

Sustainability Report 2017



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Höganäs 2017 at a glance

1,500

products in the Höganäs
product portfolio

16%

of our total workforce
are women

1,888

engaged co-workers
in 29 countries

1,435

development talks
between our co-workers and
managers, corresponding to
76 percent of all employees

2,500

customers served in
79 countries

7.1%

reduction in energy use
per produced tonne of metal
powder within direct operations
since 2010

77%

of all process-related
residual materials were
reused or found new use

1

completed acquisition
of the business of
Metasphere Technology

24.5

hours of training
on average for co-workers

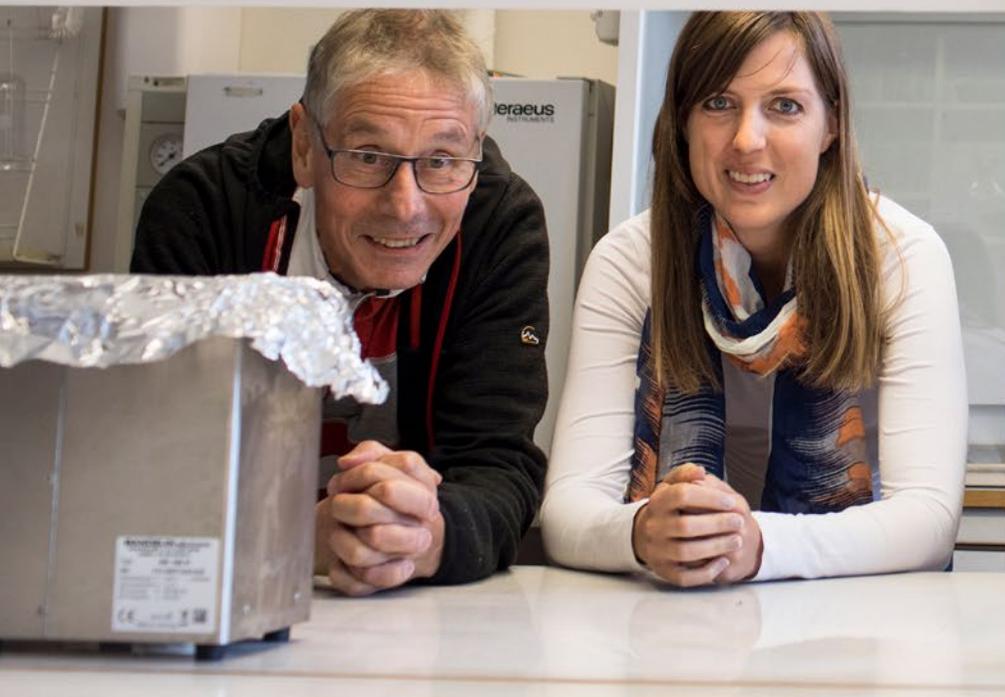
34%

reduction of lost time injury
frequency since 2014

16

is the average number of times
that the water recirculated before
it left the process and became
discharge

Making a difference with metal powders



Making a difference with metal powders

At Höganäs, we are firm believers in the potential of the individual. We know that every one of our employees has the ability to contribute to improving not only our company, but also society. Our tool is metal powder technology, and our method is close cooperation with customers and partners.

➤ **WE AT HÖGANÄS** are proud of our metal powder solutions and know-how. We believe that the inherent power of metal powders can be utilized in industry to a much larger extent than it is today. Metal powders not only enable our customers to reduce their material and energy consumption, but they also help them make their final products more efficient while reducing lifecycle costs. With sustainability at the heart of our research and development, and our customer relationships, we will break new ground. That is why our vision is “Inspire industry to make more with less”.

With this know-how, and with our strong position in the market, comes a great responsibility: it is our obligation to strive to change the industry and the society for the better. This is why we have made a deep commitment to sustainability.

More Höganäs, our management philosophy, outlines our vision, values and principles for how we lead and how we work. Our key



Fredrik Emilson
President and CEO

stakeholders are our customers, employees, owners and society, and we have defined a value for each of them. Our prosperity is linked to that of our stakeholders, so we strive to benefit all four stakeholders equally in every decision we make.

During 2017 we continued the implementation of More Höganäs via trainings and other activities around the world. All employees received the More Höganäs handbook in their own language. A More Höganäs office, with two dedicated employees, was established to support the organization with workshops, standards, tools and methods.

HÖGANÄS' SUSTAINABILITY WORK continued with deeper integration of sustainability as an aspect of the business strategy and planning process. Increasingly sustainability is seen as a natural part of discussions and development projects throughout the company. Mount Sustainability continues to serve as our foundation and our guidance for how we visualize and concretize the challenging paths we have ahead. Our main focus areas are to reduce our climate and

environmental impact; responsible sourcing and use of materials for production; and offering a safe and meaningful workplace. We do this by responsibly producing resource-efficient products that benefit both our customers and society.

Safety is a top priority for us at Höganäs. The very nature of our business – working with steel – means safety challenges that must be taken seriously and addressed in a planned and thorough fashion. I am pleased that the number of incidents and accidents has decreased for the third consecutive year, but I am still not satisfied, we need to do better. No one should be injured carrying out their work, and this is why we work systematically to create a Zero Accidents culture. During 2017 we have implemented an incident reporting system globally and new targets for our occupational health and safety work, in addition to trainings and physical improvements at the production sites.

SAFETY IS ONE of the group-wide initiatives that Höganäs has been working on for many years; others are minimizing waste and improving energy efficiency. These are long-term commitments where we are investing considerable resources.

In late 2017 we took an important step away from fossil fuels and towards renewable energy. In Höganäs, Sweden, we broke ground for a plant for production of renewable energy gas and green coke. The goal is to transform biomass into renewable energy, and prove the technology so it can be used widely in the iron and steel industry. With this investment alone, carbon dioxide emissions could decrease by around 10,000 tonnes per year for Höganäs. In this project, called Probiostål, we collaborate with Cortus Energy AB, academia and other companies in the Swedish steel industry.

Other noteworthy actions during 2017:

- ★ We joined the UN Global Compact as a participant. The UN Global Compact's Ten Principles are an important foundation in our materiality analysis and our forthcoming work.
- ★ We initiated a global climate roadmap to move from fossil fuels to renewable energy.
- ★ Höganäs employees participated in an e-learning covering general sustainability knowledge and our own sustainability work.
- ★ We implemented a tool for reporting group-wide sustainability data and key performance indicators (KPIs).
- ★ We conducted a pilot project for a supplier evaluation tool.

We will continue to work with sustainability at a high pace during 2018. We plan to update our Code of Conduct, launch the supplier evaluation tool for our suppliers of direct material, continue work on the climate roadmap, and establish a partnership with Plan International concerning water purification technology in countries in great need of support.

It is clear that we have a strong vision of what characterizes Höganäs as a sustainable business, and what positive impact we and our customers can have in society. Our employees are ready to take on this task. The next step is to set challenging, yet realistic goals to guide us in our future work.

Best regards,
Fredrik Emilson
President and CEO



About this report

About this report

➤ **THIS REPORT PROVIDES** information about Höganäs' sustainability performance throughout 2017. It presents our take on the wider context of sustainability, where our most relevant material topics have been pinpointed to serve as a disclosure for GRI core level. These topics have been identified through stakeholder engagement from 2015 to 2017, which resulted in a sustainability strategy called 'Mount Sustainability'. This strategy, which guides the structure of the report, is presented according to the following sections that correspond to our long-term vision:

- ★ A great and meaningful place to work
- ★ Building communities and responsible partnerships
- ★ Sustainable offerings and long-term profitability
- ★ Future-proof business
- ★ Climate neutral operations

This report is our first public sustainability report that will, henceforth, be produced on an annual basis. It presents Höganäs' most substantial areas of impact on the economy, environment and society, and serves as a benchmark for our continuous improvement work.

