



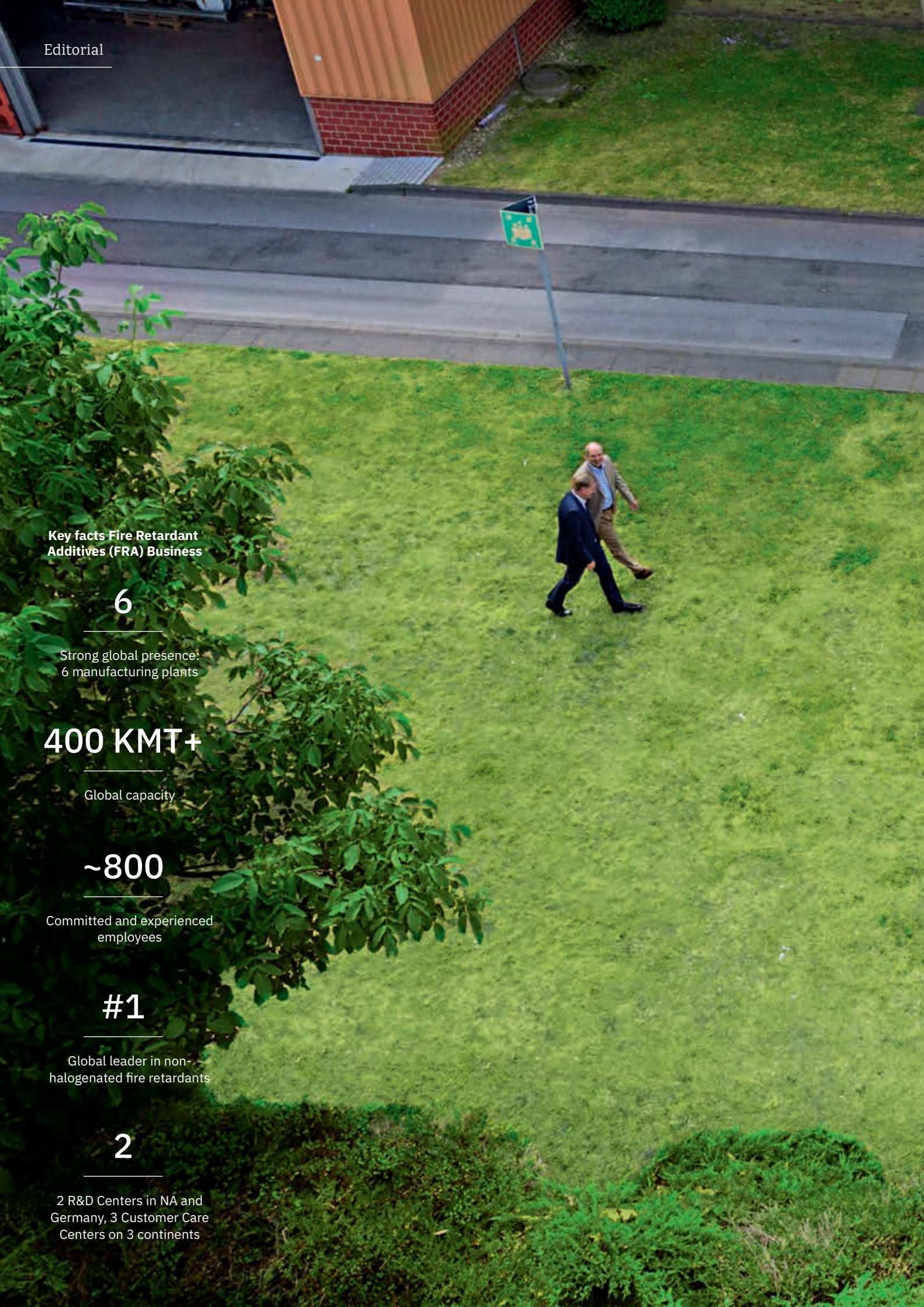
HUBER | MARTINSWERK

No.1

News

Transforming
Tomorrow





Key facts Fire Retardant Additives (FRA) Business

6

Strong global presence: 6 manufacturing plants

400 KMT+

Global capacity

~800

Committed and experienced employees

#1

Global leader in non-halogenated fire retardants

2

2 R&D Centers in NA and Germany, 3 Customer Care Centers on 3 continents

Welcome



Jerry Bertram & Martin Schulting

Dear Business Partner,

With great pleasure we present to you the first edition of our newsletter. With this special K-show edition we would like to inform visitors about the latest news about our company and fire retardants, smoke suppressants and Specialty aluminum oxides product portfolio. The K-show is an excellent opportunity to meet with each other face-to-face and to engage with our committed team; they are happy to address your needs and questions.

On a daily basis, our entire organization does its best to put our customers at the heart of our business and be your trusted supplier of high quality, innovative product solutions. We have a clear growth strategy in place to support the growth of our customers assuring supply of environmentally friendly, non-halogenated fire retardants and Specialty high-value added aluminum oxides as our core business.

Transforming tomorrow: we continue to heavily invest in capacity expansions (see pages 9 and 10) and innovation to drive successful New Product Developments to remain your preferred supplier, who brings real value to your business. Please enjoy reading our newsletter and thank you for your appreciated business. In case we are not business partners yet, we look forward getting to know you and becoming your supplier.

