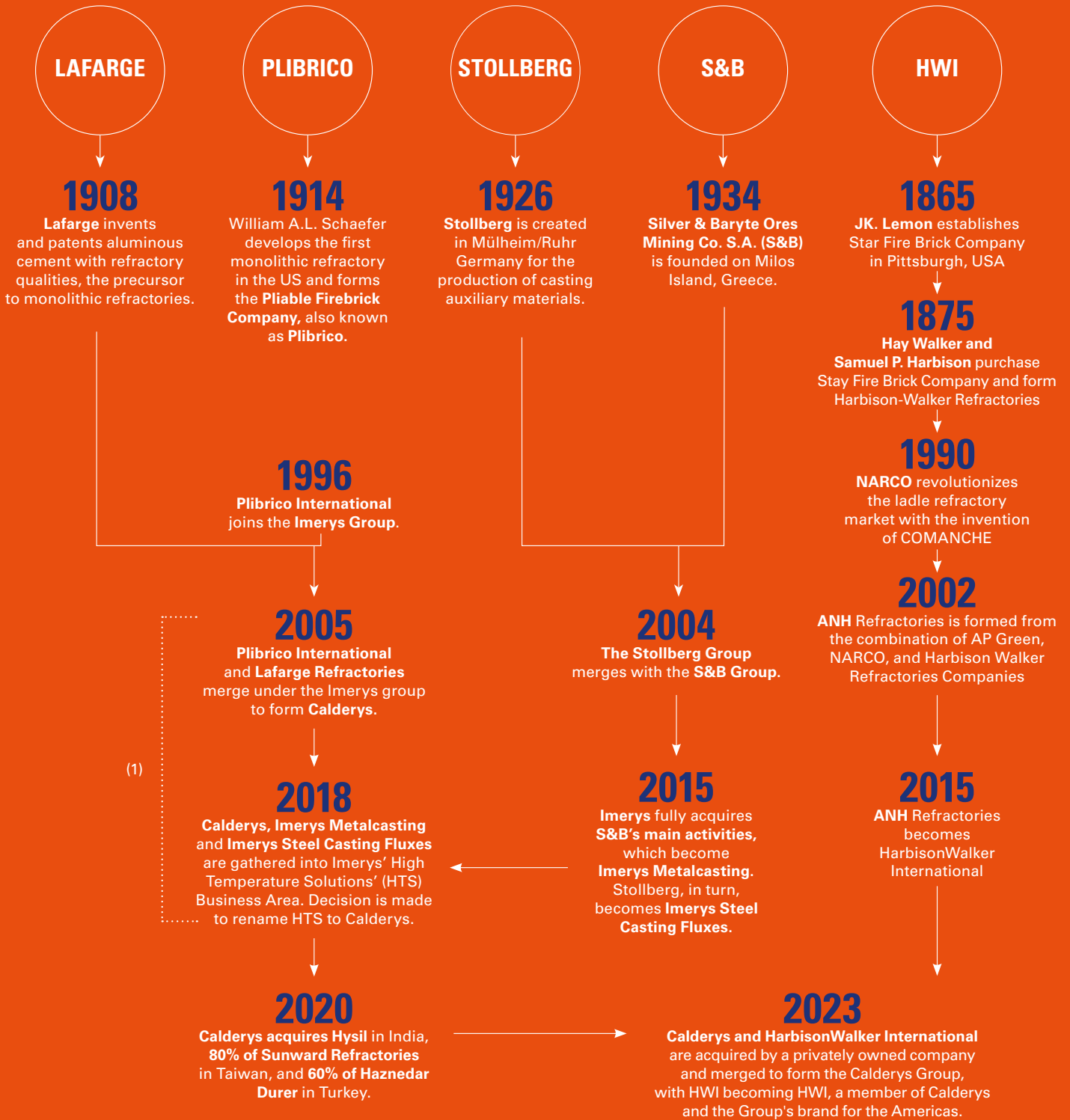
## OUR SERVICES

**Calderys provides a full range of services to customers to deliver a world-leading offer of products and high temperature solutions. These include:**

- Material selection & customized formulation for fluxes
- Engineering & design, installation, dry-out & commissioning, maintenance, and assessments for refractories
- End-to-end project management
- Technical support and training