This report refers to the period from January 1, 2017 to December 31, 2017.

The people data were compiled using a headcount, and were collected from the company's human resources systems. Data on

emissions, energy, waste and water were calculated with information provided by Höganäs' environmental management systems, based on data from control, measuring, or indirect methods. Some values have not been fully verified and have been marked as estimated, with other caveats explained.

Data that, by proxy, cannot change the level, strength or otherwise impact reported facts or statements by more than ± 5 percent, may have been excluded.

This report has been prepared in accordance with the GRI Standards Core option and in accordance with Swedish regulation (Årsredovisningslag) regarding disclosure of non-financial information. An additional GRI content index can be found at the end of the report¹. This report has been approved by Höganäs Board of Directors.

Omissions

We have made omissions for the following indicators:

- ★ **GRI 303-1** and **303-3**: use of water is based on our largest production units, where our largest impact occurs.
- ★ **GRI 403-2**: Rates of injuries are not divided into gender

With two exceptions, this report covers all entities included in Höganäs consolidated financial statement:

- ★ As the operational responsibility for the Höganäs Group is delegated to Höganäs AB's Board of Directors, the sustainability report focuses on Höganäs AB and its subsidiaries. The owners of the Höganäs Group are represented in Höganäs AB's Board of Directors.

¹ This report has not been verified by GRI Standards.

- ✦ As Höganäs acquired the business of Metasphere Technology in November, it was too late for data from operations in Luleå, Sweden, to be included in the report.

Internal assurance

The Höganäs Sustainability Report has been verified by our internal auditors to ensure legislative compliance. No external assurance for the report outside the COSO framework for internal control has been performed. ■

For any questions regarding the report, you are welcome to address them to:
Senior Vice President Sustainability Nicklas Lång at nicklas.lang@hoganass.com or
Sustainability Manager Anders Bergman at anders.bergman@hoganass.com.



**This is
Höganäs**



This is Höganäs

» **AT HÖGANÄS, WE** are convinced that metal powders provide endless opportunities, starting with – but also far beyond – their traditional use in powder metallurgy (PM) for automotive components. Metal powders can help our customers (and their customers) to reduce their material and energy consumption, or to prolong the lifetime of their products. Metal powder can also enable new and better technologies that make final products more efficient and with lower lifecycle impact. Indeed, we believe that metal powders can be an important tool towards improved industrial

sustainability. That is why our vision is to “Inspire industry to make more with less”.

The particle is the answer

Despite their minute size, metal powders have astounding powers. Particle shape, particle size distribution and chemical composition can be adapted to fit a wide range of different needs. For example, press-ready mixes that easily flow and fill cavities in the mould, enabling pressing of intricate components, or powder-based cleaning media with huge surface area, which allow for efficient reaction with contaminants in air, water and soil.

All of this is Höganäs’ home turf. We have developed metal powders and adapted their properties to various customers and markets since the 1950s.

Applications we serve

Powder metallurgy (PM)



Additive manufacturing



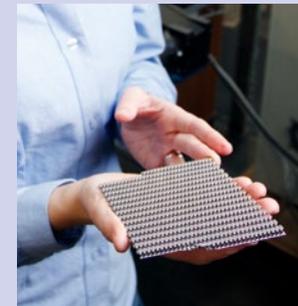
Electromagnetic applications



Surface coating



Brazing



Water treatment



A solutions provider

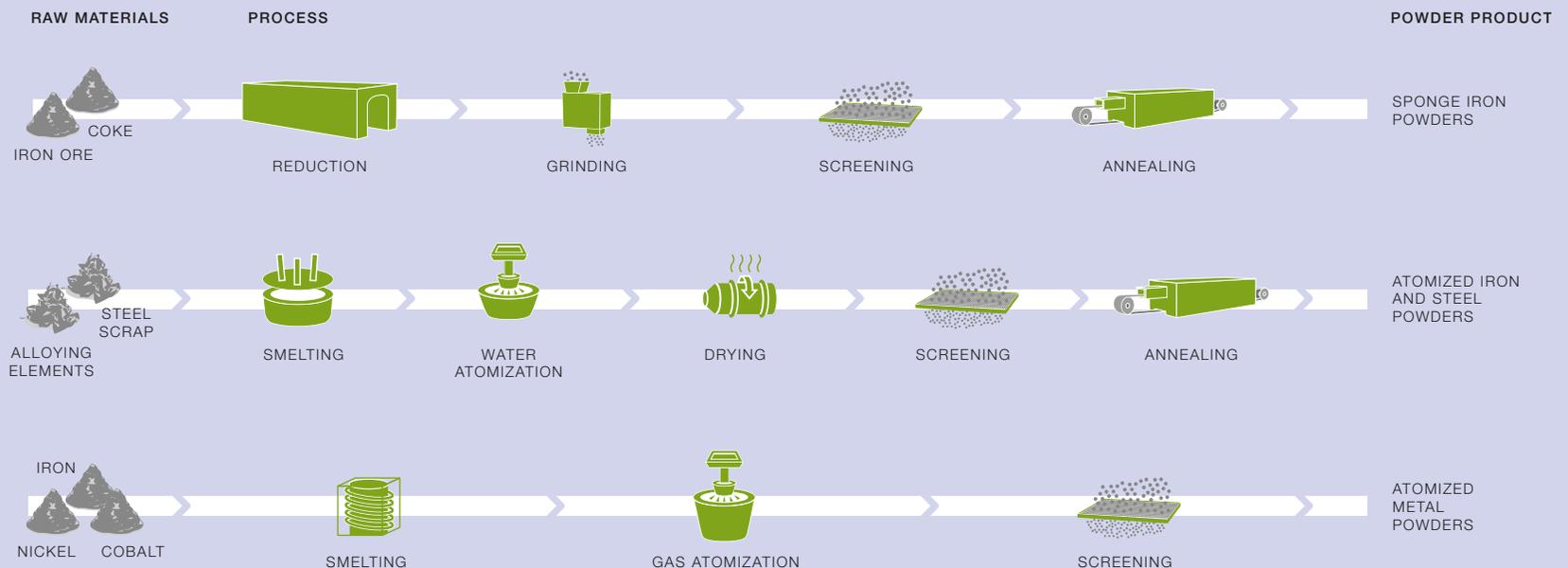
Today, our product portfolio contains more than 1,500 products, and we serve about 2,500 customers in 79 countries. Our metal powders are used in a wide spectrum of applications, ranging from sintered components, electromagnetic applications, surface coating, brazing, filters, friction components and welding to chemical and metallurgical processes, food fortification and water and soil treatment. Lately, metal powders have also gained importance for emerging technologies such as additive manufacturing.

So, when a customer turns to us, they don't just get access to our metal powders. They can also tap into our vast expertise both in metal powders and their subsequent treatment in our customers' processes, and on the design of a broad range of metal powder-based applications. We can help our customers with:

- * Selection of the right material and processing for a given application
- * Improvements in their supply chain, working environment and material utilization by offering press-ready mixes or ready-to-use brazing pastes in lean packaging, for example
- * Development, testing and prototyping of new designs and concepts in cooperation with one of our tech centres
- * Design of materials with specific properties
- * Troubleshooting – identifying root causes for application failures and indicating corrections to processes and material choice for robust manufacturing
- * Schools and onsite training.

Besides being a world-leading supplier of powder materials,

Höganäs production



Höganäs is also a strong partner offering logistics solutions, technical support and application development capabilities.

200 years of innovation

Höganäs' origins date back to 1797, when coal mining started in the fishing village of Hyggenäs in southwestern Sweden. Coal mining and bricks, as well as industrial and household ceramics, have played important parts in the company's history, but today Höganäs focuses solely on metal powders.

Lindéngruppen and FAM each control 50 percent of the shares in Höganäs and have done so since they bought the company off

Historical milestones

1797: Höganäs AB was founded as a coal-mining company

1910: Sponge iron works was built

1946: Factory for production of iron powder was built

1950: Establishment of Höganäs in USA

1980s–1990s: Expansion in Asia, sales organisation grows in Europe and new plants are opened up in India, Brazil and UK.