Yours sincerely,

Jerry Bertram
Vice President &
General Manager FRA

Martin Schulting
Managing Director FRA EMEA+I &
Martinswerk GmbH

“We put our customers at the heart of our business.”

We are Huber FRA

Touching Lives - Enhancing Safety.

Huber's Fire Retardant Additives (FRA) strategic business unit is a specialty chemicals business with a global, leading position in the development and production of halogen-free fire retardant solutions, smoke suppressants and Specialty aluminas.

Our environmentally-friendly, halogen-free fire retardants and smoke suppressants are touching lives and enhancing safety for millions of people around the world, whether you are at home, in a skyscraper or traveling by car, train, plane or public transportation.

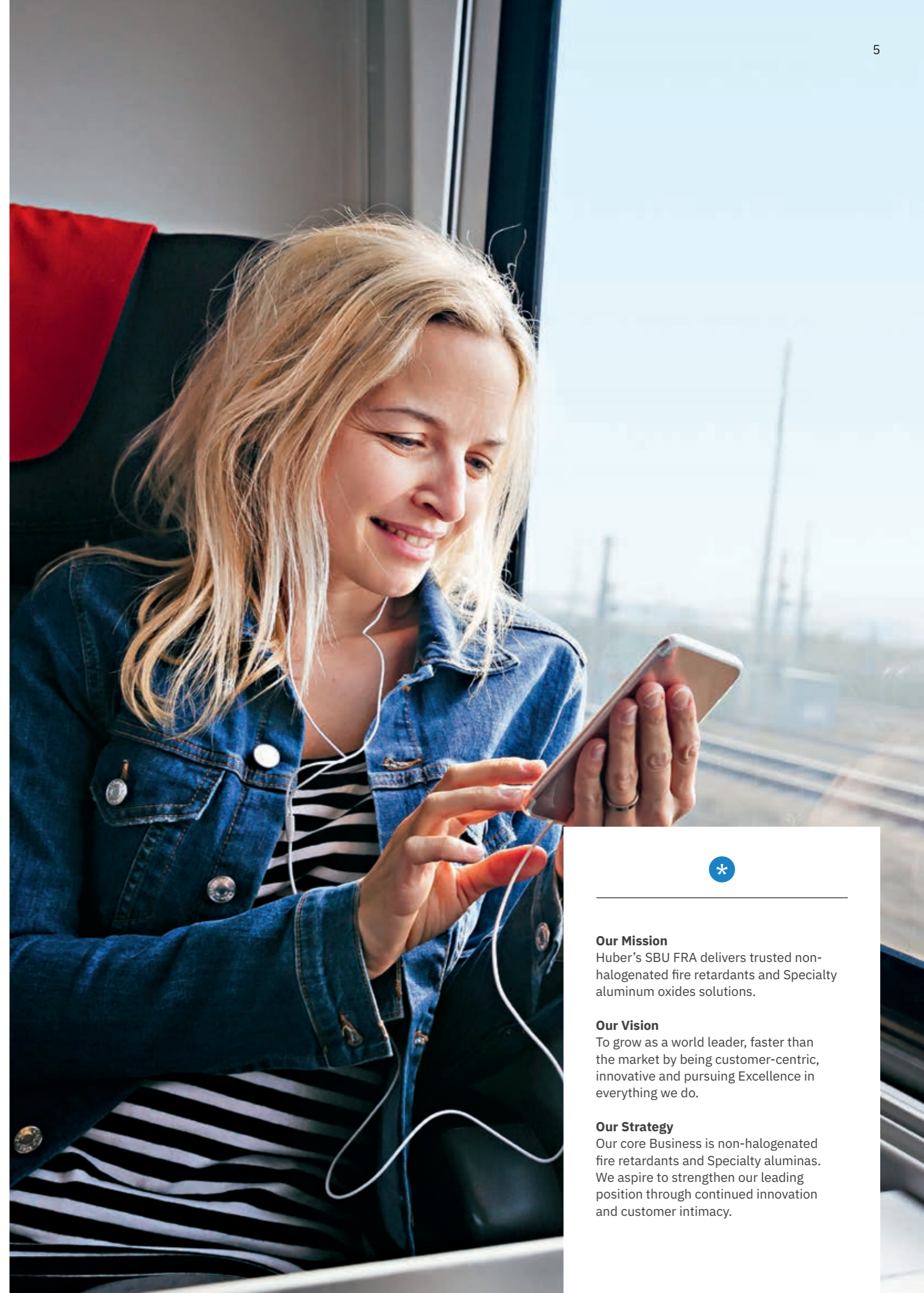
With four manufacturing plants in North America and two in Europe: Martinswerk in Bergheim, Germany and Magnifin in Breitenau, Austria (50/50 JV with RHI) we are well positioned to serve the global needs of our valued customers.

Our reputation for quality and reliability is illustrated through a comprehensive portfolio of problem solving solutions.

We offer a large product portfolio of engineered, value-added solutions with some well-known brand names:

MARTINAL®, Hydral®, Hymod® and Micral® alumina trihydrates; MAGNIFIN®, Vertex® and Zerogen® magnesium hydroxides; and Kemgard® molybdate compounds for a variety of end-use applications. In addition, we manufacture COMPALOX® activated aluminas, MARTOXID® specialty calcined aluminas and PERGOPAK® matting agents and carriers.