# THE LEGACY

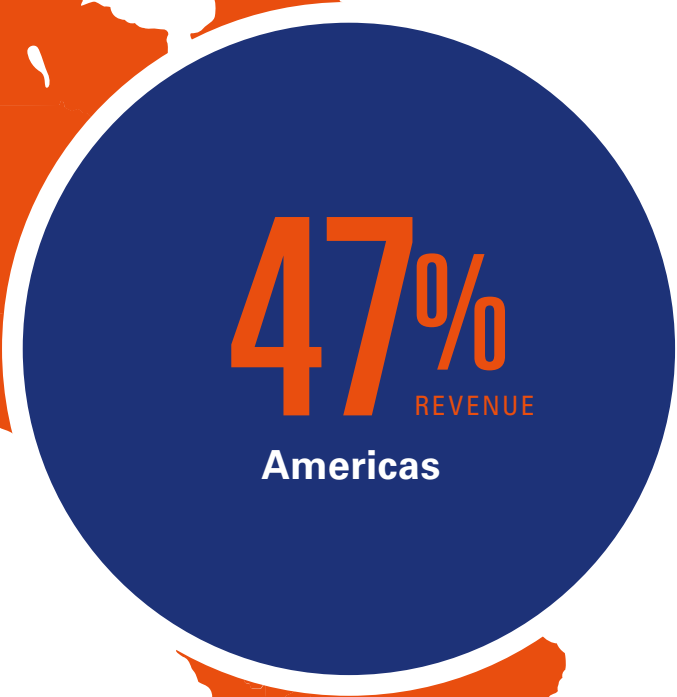
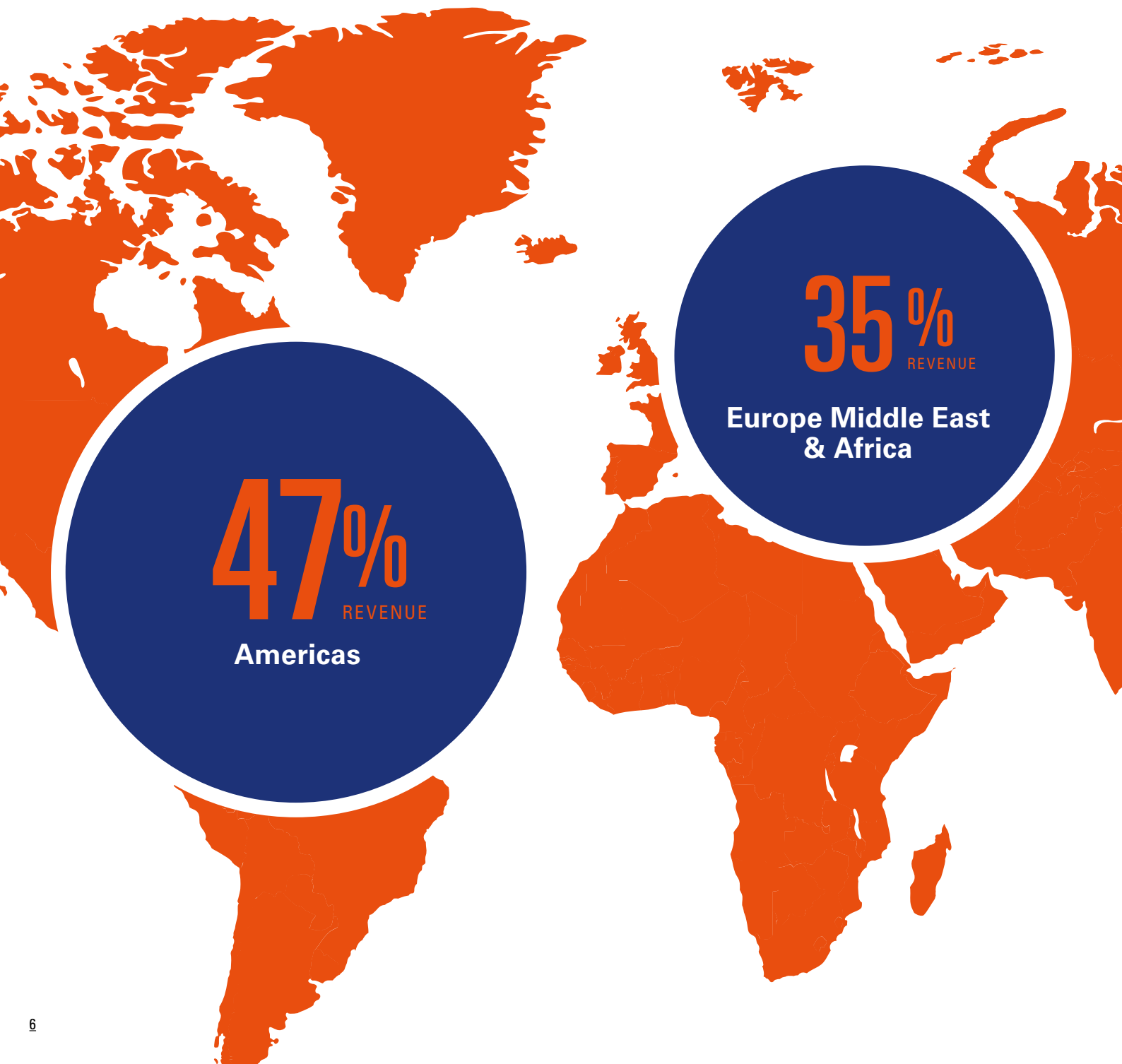
## of combined expertise



(1) Over 10 years of strategic acquisitions and international expansion follow: ACE Refractories, India - Svenska Silikaverken, Scandinavia - Tokai Ceramics, Japan - Termorak, Finland - JV with PT Indoporlen, Indonesia - Opening of a refractories plant in China - Spar, US - Fagersta Eldfasta, Sweden - N.G. Johnson Northern, UK - SetLinings, Germany - Expansion in Brazil.



# THE CALDERYS GROUP IN NUMBERS





**Calderys has broken down barriers to create a truly global refractory network spanning production plants, local labs, sales offices, engineering centers, distribution centers, external partners, a contractors/installers network in the US, and full-time workers on customer sites.**



**150+** years of experience

**30+** countries host our operations with sales in **100+** countries

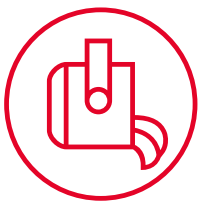
**~50** plants on the **5** continents

**5,800+** people and contractors in over **30** countries

**50+** nationalities represented in our workforce

*Figures based on 2023 results*

# IRON & STEEL



**As a key ally to the iron & steel industry, Calderys has steadily enlarged its service solutions from ironmaking and continuous casting, to a full range of steel processing equipment.** With innovation and sustainability as fundamental parts of our DNA, we have pioneered a tremendous number of new applications, such as low volatile emission tap-hole clay for blast furnaces and cutting-edge mold fluxes.

**Using the same vision to develop applications at the steel workshop, the product portfolio has been significantly enlarged from acidic monolithics to basics and bricks.** Calderys' combination with HarbisonWalker International, now HWI a member of Calderys, gives us an even greater breadth of expertise, allowing us to provide a complete range of products and bespoke solutions to meet the demands of every project with the highest level of quality.

## SERVICES

**Our tailored service packages are created to provide end-to-end, bespoke solutions, based on customer requirements.** Our selection of products and vessel designs optimizes cost efficiency, whatever the user's metallurgical aims — from steel cleanliness to process productivity. We carry out high-quality installation services using cutting-edge, in-house equipment, and we provide project management services, including consultation, planning, supervision, site management, and training. To enhance the efficiency of our products, and to prevent on-site technical issues, we provide safe and efficient maintenance services that combine robotics with advanced digital systems.

## IRONMAKING & DRI

**Calderys' market-leading products and services are built on innovation, advanced implementation techniques, and customization.** Our portfolio covers every step of the ironmaking process, from the coke oven and sinter plant, to the blast furnace, casthouse floor, and hot metal transport and treatment.

- Blast furnace stack gunning or spraycasting, supported by digital solutions
- Tap-hole clay customization and innovation
- Complete lining for runners
- Refractory solution for DRI, H<sub>2</sub>-compatible

## CONTINUOUS CASTING

**Our internationally recognized casting fluxes are tailor-made to fit with any type of casters and steel grades.** The performance of these customized fluxes can be enhanced by continuous and controlled feed from our automatic feeders. The Calderys automatic feeders are available as "plug and play" systems for a fast set-up, or as digitally enhanced systems for real-time monitoring of the casting process.