2000: A sales office is set up as the first step for the new North American operation. A steel plant in Stony Creek (First Miss Steel) and an iron powder plant in Niagara Falls (Pyron) are acquired. Two years later, Höganäs acquires SCM Metals in Johnstown for production of high alloys.

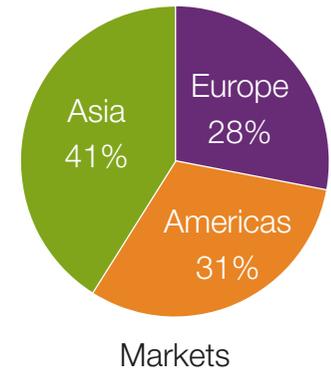
2015: Acquisition of Abril Industrial Waxes Ltd in UK.

2017: New headquarter for business area Environmental was set up in USA, Cary.

the Stockholm stock exchange in 2013. We have maintained our headquarters in Höganäs, Sweden, where we also have our largest production facilities and main R&D function. However, Höganäs has for many years had a global presence, and has today 15 production units in nine countries on four continents, seven globally distributed tech centres, and sales representatives in more than 30 countries.

The markets we serve

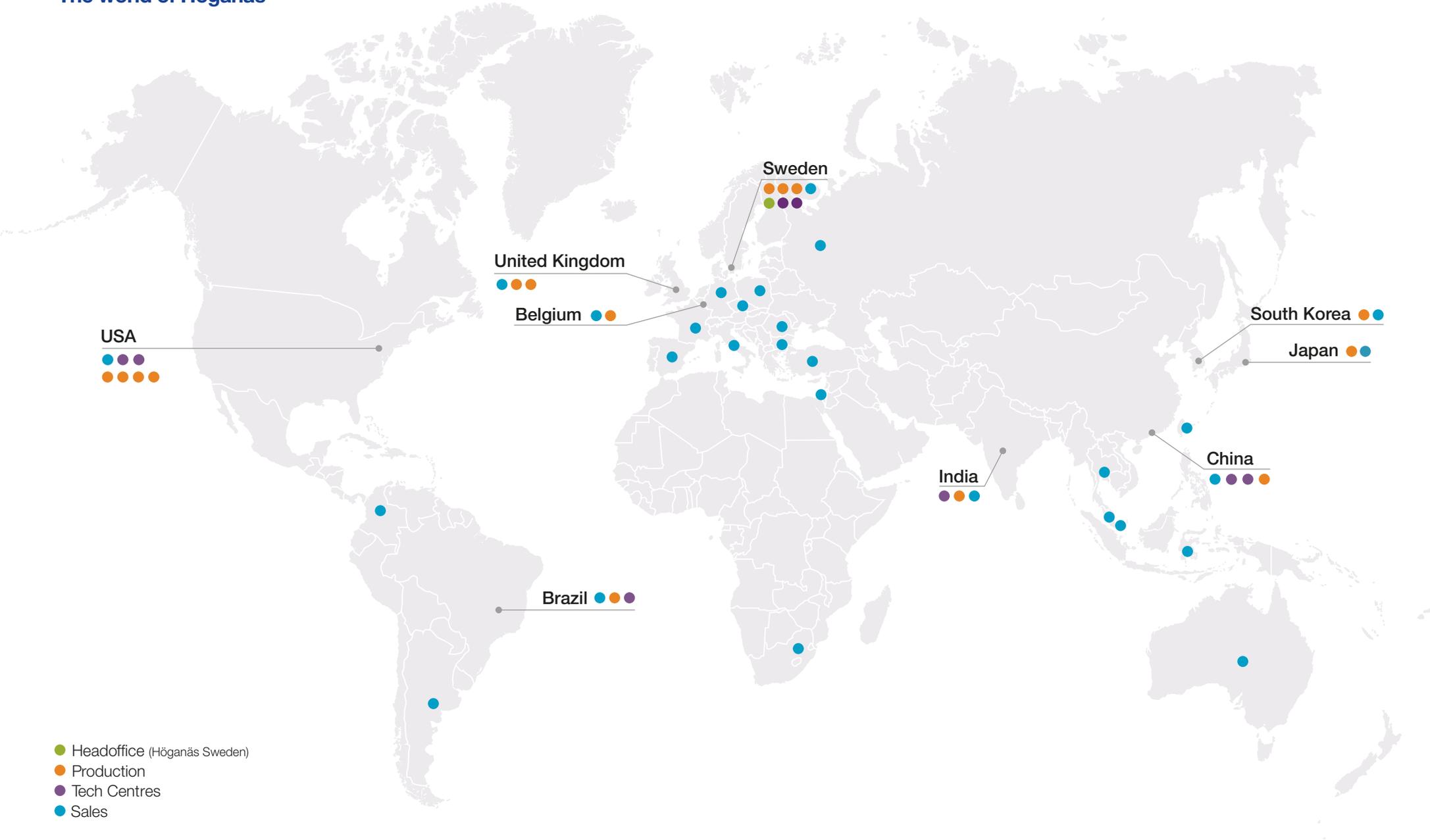
Today, our metal powders are used in a wide range of industries and applications. To meet needs in society and utilize our resources in the best possible way, we serve the market via three business areas: Automotive, Industrial and Environmental. All three act globally, but focus on different customer groups and their particular needs.



Business Area Automotive

Automotive is the business area where Höganäs has the longest and deepest experience. Here you find our 'traditional' powder metallurgy solutions for sintered automotive components utilising our pure iron powders, our alloyed powder like Astaloy® and Distaloy® and our press-ready mixes like Intralube®, Starmix® and Densmix®. Typical automotive parts benefitting from the use of metal powders are components for variable valve timing (VVT), planetary carriers for automatic transmissions, cam lobes, connecting rods, main crank bearing caps, shock-absorber components, pulleys and sprockets.

The world of Högånäs





Höganäs demonstration car with powder metal transmission gear technology

Pulse transformers for ignition systems and fast-switching actuators for fuel injection can benefit from our metal powders for electromagnetic applications. Our offer for the automotive sector also includes our soft magnetic composites Somaloy® for innovative solutions for electric traction and auxiliary motors, and inductive components for drive systems.

Our brazing pastes and our BrazeLet® brazing filler metals, which combine low brazing temperatures with high corrosion- and oxidation resistance, perfectly fit the needs of applications like exhaust gas recirculation (EGR) coolers and catalytic converters. Engine valves benefit from our surface coating powders and knowledge.

In addition, emerging technologies such as additive manufacturing for the automotive sector are supported by our Automotive team.

Business Area Industrial

This business area was created to efficiently serve, and add value to, different industries with a wide range of needs. Our industrial surface coating team, with our brands like Surfit® and Rockit®, serves among others agriculture, mining, oil and gas, pulp and paper industries, plastics, glass and steel industries. We supply powders for many different deposition techniques, such as laser cladding, plasma transferred arc (PTA) surfacing, flame spraying and powder welding. And we support our customers with application development and validation, material and process recommendations, analysis and training through our tech centres around the world.

Industrial powder metallurgy (PM) applications can be found in mass-produced, cost-saving mechanical components used in air conditioners, refrigerators, power tools and lawn mowers. Powder metallurgy is also used in smaller series applications adding high value by unique features such as wear- and corrosion resistance, thermal properties or filtration capability. Within Industrial, we have also gathered electromagnetic applications within heating, ventilation and air conditioning (HVAC), power tools, lawn and garden, and white goods industries. Of course, our industrial customers also benefit from our vast experience gained from automotive applications, and this collective knowledge is directly accessible via our tech centres.

Typical brazing applications are found within, for example, industrial and domestic heat exchangers. Our offer includes brazing pastes, filler metals and brazing related services for all common paste application techniques as dispensing, roller coating and screen printing.