Our Specialty MARTOXID® Oxides are used in numerous applications. Some of our latest innovative developments include thermal management solutions for polymeric materials, lithium-ion battery separators (LIBS) and various e-mobility applications.



Our Mission

Huber's SBU FRA delivers trusted non-halogenated fire retardants and Specialty aluminum oxides solutions.

Our Vision

To grow as a world leader, faster than the market by being customer-centric, innovative and pursuing Excellence in everything we do.

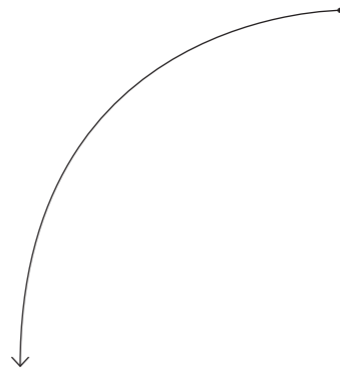
Our Strategy

Our core Business is non-halogenated fire retardants and Specialty aluminas. We aspire to strengthen our leading position through continued innovation and customer intimacy.

1883



Joseph Maria Huber arrives in America as a salesman to develop new markets.



Our strong Heritage

Family-owned Huber was founded in 1883. Our Strategic Business Unit Fire Retardant Additives (FRA) is an essential part of the Huber Engineered Materials division of J.M. Huber Corporation. Today, J.M. Huber Corporation is one of the largest family-owned multi-national companies in the United States.

Combining imagination, inspiration and innovation, we enhance the performance of thousands of consumer and industrial products around the world. Over the past 135 years we have grown and evolved to continually meet the changing needs of our customers, with a focus on the long-term. Our portfolio of companies hold leadership positions in industries ranging from personal care products to food and beverage, fire retardants and smoke suppressants, sustainable forestry, agriculture and engineered wood products.

Key facts
J. M. Huber Corporation

1883

Family-owned since foundation

~4000

Over 4,000 employees in 20 countries

\$2.3

\$2.3 billion in annual revenue

1981

In 1981, Huber acquires Solem Industries, an alumina trihydrate (ATH) manufacturer, which becomes the foundation for HEM's Fire Retardant Additives (FRA) business.

1983

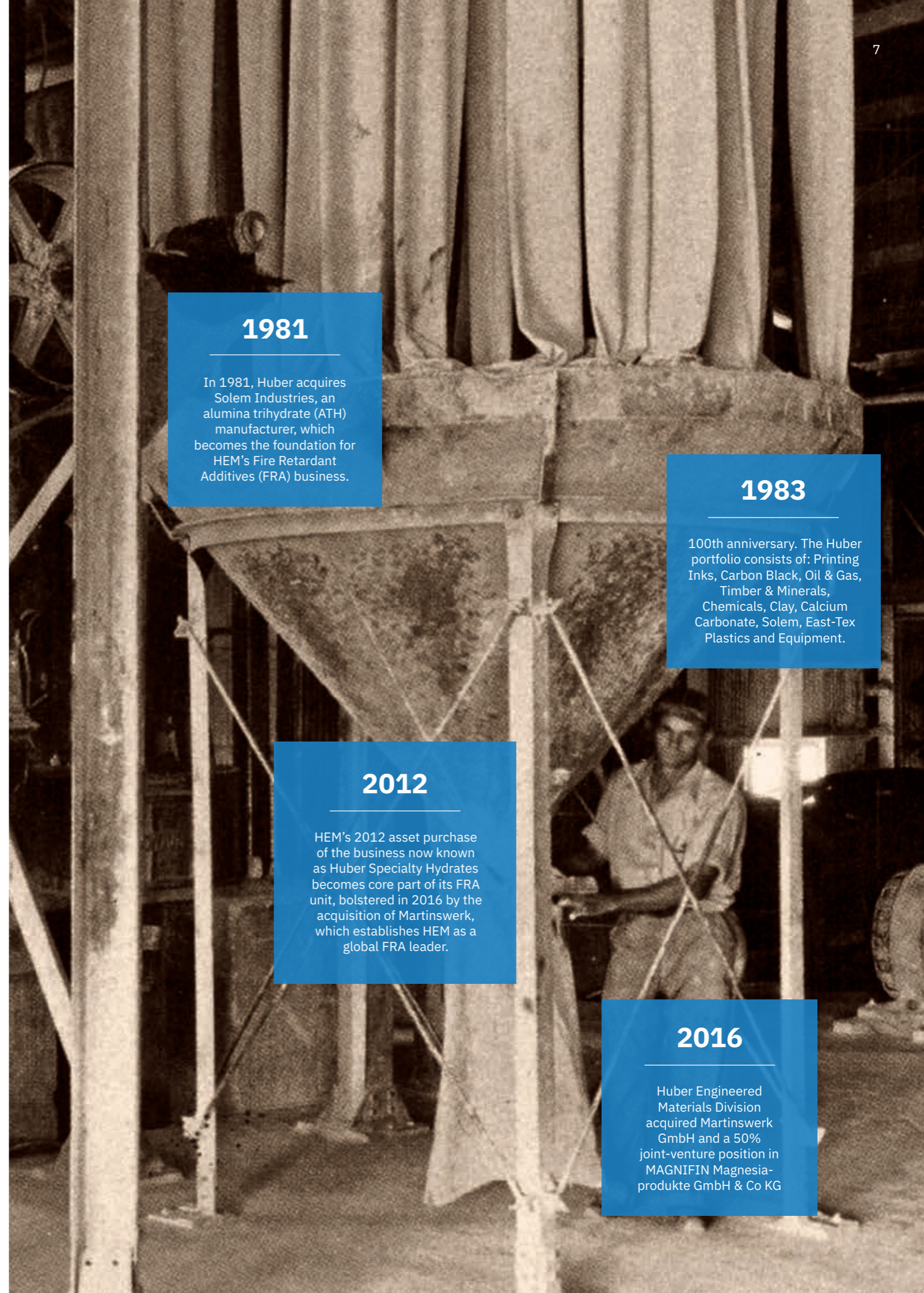
100th anniversary. The Huber portfolio consists of: Printing Inks, Carbon Black, Oil & Gas, Timber & Minerals, Chemicals, Clay, Calcium Carbonate, Solem, East-Tex Plastics and Equipment.