## STEELMAKING

**Our comprehensive product portfolio includes shaped and unshaped refractories, both acidic and basic, to cover all application demands.**

- High technology and economic solutions for all ladle requirements, supported by digital solutions for monitoring the ladle fleet
- Complete refractory solutions for EAF and BOF, from initial lining to a full range of repair products and services
- A complete product range for secondary steelmaking applications: aluminosilicate and magnesia monolithics, bricks and precast shapes as well as gas purging plugs, lances and accessories
- Dedicated hot and cold repair products and machinery to extend vessel availability
- Smart tundish solutions and refractories, including flow dynamics simulations and studies

## REHEAT FURNACES

**Calderys refractories for reheat furnaces include customized solutions for every type of furnace up to 1,500°C.** Our solutions optimize the overall cost/performance covering installation, manpower, energy consumption and CO<sub>2</sub> emissions. Thanks to our extensive network of Calderys plants around the world, we are able to offer local service and support.

# FOUNDRY



**Calderys is your dedicated supplier for ferrous foundries, including melting, treating, and transferring, as well as the casting process.** Our teams have extensive expertise allowing us to offer unrivaled engineering know-how to support our state-of-the-art products, project management, and customized installation services. Innovation and sustainability are at the heart of everything we do and include the development of boron-free SILICA MIX for the lining of CIF, as well as insulating refractories and bentonite blends for a better carbon footprint.

## SERVICES

**Calderys conducts extensive analysis of materials, customers' unique processes and equipment to provide finely tailored solutions, including thermal profiling and innovative installation techniques.**

We supply vibrating equipment, wall and bottom compaction for coreless induction furnaces (CIF), and a wide range of pre-shaped solutions.

Calderys' specialized and dedicated project engineers plan and control every aspect of the project life-cycle, from concept to definition, installation, dry-out, and commissioning. Our project management services include engineering, delivery scheduling, site and sub-contractor management, and staff training. Remote assistance and technical services provide sustainable and safe support.

We also provide consulting services for molding line and defect management for high-quality casting, and permanent on-site predictive maintenance and repair. Offsite relining of all foundry equipment is carried at our dedicated centers in EMEA and APAC. We also offer special lining solutions and repairs thanks to a wide range of gunning, self-flowing, patching and dry, semi-wet or plastic ramming materials.

CALDE® e-Supply allows silo materials to be tracked in real time, from stock to delivery. Sensors alert the customer when the silo stock is low and send an automatic purchasing order through the company's ERP system.

CALDE® e-Support — our newest digital service for foundry mold shops, provides real-time online insight into the quality of green molding sand.

## MELTING SOLUTIONS

### > REFRACTORY LINING

We supply refractory solutions for CIFs, cupolas, ladles, receivers, converters, holding and pouring furnaces, as well as bricks and specialty insulating materials. Our silica-based refractories range produced with Swedish quartzite boasts the highest grade of raw material in the world. The material's excellent thermal stability and chemical resistance make it the perfect lining for DVM (dry vibrating mix), CIFs and inductors.

The spinel-forming DVM product line is an historical industry benchmark for steel coreless induction furnaces — it contains high refractory raw materials and provides well-balanced corrosion resistance.

### > CASTABLES

Calderys' castables bring superior performance to many applications, including bricks, without compromising on ease of installation. Our castables offer high abrasive, alkaline, carbon oxide and corrosion resistance as well as quick drying.

### > BRICKS

Calderys' bricks can be used in backup linings for installation and safety linings, iron and steel channel holders, ladles, melting and holding furnaces.

### > MELT SHOP ADDITIVES

Preventing oven damage caused by zinc, Calderys' shield mix forms an impervious layer during the sintering phase to repel vapor ingress. The furnace operator benefits from increased robustness of the hot face lining, reduced coil damage caused by vapor condensation and improved reliability of the hot face lining when melting zinc-plated scrap.

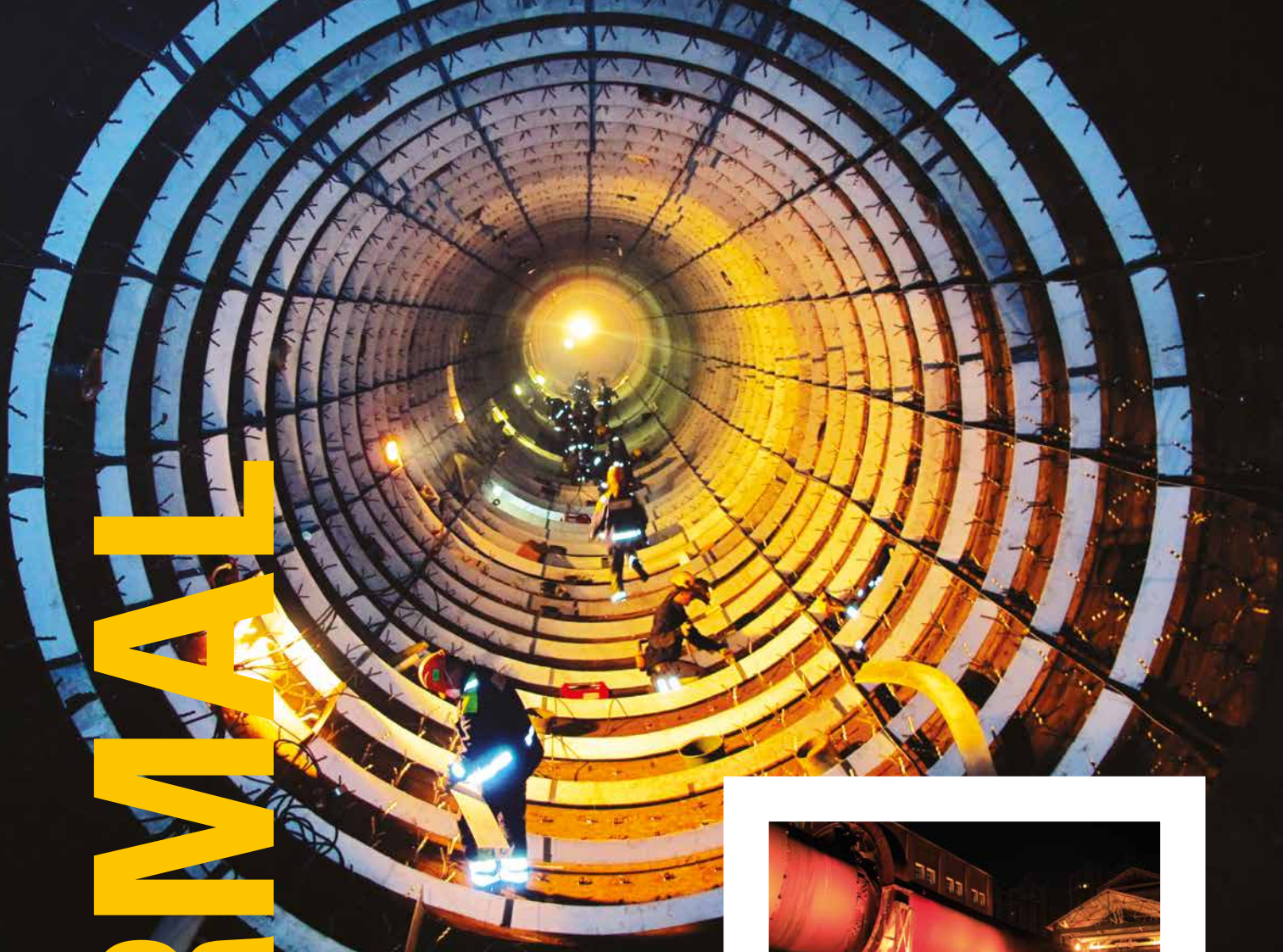
### > SLAG COAGULANTS & COATING MATERIALS