A typical industrial application benefiting from Höganäs surface coating powders.

Also, additive manufacturing is gaining more and more importance within the manufacturing industry, enabling entirely new design capabilities. We develop powders and services for all types of additive manufacturing such as powder bed, powder deposition and blown-powder techniques.

During 2017, Höganäs announced two expansions vital to Business Areas Industrial: the acquisition of the business of MetaspHERE Technology took place early November 2017; and in late December Höganäs signed an agreement to acquire H.C. Starck Group's Surface Technology & Ceramic Powders division, STC.

The start-up MetaspHERE Technology, founded 2009 in Luleå, Sweden, has developed a new technology for atomizing metals, carbides and ceramics at very high temperatures in a new and ground-breaking reactor. With this new technology, perfectly spherical, highly dense and pure powders free of satellites can be achieved. Additions to Höganäs portfolio of high-performance powders for surface coating and additive manufacturing include, among others, tungsten carbides. Current customers are supplied with products from the pilot reactor; work is ongoing to finalize the production reactor, which will be started during the third quarter of 2018.

STC is a leading global manufacturer of surface technology, ceramic and additive manufacturing powders for a wide variety of end-market applications. STC produces a broad range of highly customized metallic and ceramic powders, which target niche applications in a diversified set of end-markets including industrial gas turbines, aviation, oil & gas, welding, medical, various industrial applications, thermal management & clean energy and additive manufacturing. STC operates two production facilities in Germany and has a workforce of approximately 360 employees. In 2016, the company reported revenues slightly above EUR 100m, of which about half was generated from Europe. The company operates as a legally separate stand-alone division within the H.C. Starck Group. STC's broad product portfolio and strong trademarks will expand Höganäs' existing product portfolio, and add significant product development capabilities and knowhow to Höganäs. The transaction has been subject to the approval of relevant authorities and has been closed at the end of February 2018.

Business Area Environmental

The newly formed Business Area Environmental develops products and processes for key environmental applications. Our Cleanit® solutions cover drinking water, industrial wastewater, soil and groundwater remediation segments in the global market. Our Cleanit product range is based on high-purity iron media with very high surface area, high internal porosity and significant reactivity. When needed, we also add proprietary functional additives to the base irons for customer/site specific needs.

The Cleanit media is highly reductive and adsorptive when used in decontamination of drinking water. Its reactivity can be sustained long-term or can be fast as demanded by site conditions. Cleanit is capable of removing multiple contaminants such as hexavalent chromium, arsenic and other heavy metals from groundwater in a simple, one step pump and treat process. Our solutions can easily be retrofitted into existing water treatment systems. The media in water treatment is approved according to the North American standard for drinking water system components NSF61/ANSI 61.

Our portfolio also includes Industrial wastewater treatment using electrodes in an electrocoagulation process. The electrodes have very high surface area and porosity to allow faster reaction and dissolution. The electrodes can be customized to target a specific contaminant and site needs. Our solutions remove a broad range of contaminants including heavy metals, metalloids, organic substances, ammonia, nitrates and phosphates. Our designs typically reduce energy consumption significantly and considerably increase treatment efficiency and we can custom design electrodes for any application. In soil remediation we primarily target chlorinated organic compounds, heavy metals and allow substantial reduction in



Höganäs water treatment pilot, available for site testing to fine tune process and demonstrate performance to customers.

site remediation time. We offer engineered media (Zero Valent Iron) for all soil remediation treatment techniques, such as soil Injection, permeable reactive barrier (PRB) and soil blending.

In 2017, Höganäs set up Business Area headquarter in Cary, North Carolina, USA, with Research & Development, Sales, project design and logistics functions. Water and soil treatment are new technology areas for us, and therefore we are in the lighthouse phase, gathering real-life data and experience together with customers. Currently, three drinking water installations and one Zero Liquid Discharge (ZLD) industrial wastewater plant are showcasing our technology in daily use. Several projects are on-going for soil remediation in cooperation with customers. ■

Total capitalization, broken down in terms of debt and equity as of 31 December, 2017

Equity:
8,405
million SEK

Net debt:
4,167
million SEK

Number of employees:
1,888

Production: ca.
500,000
tonnes of metal powder

Net sales, total:
8,223
million SEK

More than **700** valid patents on processes and products

Organization	Type of engagement
European Powder Metallurgy Association (EPMA)	Höganäs holds a position on the governance body
Metal Powder Industries Federation (MPIF)	Höganäs holds a position on the governance body
Japan Powder Metallurgy Association (JPMA)	Höganäs participates in projects and committees
Powder Metallurgy Association of India (PMAI)	Höganäs holds a position on the governance body
Korean Powder Metallurgy Institute (KPMI)	Höganäs participates in projects and committees
China Powder Metallurgy Alliance (CPMA)	Höganäs participates in projects and committees
American Water Works Association	Höganäs participates in projects and committees
Jernkontoret (Swedish steel producers' association)	Höganäs participates in projects and committees
Eurofer (European steel association)	Höganäs is represented via Jernkontoret.
UN Global Compact	Höganäs is participating in the initiative

The solutions we provide

The collaborative approach

There are many ways to do business. At Höganäs, we believe in a collaborative approach. Because no matter where in the world we find our customers, the one thing we all have in common is that, by cooperating and sharing best practice, we all achieve more with less. We want to contribute to our industry reaching its full potential, and we think this can only be done by working together. We hope that our tech centres around the world offer places where we can join forces, in close cooperation, to innovate and drive metal powder opportunities forward. Here we have the knowledge and the infrastructure to work with metal powder development, application design and prototyping as well as process optimization – an ideal platform for joint application engineering.

Our services range from straightforward prototyping or mechanical testing, to complete application development as exemplified by soft magnetic composites, where support encompasses material selection, electromagnetic application design and process solutions.

Making it easier to select the right powder-based product

Material characterization and testing has traditionally been one of the strongest competencies that Höganäs offers. By continuously adding new test methods, such as wear testing, to established competence in areas like fatigue analysis, our tech centres can provide a wide range of material and component testing methods. This includes mechanical testing of static and dynamic properties, material analysis like phase transformation and metallographic analysis, chemical analysis, rheology and corrosion testing.



Our tech centres provide services that aim to optimize customer processes in areas such as pressing and sintering, and post-treatment stages like machining and heat treatment.

Components like gears can be tested for both tooth root bending fatigue, as well as rolling contact fatigue.

Advanced testing methods enable “virtual” prototyping and the generation of reliable application-relevant data to product and process designers. Our materials knowledge and microstructure analysis tools make it possible to design materials with specific properties and to select the right material and processing for a given application. Microstructure analysis also has a troubleshooting role, providing the insight to identify root causes for application failures and the ability to indicate corrections to processes and materials that will ensure robust manufacturing. We also arrange courses

on metallography to spread knowledge and understanding of the potential and behaviour of powder metals.

Process development

In the past, Höganäs has developed processes such as warm compaction for its customers, and we continue to be involved in joint projects to offer new alternatives and improve processing performance. New developments in sintering provide opportunities for the controlled sintering of high-performance powders such as chromium alloyed materials. Cooperation with press and tool manufacturers on the use of press-ready mixes has improved the productivity and quality of PM components. Our tech centres provide services that aim to optimize customer processes in areas such as pressing and sintering, and post-treatment stages like machining and heat treatment. However, our tech centres' capabilities relate not only to powder metallurgy components, but also to electromagnetic applications, surface coating, additive manufacturing, brazing and filter applications.

Höganäs' surface-coating hubs have been set up for a very specific reason: we are committed to supplying the best technical services achievable to the surface coating industry. Our services cover identification of the best solution to improve component lifetime, selecting the optimum process and materials, prototyping, sample production, pre-series and first-series production. We can also assist our customers with technical support on process parameters and materials, and provide troubleshooting services for deposition techniques such as laser cladding, plasma transferred arc welding and flame spraying.