2012

HEM's 2012 asset purchase of the business now known as Huber Specialty Hydrates becomes core part of its FRA unit, bolstered in 2016 by the acquisition of Martinswerk, which establishes HEM as a global FRA leader.

2016

Huber Engineered Materials Division acquired Martinswerk GmbH and a 50% joint-venture position in MAGNIFIN Magnesia-produkte GmbH & Co KG



Fine Precipitated Hydrate MARTINAL®

Premium quality halogen-free fire retardants with unrivaled customer benefits and value

MARTINAL® fine precipitated aluminum hydroxides (FPH) are environmentally friendly, halogen-free fire retardants developed to meet the most stringent requirements in wire, cable and plastic applications and are available in various grades to improve flame retardancy and smoke suppression.

MARTINAL® LEO grades have extremely low electrolyte content and therefore are the ideal choice for use in insulation compounds. In addition to their outstanding electrical properties, MARTINAL® LEO grades exhibit high thermal stability, outstanding compounding performance and excellent flowability.

MARTINAL® LEO products are available in various particle sizes and specific surface areas and coated and non-coated grades to optimize performance for the intended application.

Key User Benefits and Economic Value of MARTINAL® LEO products

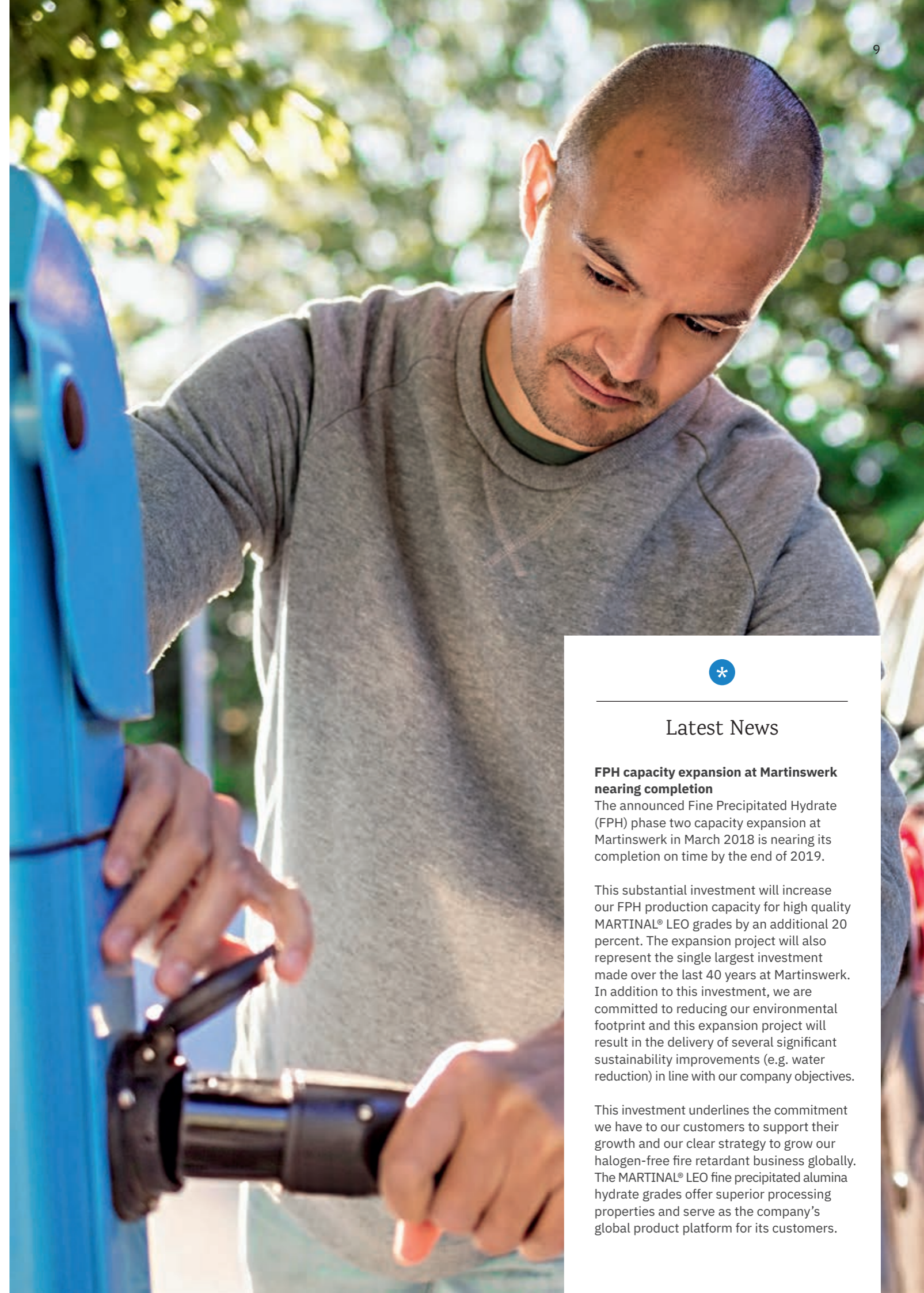
Besides fire retardant properties and ability of our portfolio to meet technical and fire requirements, MARTINAL® LEO grades have been carefully engineered and include a number of innovative, unique product properties. Dependent on product grade and application, our products provides economic value and productivity savings for our customers. Our team of technical application experts is happy to assist you to recommend the most optimized and beneficial solution for your specific application.