We offer low-dust perlite as a slag coagulant for the reduction of heat losses and removal of slag from the melt surface of iron, steel and other alloys to support further filtration and smooth mold filling — avoiding dross and corresponding surface defects.

## MOLDING SOLUTIONS

**We offer a wide range of innovative solutions tailored to customer specifications for molding sand additives that guarantee top-of-the-line health and environmental safety standards.** Thanks to deep mineral and application expertise, Calderys delivers the best bentonites with high thermal stability and strength. For green engineered blends, our experts will formulate specific solutions based on site visits and thorough analysis. For core sand additives, we offer approved organic, inorganic, and hybrid solutions, to avoid expansion defects and allow, under certain conditions, coating free solutions. Our natural and synthetic special sands offer very high refractoriness at improved health and environmental safety standards.

# THERMAL



**Thermal industries have entered an era of transition: many companies are striving to increase the productivity of their operations in the face of supply chain volatility, stiff competition and mounting climate demands.** This is an opportunity to innovate and adapt our solutions for industries such as aluminum, copper and heavy non-ferrous, cement, and other industries.

**On the back of 150 years of global process insights, on-the-ground site experience and a robust international supply chain, our teams offer the technical expertise and resources required for companies to stay ahead of competition. We minimize repair and maintenance downtime, maximize operations efficiency, and transfer our own top-of-the-line health and safety standards to our customers worldwide.**

## SERVICES

**Calderys provides complete project management services including expert consultation, planning, delivery scheduling, supervision, inspection, site management and training for customer personnel.** At the heart of our management strategy is the determination to minimize downtime and maximize the cost-effectiveness of our clients' operations — without ever compromising on safety or environmental stewardship. Our experienced engineers also optimize the ideal dry-out schedule for each customer to ensure both energy savings and maximum performance of the refractory lining.

## ALUMINUM

We provide a range of solutions designed specifically for contact with aluminum to major OEMs and end-users.

## COPPER AND HEAVY NON-FERROUS

We support customers in the primary and secondary copper and heavy non-ferrous industries, helping them optimize the life of their units through solutions that protect high-wear areas.

## GLASS

Over the past 85 years, we have pioneered — through our brand HWI — innovative refractory glass solutions for all kinds of applications: art glass, container glass, fiberglass, float glass and technical glass.

## CEMENT

We work alongside our customers, to deliver high-performing, reliable and bespoke solutions based on the knowledge we have cultivated over the decades.

## ENERGY & ENVIRONMENT

We offer the most suitable technical solutions for operating your waste-to-energy facilities — be it domestic, industrial or hazardous waste. We partner with engineering companies and plant operators to further develop gasification and other technologies that contribute to a circular economy through waste recovery and reuse.

## CHEMICALS ENGINEERING & PETROCHEMICALS

From increasing the energy efficiency of an oil refinery to providing the best refractory solutions for hydrogen plants, we help our customers transition to decarbonization. Whether you are a technology licensor, an EPC company, an OEM or an end-user, Calderys is committed to optimizing plant performance, shortening downtime and increasing operations' safety and sustainability.

## INDUSTRIAL MINERALS

We provide brick and monolithic refractory solutions for the extraction, refining, and beneficiation of industrial minerals. Our solutions are adapted to the different furnaces, temperature requirements, and minerals processed.

## SPACE EXPLORATION

For more than 60 years, our Americas brand — HWI, has been a pioneer in delivering refractory launch pad solutions to the space flight industry.



# SUPPORTING OUR PARTNERS BUILDING A BETTER WORLD

**When it comes to extreme conditions, all our customers have their own unique requirements; a challenge fully embraced by Calderys, making us a market leader in high temperature solutions. We consider all their constraints to ensure we provide the right solution offering the best and most sustainable results.**

## AN UNPRECEDENTED SHIFT



**Climate change, automation, and geopolitics are forcing an unprecedented shift in the way we produce, consume, travel, and build for the future.** At the same time, technological innovation is creating new possibilities while putting pressure on finite resources. As a consequence, companies around the world are caught in a balancing act between the need for less energy-intensive industrial processes and rising demands for productivity and efficiency. These are complex challenges, and experience has taught us there is no single solution that can respond to all at once. Rather, the situation calls for a wide range of solutions; some involve delicate adjustments to existing formulations, others require a totally new and disruptive approach. Some actions can be implemented straight away, others require medium- and longer-term planning.



## OUR PURPOSE



We have a responsibility to help industries meet the needs of a rapidly changing society, be that in building new housing and offices for a growing urban population, extending and refurbishing infrastructure, or providing high-quality materials for the booming e-vehicle sector, in the most sustainable way. Calderys is placing sustainability and innovation at the heart of its business with an ambitious and powerful purpose to accompany its customers in these transitions: **We are the vital partner of all high temperature industries. We support them building a better world through sustainable solutions.**





## DEDICATION TO EXCELLENCE



**Calderys provides solutions with a level of precision, discipline, and expertise to guarantee their ultimate efficacy.** That means an end-to-end offering of tailored solutions, where future challenges are predicted, energy efficiency is prioritized, maintenance is incorporated, and cost-savings are guaranteed by reduced downtime, smart troubleshooting, and innovative process optimization. Above all, we see our customers as partners, and our teams bring the same dedication to excellence to every project — large and small.