With state-of-the-art equipment for screen printing, roller coating and dispensing, we can help our customers to reach high precision, high productivity and low defect rates in all types of brazing applications. We can, for example, provide test series of components with paste applied the same way as in final production, in order to make sure the customer's productivity and quality requirements are fulfilled. On-site application development is also provided to ensure we find the optimum application solution for our customers' components.

A multidisciplinary approach

Within our tech centres, we can provide the expertise and services needed to reduce time to market for innovative electromagnetic application projects. This requires a multidisciplinary approach focusing on material selection, application design and an efficient solution for producing pressed and heat-treated components. We offer the knowledge, tools, equipment and services to support a successful project outcome. Our range of capabilities provides support in areas such as material selection, training, application design using FEA analysis production optimization, and prototyping.

We call our largest tech centre at our head office in Sweden PoP-centre, while our tech centres focused on surface coating are called ArcX-centers. Brochures on the complete infrastructure of our tech centres around the globe can be found on our homepage.

Continuous service development

During 2017, we expanded our tech centre capabilities with two new facilities. The new machining hub in the US aims to support



Our materials knowledge and microstructure analysis tools make it possible to design materials with specific properties and to select the right material and processing for a given application.

customers in the machining of sintered components. By fully utilizing our machining additives in the powder, our competent staff and our new test possibilities, we can realize significant improvements for our customers, such as longer tool life, increased productivity, less cooling and lubricant use, while minimizing the occurrence of defective goods.

In China, Höganäs opened a new sintering competence centre to support our customers to improve their sintering and heat treatment processes for optimized product quality, performance, reduced scrap rates and lowest total costs.

Also in 2017 AMEXCI was founded, which is a service centre in Sweden for know-how throughout the product lifecycle in the field of additive manufacturing. It is co-owned by Höganäs and Scania, SAAB, Electrolux, Husqvarna Group, Stora Enso, ABB, SKF, Atlas Copco, Wärtsilä and our owners FAM.

In early 2018, Höganäs acquired the Swiss tooling company Alvier PM-Technology. While Höganäs will support Alvier's development and global ambitions so that it remains a strong and independent player, the acquisition will assure and broaden our possibilities to provide excellent support to powder metallurgy customers and industry, allowing innovations to be realized within mechanical as well as electromagnetic applications.

Höganäs and sustainability



Höganäs and sustainability

Höganäs is striving to be a catalyst for change and become a truly sustainable business. We do this by responsibly producing resource-efficient products that benefit both our customers and society as a whole. In recent years, we have raised the bar even further by developing an extensive sustainability strategy that sets the direction for all our business activities.

➤ **HÖGANÄS IS A** mature business with well-established relationships with major stakeholders and a long tradition of measuring and prioritizing social contribution, environmental impact and economic development. With that said, we constantly need to tackle the complex challenges facing society today and tomorrow. Last year, we took steps to integrate sustainability into our business planning – but we know this is just the beginning. Without considering the environment and the world around us, financial strength and success are unattainable and vice versa. This reciprocal approach is the core of sustainable development for Höganäs.

Climbing Mount Sustainability

A journey of a thousand miles starts with the first step, and Höganäs' intention is to be an industry leader on this journey. Our

sustainability strategy, Mount Sustainability, was set during 2016, and illustrates our climb along five strategic paths leading to the top. Along the paths are focus areas that support each other.

Our strategic priorities are:

■ A great and meaningful place to work

At Höganäs, we believe in the capacity of the individual. Everyone has the potential to contribute to improving not only our company, but also society.

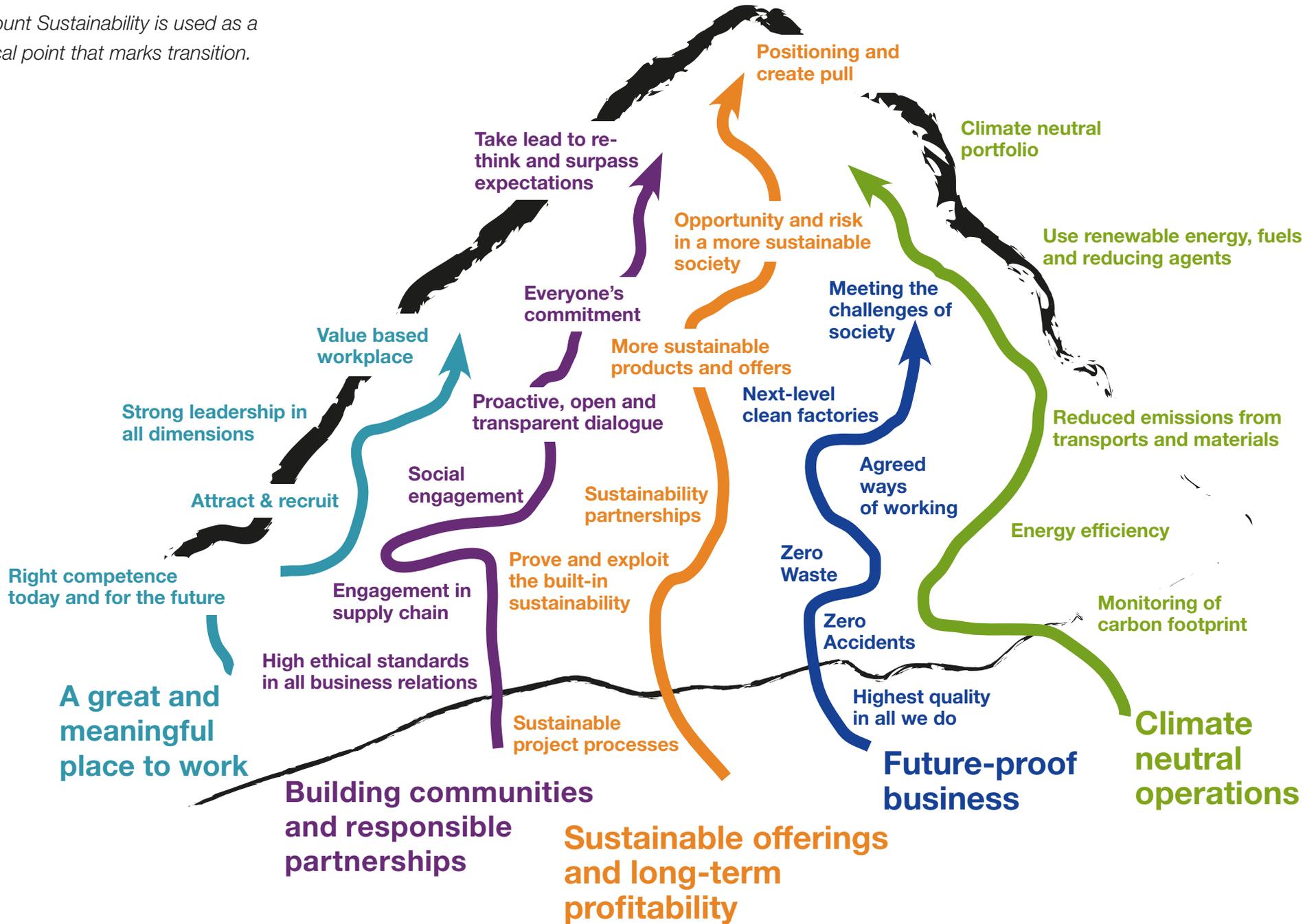
A good workplace is safe and offers the right physical and organizational prerequisites for the development of individuals and teams. Competence development and inspiring leadership are important building blocks of a meaningful and attractive workplace. The foundation for making Höganäs a great and meaningful place to work is More Höganäs – our management philosophy that sets out our vision, values and principles.

■ Building communities and responsible partnerships

A sustainable company needs to understand its impact on and obligations toward society, including which companies and organizations it chooses to partner with. Höganäs' engagement in industry partnerships has global reach, and local commitment comes from our desire to be a good citizen wherever we operate.