MARTINAL®, Hydral®, Hydral® Coat fire retardants are available in various grades to meet most stringent requirements of the wire & cable industry

Overview of customer benefits and value

MARTINAL® LEO Technical Properties	Customer Benefit	Customer Value
Higher thermal stability	<ul style="list-style-type: none"> higher processing temperature improved compounding, lower viscosity higher line speed & throughput higher loading level 	<ul style="list-style-type: none"> lower extrusion costs lower compounding costs higher flame retardancy performance
Higher bulk density & better flowability	<ul style="list-style-type: none"> improved feeding higher silo capacity larger batch sizes 	<ul style="list-style-type: none"> lower extrusion costs lower compounding costs lower transportation costs
Low impurity Na ₂ O level	<ul style="list-style-type: none"> improved electrical performance reduced conductivity 	<ul style="list-style-type: none"> reduced cable failure longer cable technical life



Latest News

FPH capacity expansion at Martinswerk nearing completion

The announced Fine Precipitated Hydrate (FPH) phase two capacity expansion at Martinswerk in March 2018 is nearing its completion on time by the end of 2019.

This substantial investment will increase our FPH production capacity for high quality MARTINAL® LEO grades by an additional 20 percent. The expansion project will also represent the single largest investment made over the last 40 years at Martinswerk. In addition to this investment, we are committed to reducing our environmental footprint and this expansion project will result in the delivery of several significant sustainability improvements (e.g. water reduction) in line with our company objectives.

This investment underlines the commitment we have to our customers to support their growth and our clear strategy to grow our halogen-free fire retardant business globally. The MARTINAL® LEO fine precipitated alumina hydrate grades offer superior processing properties and serve as the company's global product platform for its customers.

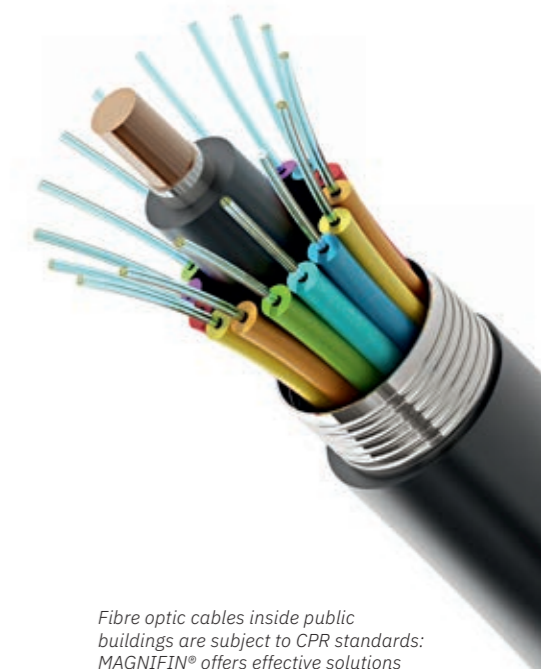
Trends: new 5G networks, E-mobility and photovoltaic applications are growth markets for MAGNIFIN®

High purity MAGNIFIN®

Premium high purity halogen-free flame retardants with processing temperatures up to 340°C

For more than 25 years, MAGNIFIN® high purity, non-halogen magnesium hydroxides have been on the market as a trusted and preferred choice of customers around the world. The proprietary production process results in very high purity magnesium hydroxide grades with a regular crystal form required for fire retardancy applications in a wide range of plastic and rubber applications. MAGNIFIN® is especially recommended when applications require low smoke emissions and high thermal stability of the halogen free fire retardant additive.

MAGNIFIN® non-treated and treated grades have been developed and optimized to meet the highest technical requirements. Its distinctive product properties result in unique benefits and value for our customers.