## RELIABILITY



**The ability of our industry to rapidly adapt to a new energy and technological paradigm requires reliable delivery of both top-quality materials and services.** Calderys possesses a dynamic worldwide network of suppliers and logistical infrastructure, which provides supply-chain security and enables us to stay close to the operations of our customers. We work continuously to extend our global network and make it even more robust, agile, and aligned with the evolving needs of our customers.

## A STRONG LEGACY



**The singular skillset of our teams has been accumulated over 150 years to formulate the right material solutions for our customers and partners around the world.** Today, we bring our unparalleled process insights to deliver cost and energy savings and increased productivity to all industries operating with extreme temperatures — from Iron & Steel to Foundry to Thermal.

## STRENGTHENING INNOVATION



**Calderys has embarked on an exciting journey to strengthen innovation and address the challenges of the energy transition. Innovation is an integral part of our company culture.** Our approach is to continuously improve, to test new ideas and solutions and develop practical solutions. We draw on our international network of technical support, quality control and formulation laboratories, and our innovation and technology centers, to find new and creative ways to unearth the value of minerals through market-driven product development, optimizing sustainable processes and digitalization.



## HUMAN EXPERTISE & KNOW-HOW



**Calderys is a melting pot of passionate people from different backgrounds and nationalities, each with their own specific expertise.** Our diverse team is ultimately what allows us to take a truly customer-centric approach, where no one model is ever considered to be beyond improvement and customization. Hundreds of customers around the world can testify to our unparalleled ability to manage projects and deliver the right solutions at the right time.

## A CUSTOMER-ORIENTED CULTURE



**Advising customers and helping them to choose the right solution that meets their specific needs is a driving force for us.** This involves blending products to get the perfect formulation. This means understanding our customer's needs, being resourceful, and applying our know-how to deliver the proper solution. It's a specific skill that our customers know they can rely on.



# A PEOPLE BUSINESS

**At Calderys, people are at the center of our strategy. They are the foundation of all our past successes and future achievements. They are at the heart of our ambition to foster a positive impact with all our stakeholders.** 5,800 people and contractors in more than 30 countries contribute to and perpetuate our refractory expertise. Every day, they build the future of our company through teamwork, dedication, customer focus and a proactive mindset.

**Forged in legacy.  
Fueled by excellence.**  
Our heritage dates back to the 19th century and has since been nourished with an unwavering quest for excellence. Our people embody this excellence.



## OUR VALUES

Reflecting the true personality and the foundation of the company culture, our values draw their strength from excellence and guide our employees in their everyday actions, behaviors and decisions.

### > WE ARE TENACIOUS

We define ourselves as **determined** and **resilient problem solvers**, committed to **goal achievement** and **continuous improvement**, always striving for **innovation**.

### > WE ARE ACCOUNTABLE

We take **responsibility** and **ownership** very seriously. We are deeply **committed to safety and ethics**, driven by the pursuit of **excellence** and **respect** for others.

### > WE ARE MULTICULTURAL

We believe in the strength of **diversity, inclusion** and **cultural richness**. This **global mindset** and sense of respect enhance our **adaptability** and **effectiveness**.

### > WE ARE AUTHENTIC

We are attached to **trust, integrity** and **care for people**, always aligning actions with words, keeping a **humble** and **collaborative** mindset.



## AN EMPLOYER OF CHOICE

Calderys is an exciting place to work, a company where performance is recognized, and learning is promoted, with plenty, of opportunities for growth. We are always looking to attract new talent. Our services and solutions depend upon the expertise and commitment of our employees. So we ensure that they have the scope and opportunities to develop their potential within an international, inclusive and collaborative setting.

As we strongly believe that people make the difference, we have developed Calderys Academy to provide technical and soft skills training to our employees. It is a unique tool to welcome our newcomers, transfer our unique expertise, promote our customer-focused approach and continuously enhance our employees' skills and expertise.

## A DIVERSE AND INCLUSIVE WORKPLACE

For an international company with customers around the world, diversity and inclusion are of great importance. They go beyond ethics and corporate responsibility by embracing different ideas, cultures, and backgrounds to promote creativity and innovation,

which provide solutions to customer challenges and generate concrete results.

At Calderys, we pay close attention to building a diverse and inclusive workplace, mirroring our customers. We embrace team spirit and ambition, and we promote equal access to managerial positions for employees wherever they are in the Group.

**5,800+**  
people and contractors

**50+**  
nationalities



# HEALTH & SAFETY

**The same attention to detail that helps us provide personalized products and solutions is also applied to our rigorous health and safety procedures, controls and standards.** These are designed to protect our employees, subcontractors and temporary workers from risks and injuries. We integrate health and safety into every aspect of our business – it's part of our DNA. Our corporate value "We are accountable" says it all. We are accountable for our actions, decisions and their consequences. We lead by example and we are responsible for our own safety and that of everyone involved in our activities. This is an absolute commitment. We strive for continuous improvement and our goal is to achieve zero work-related illnesses and zero accidents.



**Our Group-wide safety program, “safe.”, aims to help us reach this objective and clarify our expectations to maintain a strong health and safety culture across our business through four pillars:**

## **SAFETY FIRST**

We encourage our employees, our contractors and anyone involved in our activities to take the time to do things properly and stop the job if safety conditions do not meet our standards. A serious application of our protocols, a careful approach to incidents and a determination to always improve are prerequisites in all our operations.

## **ADVANCING COMMUNICATION**

We encourage clear communication about our health and safety protocols and procedures. Only if they are clearly understood will they be successfully applied. Transparent and strong communication throughout the organization is critical, and all incidents should be reported and communicated without fear. Communication is vital to foster our continuous improvement approach.

## **FOSTERING COLLABORATION**

We encourage everyone to treat health and safety as a collective effort and shared commitment, stepping in if they see a high-risk situation — for themselves and their teammates. We care about each other, we share best practices and work together to maintain a healthy and safe environment.