Höganäs has throughout its history been committed to high ethical standards in all its business relations – a good tradition that we need to protect carefully, not least through transparency and openness in all our communications. We make extensive efforts with our suppliers, working together to secure and develop

Mount Sustainability is used as a focal point that marks transition.



high standards of human rights, labour rights, anti-corruption and environmental protection.

Our aim is to create a culture of individual engagement, where all co-workers feel supported in their personal ambitions toward building communities. We think that each employee should do whatever he or she can in their daily work to make Höganäs truly sustainable.

■ Sustainable offerings and long-term profitability

Long-term profitability requires sustainability. To remain relevant into the future, our business must produce societal value. Products from Höganäs should be the first and most sustainable choice for customers and end users. We understand that this path up Mount Sustainability is the toughest one for us to climb – and we will not be able to do it by ourselves. We aim to be the partner that enables sustainability and seeks cooperation with suppliers, end users, academia and communities to meet the expectations and requirements of society.

■ Future-proof business

We need to assume our responsibility in a society that is aiming at sustainability. Future-proofing the business means ensuring high quality in our products and operations through effective work methods, responsible use of resources, environmental protection and workplace safety. Our goal is clear: The highest quality in all we do, Zero Accidents and Zero Waste. These are ambitious goals, but we believe it is possible to reach them.

■ Climate neutral operations

We have a vision of becoming a climate neutral operation, although we are aware it is a huge challenge. We must work both with innovation, new and established methods to minimize our climate footprint, improving energy efficiency, transitioning to renewable energy sources in production and transport, and developing new production technology. We have a long-term goal to use only renewable energy, fuels and reduction chemicals. This necessitates leadership and partnership.

■ Footsteps to form the paths

The last few years have seen a more concerted call for a change of direction away from business as usual. We take the scientific findings behind the public debate very seriously and realize that we need to not only adapt, but take the lead in a change process towards a sustainable society. For this reason, we became a signatory to the UN Global Compact in 2017, and we adhere fully to its Ten Principles. This means that we commit to operate in ways that meet fundamental responsibilities in the areas of human rights, labour, environment and anti-corruption.

We have an ongoing stakeholder dialogue in order to keep our sustainability strategy relevant. Höganäs' major stakeholders are customers, employees, owners and society. Many aspects comprise society in this context, ranging from the environment in which it exists to different facets of the community such as competent authorities, non-governmental organizations and neighbours.

In 2015, we carried out the first stakeholder dialogues in accordance with the GRI principle for stakeholder inclusiveness. A two-day workshop called Future Search Seminar was initiated by

Höganäs, where we gathered almost 50 people, representing the most important internal and external stakeholders, with the ambition of setting the future direction of the business. Owners, competent authorities, employees present and future, customers, suppliers, local communities, NGOs and academia all participated. The result helped us identify and prioritize the material issues on which we have built our sustainability strategy, Mount Sustainability.

In 2016 and 2017, Höganäs joined forces with key stakeholders to form a network of Swedish mining and steel industries for sustainable development. This collaborative network is managed by the Swedish Steel Producers' Association, the Swedish Association of Mines, Mineral and Metal Producers, and the Swedish Association of Industrial Employers that work together with the companies. The network has, among other activities, participated in a joint project between the Stockholm Environment Institute (SEI), an international non-profit research organization, and the Swedish steel producers' association, Jernkontoret, to explore the potential of Swedish steel industry for increased societal value in relation to the UN Sustainable development goals (UN SDG) and targets. Thus, members of the network work to better understand what the UN SDG mean for their industry and use Agenda 2030 as an industry benchmark to identify key aspects where we can best contribute to the realisation of the SDGs. At the same time, this project shows the importance of considering all seventeen SDG together”.

During 2017, we intensified our dialogue with our co-workers, owners and customers. The 2017 People Satisfaction Survey for our employees included a section covering sustainability issues, concerns and expectations. The survey was complemented with a number of in-depth interviews with a selection of employees

that together represent the geographical and organizational width of the company. To prepare for the materiality analysis, the sales department made an updated summary of findings from our customer contacts.

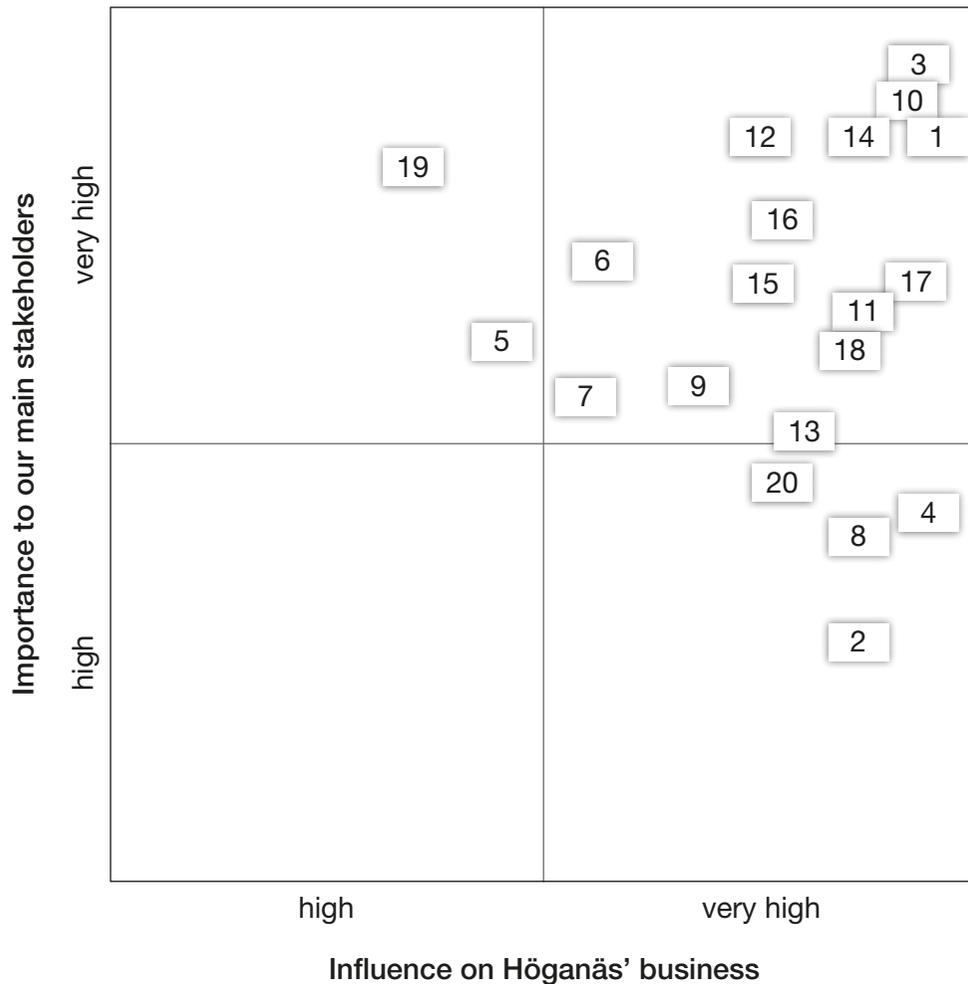
Input from the owners is given regularly at board meetings. During 2017, Lindéngruppen also hosted a separate workshop on sustainability and invited, amongst others, Höganäs' sustainability department and representatives of the management team, including the CEO. In addition, we also conducted in-depth interviews with representatives of FAM to complement the owners' views and expectations.

Additional input for our updated materiality analysis was based on the SDGs and the UN Global Compact's Ten Principles, which are the most accepted and thorough ones covering the needs of society; they also express the expectations placed on an international company like Höganäs.