Fibre optic cables inside public buildings are subject to CPR standards: MAGNIFIN® offers effective solutions



Latest News

Engineering study for second MAGNIFIN® manufacturing plant

A detailed engineering study for a second MAGNIFIN® production site is ongoing to meet growing global demand and support the growth of our customers for high-purity, non-halogenated magnesium hydroxide fire retardants. The scope of the study is to double MAGNIFIN's existing manufacturing capacity in a phased manner.

The new plant would manufacture the same high-quality product portfolio currently being manufactured at MAGNIFIN's site in Breitenau, Austria. This expansion project will further enhance the company's ability to deliver premium magnesium hydroxides and provides additional supply chain flexibility for its customers.

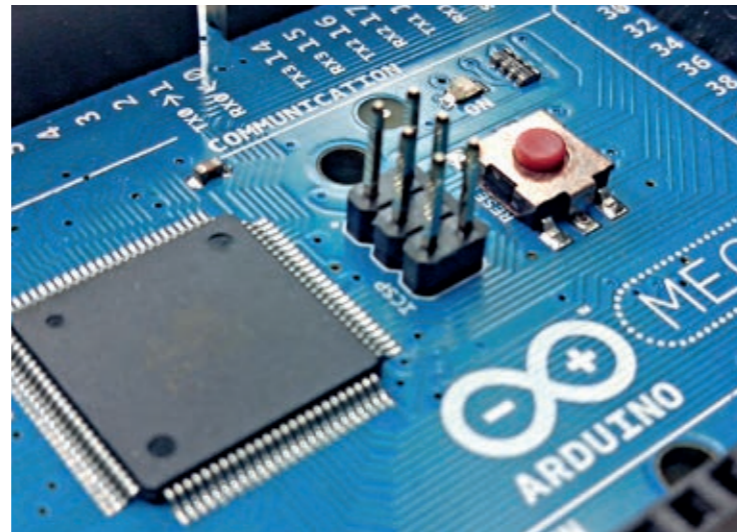
MAGNIFIN Magnesiaprodukte GmbH & Co KG is a 50/50 joint venture between Martinswerk GmbH, part of the Fire Retardant Additives (FRA) business of the Huber Engineered Materials division (HEM) of J.M. Huber Corporation (Huber) and Veitscher Vertriebsgesellschaft mbH, part of the group of companies of RHI Magnesita.

Overview of customer benefits and value

MAGNIFIN® Technical Properties	Customer Benefit	Customer Value
No foreign / coarse particles, unique particle crystal morphology	<ul style="list-style-type: none"> · high electrical resistivity · low water uptake · no strainer sieve · higher loading level 	<ul style="list-style-type: none"> · suitable for more demanding applications · higher compounding throughput · higher (cable) extrusion speed · reduced processing costs
High and stable bulk density & excellent flowability	<ul style="list-style-type: none"> · easier production processing · no strainer sieve · lower viscosity 	<ul style="list-style-type: none"> · higher compounding throughput · higher (cable) extrusion speed · reduced processing costs
Low content of impurities	<ul style="list-style-type: none"> · excellent aging performance 	<ul style="list-style-type: none"> · less cable failure · longer product technical life

Superior MARTOXID[®] TM

Thermally conductive fillers for superior thermal management solutions in polymeric materials



*We keep it cool.
MARTOXID[®] TM delivers highly effective heat dissipation.*

Huber FRA has introduced a series of thermally conductive powders for modified polymeric systems. MARTOXID[®] TM heat conductive alumina-based fillers are easy-to-use, designed to improve the coexistence between filler and matrix in thermally sensitive environments. They allow high loadings - up to 90% - necessary to transfer heat away from the electronic part. The resulting part has excellent properties appropriate for thermal management of polymeric and resin compounds.

To meet the demanding requirements of polymeric-related applications, four series of high-performing MARTOXID[®] TM alumina-based fillers have been developed:

MARTOXID[®] TM-1000 grades serve standard applications at low/medium filler degrees performing at a fit and proper thermal conductivity.

MARTOXID[®] TM-2000 grades are dedicated to sophisticated applications needing high filler degrees in providing a high thermal conductivity and balanced mechanical and rheological behavior.

MARTOXID[®] TM-3000 grades are designed for high performance applications to guarantee extreme filling degrees (maximum condition above the percolation threshold) coupled with a reduced viscosity and a significantly improved workability in processing of polymers.

MARTOXID[®] TM-3000 products can be loaded up to 90%. Denser packing of the filler particles ensures an outstanding thermal conductivity.

MARTOXID[®] TM-4000 Series are thermally conductive, electrically insulative additives, based on advanced aluminum oxide technology, especially designed for heat dissipation solutions for Polyamides (e.g., PA -6, PA -6,6) and provides superior processing performance.



Innovative new MARTOXID[®] products for E-mobility and lithium-ion battery separators

Huber FRA has developed new MARTOXID[®] alumina products with a very high purity and fine particle size, specially engineered for demanding applications such as lithium-ion battery separators (LIBS) and particulate filters. These products are manufactured using a proprietary production process and offer excellent technical performance and great value in-use for customers.

Please contact us to learn more about the solutions we can offer.