## **ENCOURAGING OWNERSHIP**

We encourage employees to understand the impact of their individual responsibilities towards themselves, colleagues, contractors and customers — both inside and outside of the company. We expect them to be actively engaged, and to continuously demonstrate their commitment to an incident- and injury-free culture. Everyone is accountable for workplace health and safety, whatever their role.

# safe.

## **PREVENTION & AWARENESS**

**We cultivate a culture of prevention and responsibility by sharing best practices, showcasing achievements, and fostering positivity around safety through Visible Felt Leadership, which promotes ongoing discussions between all parties, from management to factory workers.** Numerous measures are put in place to deter accidents, including a brief, five-step process carried out both individually and as a team before a shift or a specific task. This ensures that all employees take a moment to stop, think, and take into account any potential risks or workplace changes. Our performance is monitored and regularly reviewed to ensure our standards of conduct meet our high expectations.

## **MINIMIZING RISK ON CUSTOMERS' SITES**

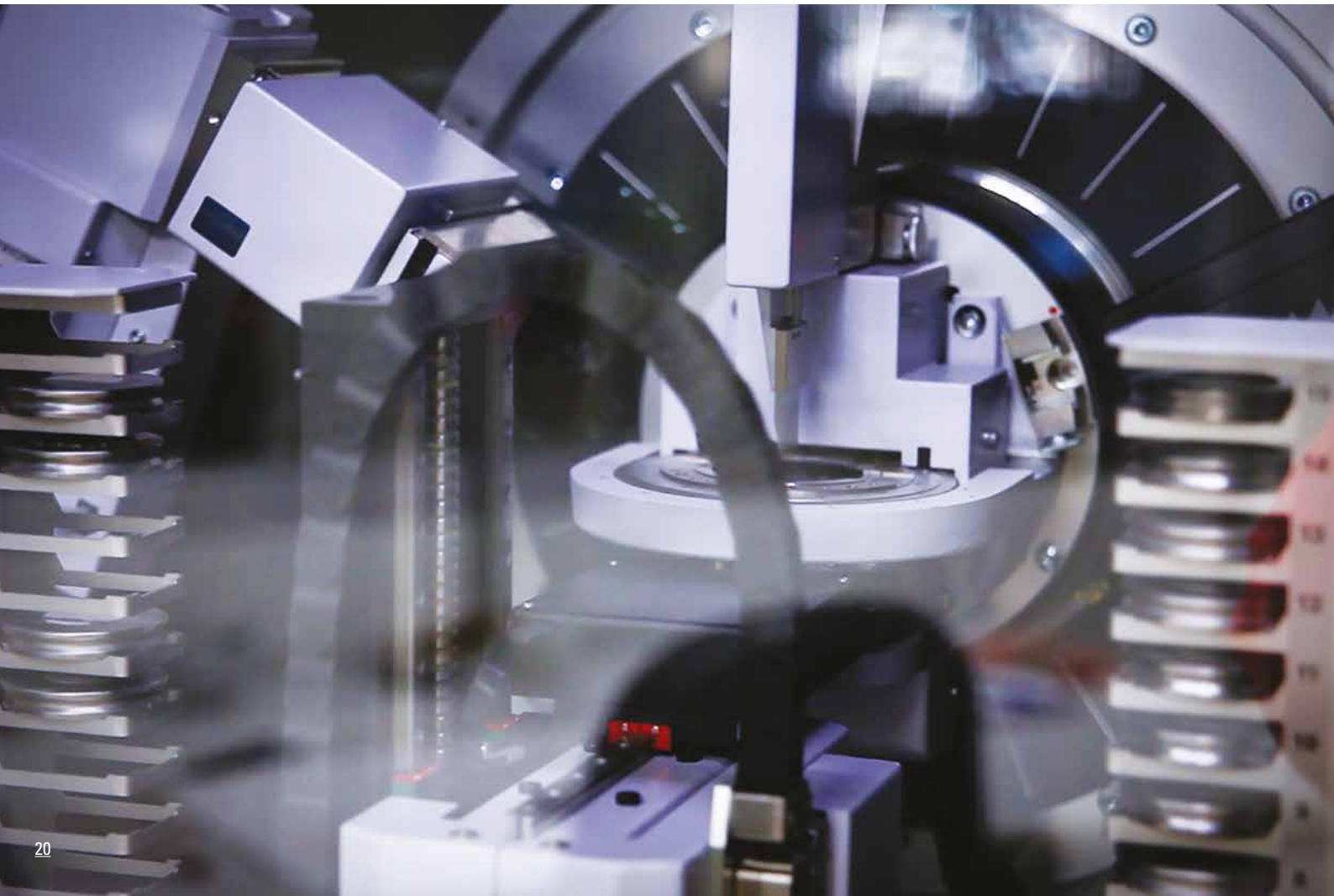
**Our key leaders, project managers and supervisors work hand-in-hand with our customers to create the safest work environment for all employees.** All workers are given our detailed safety installation guides before they set foot on the site. Upon arrival, they are already familiar with our many protocols while, our risk assessment team provides in-depth, customized evaluation and monitoring.



# A WORLD OF **INNOVATION**

**Innovation at Calderys is not limited to a single department, but takes place across our entire company, and is an integral part of our culture. We are on an exciting journey to address the technical challenges faced by our customers, to help them meet the demands of the energy transition, and to ensure a cleaner and more sustainable future for everyone.**

Calderys undertakes non-stop R&D around the world, with fully-equipped innovation and technology centers in Europe, Americas and Asia.



## Innovation at Calderys is built on 5 pillars of excellence

### INCREMENTAL PRODUCT EVOLUTION

We are dedicated to working with our customers for continuous improvement of their operations, from revamping on-site equipment to increase yield, to developing product formulas to cut downtime during installation and maintenance. For example, our special shotcreting material is 35% faster than standard shotcreting, and 70% faster than regular casting solutions, saving time, labor and money.



### DISRUPTIVE SOLUTIONS

We leverage 150 years of expertise, material know-how, and strategic partnerships to push the frontier of high temperature solutions. We are working closely with partners in the steel industry on Direct Reduced Iron (DRI) production using hydrogen instead of coal blast furnaces. Another area of research involves extending the potential to store heat from new processes and reuse it later.

### SUSTAINABLE SOLUTIONS

Our R&D teams continuously develop new formulas to provide sustainable solutions which are focused on three main aspects.