In an internal materiality workshop, we used this input to stress test our sustainability agenda to meet stakeholder expectations through a materiality analysis. A group-level decision, following a review of stakeholder input, adopted the necessary changes to the priorities set out in the sustainability strategy and cleared the way to update Höganäs' business plan accordingly. ■

Materiality matrix

Summary of key topics and concerns raised during the stakeholder dialogues. All topics are relevant for our entire organization and are presented accordingly. No topic corresponds to one single part of the organisation only. We will continue the stakeholder dialogue and materiality analysis during 2018.



Path in strategy	Our identified aspects
A great and meaningful place to work	1 Good employer
	2 Active, receptive and present management
Building communities and responsible partnerships	3 Purpose driven business
	4 High valued supplier
	5 Procurement practices
	6 Human rights
	7 Local communities
	8 High ethics and conduct
	9 Transparency
Sustainable offerings and long-term profitability	10 Profitable
	11 Stable/responsible/professional
	12 Focus on future technologies/market
	13 Market presence (responsible partnerships)
	14 Overall product and offer performance
	15 Customer health and safety
Future-proof business	16 Environmental impact
	17 Safe and healthy workplace
	18 Modern and efficient production plants
Climate neutral operations	19 Responsible use of raw materials
	20 Emissions, effluents and waste

Implementing sustainability across the organization

Both 2016 and 2017 were years of introduction to the principle of sustainability in the organisation. The implementation of our new management philosophy More Höganäs promoted our societal value “We walk the sustainable path” through extensive training. The More Höganäs message is spread by grandfathering to all parts of the organization, supported by information and dialogue among co-workers. The implementation of More Höganäs will continue over the coming years.

We also launched a specific sustainability training package, which was made mandatory for all employees. The sustainability training consists of two e-learning modules, the first of which is a general introduction to all aspects of sustainability including human rights, labour rights, anti-corruption, the environment and ethical business practices. The second module, which we developed internally, focuses on Höganäs’ role in relation to sustainability issues and introduces our sustainability strategy, Mount Sustainability. Both modules conclude with departmental discussion sessions. Major parts of our global organization completed both training modules during 2017, and the remaining employees will conclude their education in early 2018. The sustainability training has also been included within the mandatory introduction programme for all new employees.



Höganäs

Governance

Governance

➤ **DURING 2017, HÖGANÄS** reorganized how we work with our markets and how we drive development in all areas of our business. These adjustments will help us remain strong and relevant in the face of rapidly changing market demands and societal challenges. We firmly believe that sustainability can be fully integrated in the entire business, and to succeed we need – and we have – full commitment from management, the Board of Directors and our owners.

The new organization mirrors how we view our markets. Instead of regions, we implemented business areas with global responsibility for market development, customer management and sales. They are supported in a matrix organization by Operations, Research & Development and Commercial. Corporate functions – Finance, Human Resources (HR), Legal, Intellectual property (IP), Sustainability and Communications – support the organization.

Sustainability organization

Höganäs created its sustainability strategy – Mount Sustainability – in 2016, and the past year was a period of providing clearer directions and plans for creating a sustainable business. Following the five strategic paths of the mountain includes more structured sustainability work and the integration of social, economic and environmental aspects within all levels of the company.



“We firmly believe that sustainability can be fully integrated in the entire business.”

Nicklas Lång,
General Counsel and Senior
Vice President Sustainability

Our support and respect for human rights, labour rights, environment and anti-corruption proclaimed in the UN Global Compact are implemented and managed by our code of conduct and subsequent policy documents.

The Corporate Sustainability department continued to develop during 2017, with the addition of the position as sustainability coordinator. The sustainability coordinator has mainly been responsible for implementing an online tool for the reporting of sustainability data and key performance indicators (KPIs) to evaluate compliance and progress regarding human rights, labour rights, environment and anti-corruption.

Corporate Sustainability is responsible for the Group-wide development of the sustainability strategy and for proposing sustainability targets for the Group. Corporate Sustainability also ensures that relevant sustainability issues are brought to the attention of Group Management. Each Business Area and

Competence Centre is responsible for implementation of the sustainability strategy, including all five paths in Mount Sustainability, in its respective area, supported and advised by Corporate Sustainability. Further responsibilities of Corporate Sustainability include follow-up on the implementation of decisions taken, and to drive and coordinate sustainability work at Group level.

Board of Directors

The Board of Directors, which is elected for one year at a time, consists of nine members appointed by the owners at the Annual General Meeting, and two members appointed by trade union organizations. The General Counsel and Senior Vice President Sustainability is the Board's Secretary. Höganäs' Chief Financial Officer (CFO) also attends the meetings as part of Group management. Other members of Group management and other

executives attend and present reports on individual issues as required.

The Board sets the company's financial goals and strategy, appoints and evaluates the President and Chief Executive Officer (CEO), and ensures that efficient systems are put in place for follow-up on, and monitoring of, operations. It also ensures that the company complies with statutory and regulatory requirements.

The Board establishes each year its working plan, which integrates sustainability reporting and risk-management reporting. Risk management includes financial, operational and sustainability risks. An extensive risk matrix is prepared by group management once a year and reviewed by the Board. On a needs basis, tighter follow-up is decided upon for specific risks. The Board receives updates on Höganäs' fulfilment of its sustainability goals at board meetings. Consequently, every board meeting includes a review of Höganäs' operations, including sustainability issues.

The owners receive an annual and comprehensive compliance and progress summary on sustainability, according to the Owners Sustainability Framework, a set of minimum requirements and development. They cover issues of environmental protection, efficiency in operations, occupational health and safety, social contribution and ethics.

In 2017, the Board of Directors held eight meetings, whereof five were physical and planned in advance. The other three meetings were extraordinary and held by phone.

Human Resources and Remuneration Committee

The Board of Directors elects a remuneration committee on yearly basis following the Annual General Meeting. The committee consists

“Sustainability must be driven by leaders with great commitment.”

Kristian Sildeby,
board member



of the Chairman of the Board and two members of the Board. The committee can co-opt members of Group management or other key functions from the company to the meetings.

The committee's work is laid down in an instruction accepted by the Board. The committee deals with matters concerning remuneration principles and other terms of employment for Group management, incentive programs and general profit-sharing programs. The committee also follows up on how remuneration principles are applied and the levels of remuneration to Group management.

Audit Committee

The Board of Directors elects an Audit Committee on yearly basis following the Annual General Meeting. The committee consists of least three members of the Board. President and CEO of Höganäs, Höganäs CFO and external auditors participate in the committee meetings.

The committee's work is laid down in an instruction from the Board. The committee reviews the company's financial reporting, risk situation and participates in planning of audits and decisions regarding financial policies. The committee also supplies guidelines concerning audit services.

Group Management

The CEO and the Group Management are responsible for approving the sustainability strategy and goals each year. Group Management receives regular updates on the progress of sustainability

performance from the Senior Vice President Sustainability. Sustainability issues are on Group Management's agenda at every meeting to ensure close involvement of top management.

Project Council

The Project Council is the highest instance regarding Höganäs Group's major projects, covering a wide spectrum from projects about research and development, to investments and communication. Sustainability is an important aspect in all projects, and in 2017 the council approved an investment in a pilot plant for renewable energy gas and green coke. The council consists of managers from various parts of the business, and they meet four times a year, including the Senior Vice President Sustainability.

Ethics Committee

During 2017 Group Management introduced an Ethics Committee with the mission to set a number of focus areas and key principles for our long term social engagement. As a start, the committee launched the initiation of a collaboration with Plan International (a humanitarian organization that advances children's rights and equality for girls). The committee consists of three members of group management, including the Senior Vice President Sustainability. During 2018 the Ethics Committee will broaden its scope to also address and clarify value direction in certain areas. For the time being, employees are encouraged to contact their manager, human resources, local union representatives or the General Counsel for advice and concerns about ethics.