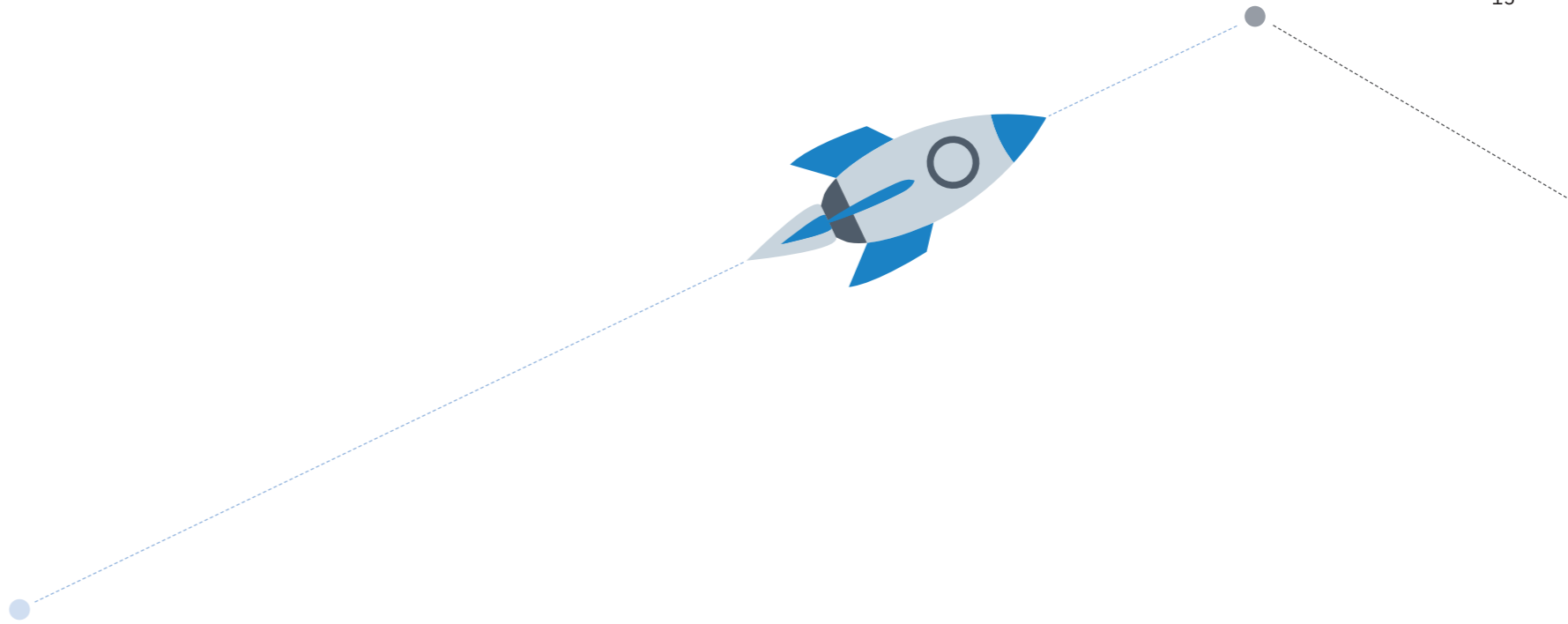


Excellent Cost Performance

Due to high loadings necessary to achieve high thermal conductivity, the filler content contributes significantly to the cost of the formulation. On a volume basis, MARTOXID[®] TM alumina powders comparable in cost to polymeric materials are much more economical than carbide and nitride powders.

MARTOXID[®] TM Key Performance Benefits

- Quick cooling-off phase (through-plane)
- Stability at higher temperature and enhanced thermal stability of the final composites
- Optimized particle size distribution allowing miniature design and low bond lines
- Flat and smooth surface improving the intercontact between thermal interfaces
- Low heat expansion coefficient allowing tight dimensional accuracies
- Excellent electrical insulation and tracking resistance due to high dielectric strength
- Mechanical wear of production equipment comparable with silica powder and glass fiber
- Orientation independent thermal conductivity; i.e., high through and in-place values
- Low viscosity and good flowability, essential for efficient extrusion and injection molding



Moving ahead

Transforming tomorrow. Our reputation is based on our proven track record as a trusted solutions provider, our high value-added products and technical competencies that provide real value to customers.

We provide innovative solutions using the most advanced technologies combined with our unique expertise and know-how.

Global Thinking and Presence
Huber FRA takes advantage of having two centers of R&D Excellence which each create a unique set of capabilities and expertise. New products and solutions are developed both on a global and regional basis to meet specific needs and requirements from our customers.

Recent new products are the MARTOXID[®] TM series of Thermally Conductive Alumina based Fillers and MARTOXID[®] specialty aluminum oxides which are used in e-mobility applications such as lithium-ion battery separators and ceramic particle filters.

We recently also launched our Kemgard[®] molybdate smoke suppressants for rigid and flexible PVC compounds in Europe and Asia, which have now been REACH registered. Kemgard[®] molybdate compounds are cost-effective smoke suppressants based on patented surface

2 world - class R&D centers with unique capabilities and highly experienced staff

treatment technology. The Kemgard smoke suppressant product chemistries include zinc molybdate, calcium zinc molybdate and zinc oxide/phosphate complexes.