**Removing hazardous materials.** To reduce the environmental impact of certain hazardous materials from our casting fluxes, we are working to replace them with alternative materials with equivalent or improved chemical properties. For example, in our tap-hole clay, the traditional binder is replaced by a partially bio-based material. Another example is a newly patented pump to install DVM\* products that significantly reduces dust level during installation.

**Increasing recycling and reusing materials.** We are working closely with our customers to improve our recycling systems for the raw materials used in monolithic refractories and increase the share of reused materials in our formulas, while maintaining optimal performance.

**Saving energy and increasing product lifetime.** We aim to help our customers with technology to save energy and extend product lifetime. Our CALDE® SOL cast technology for incinerators has a much quicker dry-out which reduces commissioning time by around 50% and significantly improves the lifetime. By integrating product lifecycle management, we ensure more sustainable and environmentally friendly solutions for our customers.

\* Dry Vibrated Mix

### IMPROVED SERVICES

We continually upgrade our services and equipment to ensure they remain safe and easy to use. Some of our recent innovations include:

- Developing **long-term leasing options** for our machinery, offering customers more security and lower monthly costs.
- Devising **automation solutions** for flux distribution in steel casting on our Indian sites. By removing the need for manual labor, safety and production quality are increased while our environmental impact is reduced.
- An **upgraded turnkey Spraycast system**, allowing our customers to significantly reduce equipment downtime and costs.

### DIGITAL SERVICES AND SOLUTIONS

We use the latest digital tools for everything from enhancing our interactions with customers to optimizing stock levels to monitoring equipment and refractory processes.

- **CALDE® e-Supply** allows our customers to track their silo materials in real time from stock to delivery. Our smart sensors alert the customer when the silo stock is low and send an automatic purchasing order through our ERP system.
- **CALDE® Smart Lens** enables remote technical support, installation, and training in remote areas. The electronic goggles allow real-time exchanges of on-site technical drawings and pictures between customers and Calderys' technical experts — leading to instant support, reduced emissions, and safer operations.



# A UNIVERSAL APPROACH TO **SUSTAINABILITY**

**Calderys pays particular attention to our industry's impact on the environment. From the raw materials that we source and use in our products to the high temperature processes they serve.**

We take a sustainable business approach that is built on three key features: helping our customers in their energy transition needs, improving our own environmental footprint and being committed to our people and the local communities.





## HELPING OUR CUSTOMERS IN THEIR ENERGY TRANSITION NEEDS

Industries around the world are rapidly implementing changes to overcome the complex challenges associated with the energy transition. This often means addressing the carbon intensity of their high temperature industrial processes. We can play an important role in helping our customers with high quality, efficient, and sustainable solutions. We aim to deliver new products and services to drive change across the industry.

Key areas of development focus on energy efficiency measures to reduce drying times and improve the insulating properties of our solutions, as well as new technologies to support the adoption of hydrogen as a fuel for energy intensive industries.

## SUPPORTING STEELMAKERS IN THEIR TRANSITION TO GREEN STEEL

To tackle the challenges of hydrogen and natural-gas based applications, Calderys is developing adapted approaches and partnering with laboratories in several studies to design solutions for the iron and steel industries' evolving needs. While traditional steel plants produce on average 1.85 tons of carbon dioxide per ton of steel, these new processes, coupled with adapted refractory solutions, will enable steelmakers to drastically lower this amount to 0.2 tons of CO<sub>2</sub> per ton of steel by 2050.

## CARBON FOOTPRINT REDUCTION FOR THE PRODUCTION OF IRON CASTINGS & PIPES

Calderys took part in the first large investment in the European foundry industry towards furnace-based carbon emission transition. The customer, supported by the Ecological Transition Agency, acquired the largest low carbon electric furnace from Europe with the purpose of achieving a 10% reduction in emissions. Calderys was instrumental in achieving this, having managed the design, choice, installation, usage and maintenance training of the appropriate refractory lining. Calderys' Silica Mix Q15 was used for its high-quality quartzite and high-fused silica content. The project was a success, allowing the customer to achieve



energy savings of 70 MWh per year, or 30,000T CO<sub>2</sub> emission reduction per year. The furnace also enables the recycling of waste iron versus primary iron resulting in unlimited recycling options without quality losses, furthering Calderys' sustainability mission.

## LOWER ENERGY AND WATER CONSUMPTION FOR TUNDISH LINING SOLUTIONS

Calderys has developed a new energy-saving solution for tundish lining – CALDE® MAG TUN. With no water added, the tundish dry-out is more energy efficient, saving a standard steel plant up to 100,000m<sup>3</sup> of natural gas per year. Compared to wet tundish spray, this innovative solution reduces CO<sub>2</sub> emissions by 30% and water consumption by 35%.



## IMPROVING OUR OWN ENVIRONMENTAL FOOTPRINT

**To protect our planet, we must act to reduce our environmental footprint. We strive to achieve this by increasing the circularity of our materials through recycling and reuse, and growing the share of renewable energy in our operations.**

Tracking CO<sub>2</sub> emissions is the new paradigm. From procurement to production, we are sizing our carbon footprint and that of our customers to optimize and reduce emissions. With our lifecycle assessment solutions, we can calculate the environmental footprint of our products to help customers save energy or move towards greener energy.

We are working to develop circular business models from the design stage which incorporate systems to reduce consumption of virgin material and increase the share of reclaimed minerals ahead of demolition and replacement. Moreover, we are working to curb the use of toxic materials by replacing them with more environmentally friendly solutions.

We have stringent environmental management standards to preserve resources and protect biodiversity. We are committed to reducing the share of coal in our electricity generation. We have discontinued the use of coal fired power generation in India and will extend this approach to our operations in China. We are rolling out the use of solar PV panels where it makes sense to do so.

## SOIL EROSION PREVENTION & LAND CREATION

In China, our bentonite mine has long encountered issues of soil erosion. Calderys has built up terraced land of 3.7ha, planting more than 1,500 trees, to help mitigate the progressive soil erosion, retain the surface water in plant roots, and create economically viable cropland beneficial to the well-being of the local communities.

## MORE SUSTAINABLE PRODUCTION

The teams from our plant in Guaratinguetá in Brazil have made several adjustments to the production process of core products used by the steel industry, to reduce emissions and cut down the use of virgin materials. As a result, by June 2022, the teams had cut CO<sub>2</sub> emissions by 30 tons/year and reduced both fluoride generation and the depletion of mineral resources.

## 100% POWERED BY FOSSIL-FREE ELECTRICITY

Our Höganäs plant in Sweden is 100% powered by fossil-free electricity: the plant's electricity comes from wind and solar power.

## ZERO DISCHARGE PLANTS

All our plants in India are zero discharge plants, which means that no industrial water is discharged into the environment. At our Katni plant, we have introduced a rain harvesting system which benefits not only the plant but also the nearby community of 3,500 people. Thanks to its dedicated filter system, the collected storm water is reused in our processes, for domestic purposes, as well as drinking.

## BEING COMMITTED TO OUR PEOPLE AND COMMUNITIES

**Calderys is committed to maintaining the highest standard of corporate governance. This is integral to long-term business stability. Our approach is ethical and compliant. It encourages inclusivity and respects diversity. The result is a corporate culture of transparency that reflects our customers' expectations and aligns the objectives and interests of all stakeholders.**

Wherever we operate, we promote equal treatment and good labor relations. We recognize performance and encourage learning, so that all our people are able to access managerial positions. Across all our entities worldwide, our health, safety and environment protocols are applicable to all our employees, but also to our contractors and temporary workers. During installation, we ensure that our customers also benefit from our safety experience.

We strive to operate close to our customers, to meet the specific needs and challenges of our local markets. To strengthen this undertaking, we are committed to playing a positive role in the communities in which we operate, to help them thrive by creating shared value and long-lasting benefits. We support education, infrastructure, and training programs throughout our growth regions.

## 1,200 TREES PLANTED IN JUST 10 MINUTES!

In Dharuhera, India, 500 volunteers, including employees, local students and community members joined forces to support the TREE Innovative Foundation to plant 1,200 fruit-bearing saplings on local farmland. The project aims to support local farmers, improve quality of life and develop the local surroundings. The volunteers planted 1,200 trees in just 10 minutes and made over 2,400 social media posts about this initiative – a combination of facts that added to this amazing project a Guinness world record!

## SUPPORTING SCHOOLS AND TRAINING IN INDIA

Following the success of its first school project in Katni, Calderys has opened a second school in Wankaner, in partnership with the D.A.V. College Managing Committee, the most significant educational institute in India. This will extend quality education to more than 1,500 young people. In addition to supporting formal education, Calderys in India also offers unqualified workers the opportunity to receive government-recognized trade qualifications through formal training and certifications. Since launching the program two years ago, more than 400 people have completed the training.



## **DESIGN AND EDITING**

### **CALDERYS COMMUNICATIONS DEPARTMENT**

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#### **Photography:**

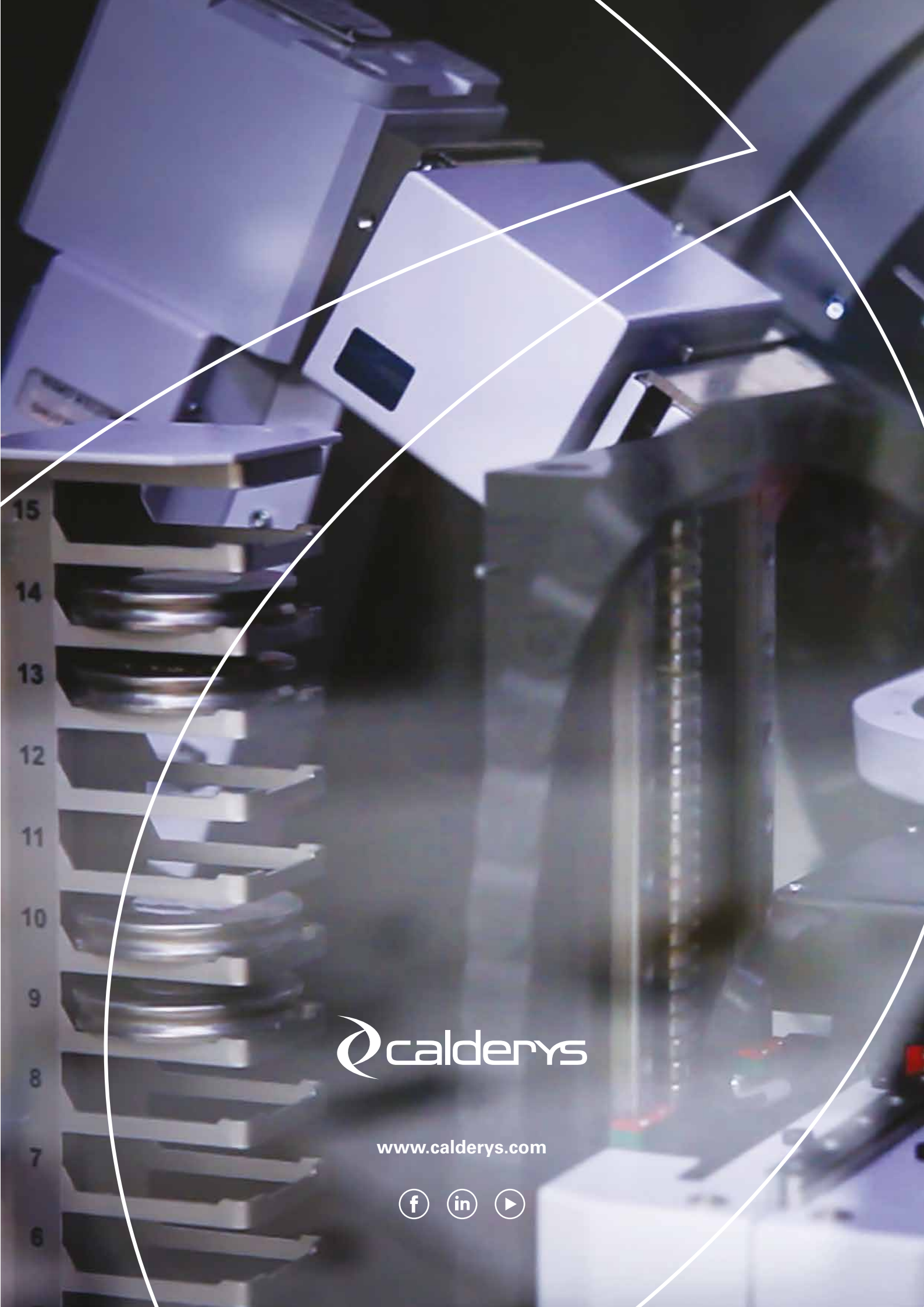
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