Huber's Kemgard[®] products are ideally suited for PVC applications where smoke emission is a critical issue, like public buildings, aircraft, mass transit and wherever products are required to meet the highest flammability and smoke performance specifications. When the compound burns, molybdates chemically promote the formation of organic char, effectively insulating the polymer from the heat and oxygen source, thus lowering both smoke and heat release.

Kemgard[®] products are manufactured by a patented process in which the active phase (molybdate) is precipitated on an a designed core. This unique "shell/core" structure maximizes the surface area of the active phase thereby producing a very effective and efficient char former. Kemgard[®] products are also effective as partial replacement for antimony oxide in similar thermoplastic applications.

"We provide innovative solutions using the most advanced technologies."



New products

We have exciting new products in our New Product Development pipeline and our team will keep you informed about new product launches. In case you have unmet needs or require specific solutions for your application, please let us know and we are happy to work with you to offer technical support and expertise.

Our global footprint

North America

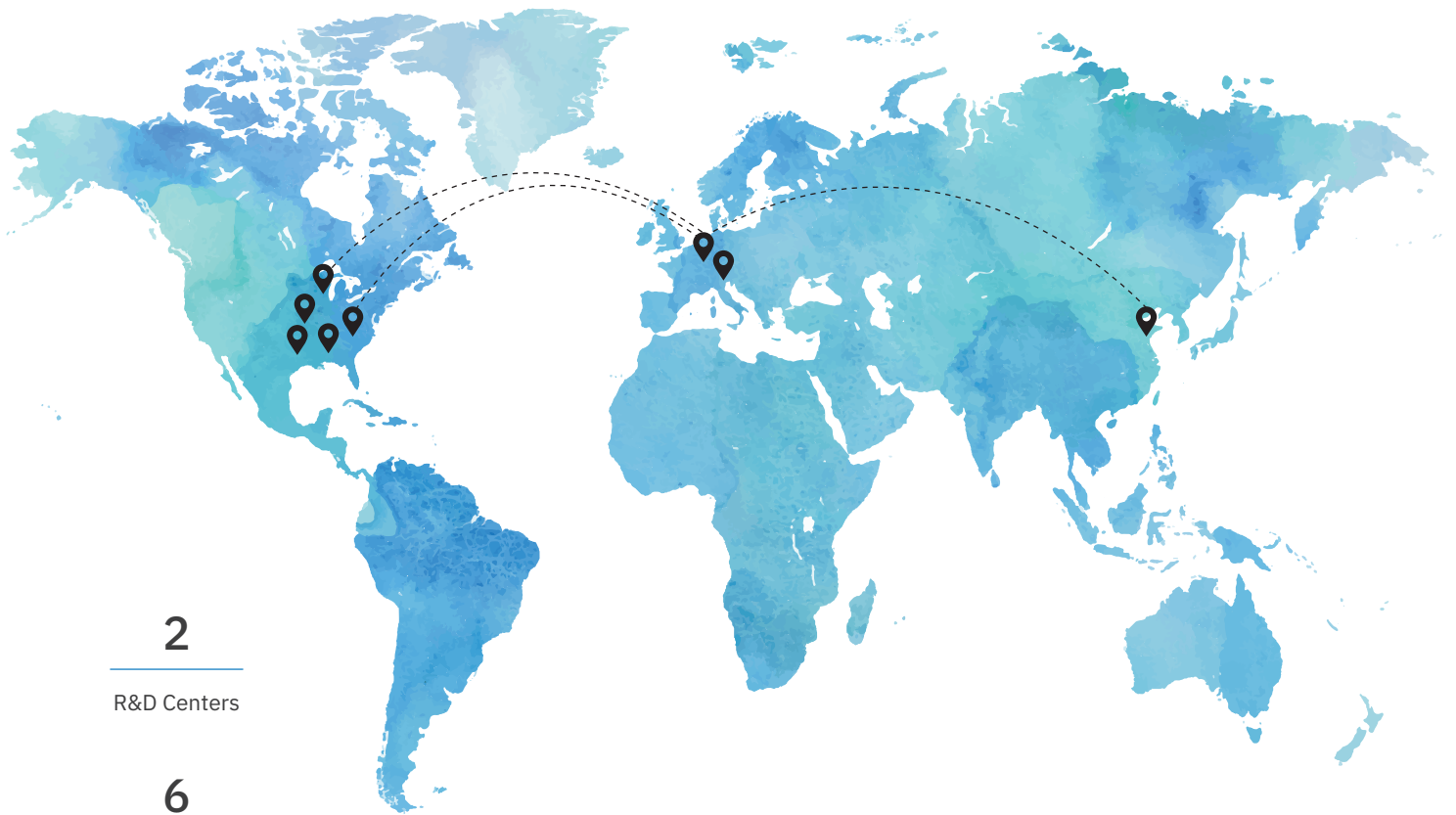
Fairmount, GA
Atlanta, GA
Kennesaw, GA
Marblehead, IL
Bauxite, AR

Europe

Bergheim, Germany
Breitenau, Austria

Asia

Qingdao, China



2

R&D Centers

6

Manufacturing plants

3

Customer Care
Centers

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