Internal governance instruments

- ★ Code of Conduct – The Group’s fundamental values on ethical issues
- ★ Finance Policy – Instructions adopted by the Board that formalize for example the finance function’s framework for finance and currency risks
- ★ Communication Policy – The Group’s rules for external communication
- ★ Policies covering environment and energy as well as occupational health and safety – a set of instructions to secure continuous improvements in respective areas
- ★ Risk Policy – Overall regulations for the Group’s risk management initiatives
- ★ CEO instructions from the Board

External governance instruments

- ★ The Swedish Companies Act
- ★ Relevant law and regulation
- ★ United Nations Global Compact’s 10 universal principles on human rights, labour, environment and anti-corruption

Whistle-blower function

All Höganäs employees can report grievances via managers, human resources functions or union representatives. Anonymous concerns and grievances regarding unethical behaviour and organizational integrity can also be filed via Höganäs' whistle-blower hotline (directly connected to an external lawyer), which can be accessed by all employees via the intranet, ensuring that they are protected against any form of potential reprisals. Any grievances filed via these channels are to be dealt with straight away, primarily by the General Counsel in consultation with Senior Vice President Human Resources, and according to standardized procedures, including the reporting to the chairman of the Board and the Audit Committee. At year-end 2017, seven grievances relating to five cases about breaches against the Code of Conduct had been filed. Three cases have been resolved and two remain open.

Policies

More Höganäs, which was launched in 2016, remains the solid foundation to which our sustainability strategy and targets are anchored, and from where they can be further developed. More Höganäs entails our vision, our values and our principles for how we lead and how we work. It is the foundation for Höganäs' company culture and it forms the basis for our policies and governing guidelines. Work is in progress to align these different threads, taking sustainability into full consideration.

The Code of Conduct, Occupational Health Policy and the Environmental and Energy Policy are the most important Group

policies governing sustainability. In addition, the Conflict Minerals Policy, the Code of Conduct for Suppliers, and the Anti-Corruption Policy govern the way Höganäs operates.

Control and Management Systems

The foundation for Höganäs' internal governance instruments is the management system that includes finance, quality, environment, energy and occupational health and safety. The management system covers all operations, and is based on, and followed up on, Group documents such as policies, directives and procedures including the precautionary principle. All policies, certifications and legal statements are available on hoganas.com.

On a local, operational level, further detailed procedures and routines are documented. An internal audit scheme according to the principles laid down in the COSO framework (the framework of the Committee of Sponsoring Organizations of the Treadway Commission, concerning enterprise risk management, internal control and fraud deterrence) is in place for internal control purposes. Large parts of Höganäs' management system are certified and third-party audited for environment, quality, energy, occupational health and safety. A list of management certificates is available on hoganas.com.

Höganäs' operations in Sweden are subject to external auditing and verification control according to the regulations of the European Union Emissions Trading System (EU ETS). EU ETS is the world's first major carbon market and a tool for reducing greenhouse gas emissions and combating climate change. ■



**A great and
meaningful
place to work**

A great and meaningful place to work

Höganäs intends to set the standard as a great and meaningful place to work. Creating a safe and supportive workplace where people prosper is the essence of More Höganäs – our management philosophy. This will help us to unleash the full potential of our people.

Höganäs – a value based workplace

During 2017, we continued our cultural transformation journey called More Höganäs. Our purpose is to create a company that connects people and that sees, values and realizes the full potential in each individual. Making more with less, while offering opportunities for our people, will enable us to stay competitive. We are convinced that people who feel acknowledged and have the possibility to influence and develop, are the foundation for our progress and performance as a company. This is the absolute belief that underpins More Höganäs.

In late 2017, following a time with many and profound changes, including a revamped business strategy, a major re-organization, the introduction of More Höganäs and changes in management, we launched a people satisfaction survey. The survey was based on our new philosophy and had a separate leadership module.



Our four values

Customers – We focus on customer success

Employees – We respect and believe in each other

Owners – We create long-term value

Society – We walk the sustainable path

More Höganäs is our management philosophy. It encompasses our vision, our values, our view of leadership and our principles. The philosophy will help us to strive for sustainable business every day, where everyone can grow and develop.

The survey results reflect a period of confusion that naturally follows times of change. There is much learning and action needed in response. The answers show a decrease in net promoting score from 46% in 2015 to 26% in 2017, which coincides with our development journey. The results also show that the majority of the five lowest rated statements have to do with leadership and communication with management, while another is “we work actively to avoid stress”. Apart from the areas connected to group management and stress, our analysis has identified the

following areas in need of improvement: competence development, sustainability, leadership and efficiency. As this report is being finalized, the action planning process based on the survey results is ongoing in different parts of the organization.

As Zero Accidents is one of our most prioritized goals throughout the organization¹, we are happy to see that the survey shows a great commitment to it. Two of the five highest scored statements concern safety at work: “I feel responsible for contributing to a safe and healthy workplace” and “we learn from past accidents”. Further, the results show that goals and achievements were addressed by the development talks. When we asked co-workers if they felt they had the competence needed to perform their work, it was scored high.

Competence development is important for Höganäs to remain competitive and for co-workers’ job satisfaction. Discussion and planning of competence development takes place annually in connection with the appraisal and development talk.

The follow-up process of the survey will be finalized early spring 2018, with many dialogue meetings in order to deepen our understanding of the results.

Strong leadership in all dimensions

How we work goes hand in hand with how we lead. Competence and leadership development is an important part of More Höganäs. As we are faced with a lot of changes and challenges over time, we need to be more agile and rely on everyone’s leadership. Being a part of Höganäs means everyone taking responsibility both for

¹ More information is found in chapter “Future-Proof Business”.

the own performance and for the development of better ways of working, as well as being a good colleague, who supports others to grow and develop. We strongly believe that a prerequisite to leading others is that you learn to lead yourself.

Höganäs uses appraisals (that is, performance and career development reviews) to plan each co-worker’s competence



Our four leadership principles

- * We are all leaders
- * We all have potential
- * We are interdependent
- * We learn and develop

We have complemented the principles with six leadership capabilities that we need to develop to succeed

- * Leading and developing people and teams
- * Leading business with clear direction and plans
- * Leading and enabling change
- * Leading with communication
- * Leading through collaboration
- * Leading continuous improvement

development. To match the leadership principles and capabilities of More Högånäs, we have during 2017 developed and piloted a new template for development discussions around the world. The new template focuses on the capability to lead and develop people with the core purpose of creating an individual development plan. In 2017, 76 percent of our co-workers had a development talk. We have a goal that, by 2019, all employees should have had development talks.

Right competence today and in the future

We define competence as a combination of knowledge, capability and motivation. We strive to equip our employees for the future in the best possible way by offering learning initiatives to develop their competence.

All new operational staff currently undergo training designed for their individual position. In many areas, they are also given a mentor. Office workers must also complete a number of trainings, ranging from leadership development to work environment and labour rights, just like the operational staff. Mandatory training for all employees includes

- ★ More Högånäs
- ★ Sustainability (general knowledge and Högånäs specific)
- ★ Energy management
- ★ Environmental protection
- ★ Workplace safety

Moreover, all employees considered to be in a high-risk group for exposure to corruption and bribes must undergo an anti-corruption training.²

² The last time this was carried out was in 2015.

We further encourage co-workers to develop their competence. We arrange training both in-house and externally. During 2017, for example, we offered training in:

- ★ Languages
- ★ Communication
- ★ Powder metallurgy
- ★ Leadership
- ★ Job-rotation
- ★ Value-based selling
- ★ Surface coating

We also encourage co-workers to suggest training for themselves. In addition, workers in Sweden can apply for sponsorships and scholarships for various academic courses they choose to take during their spare time.

Hours of employee training

Total	46,265
Average	24.5
Average, women	23.2
Average, men	24.7



No data were reported for India and USA. An assumption of 24 hours of training per employee has been made.

Last year, after a trial period in 2016, we fully introduced the People and Competence Review process with the aim of connecting the people and competence agenda with business strategy and needs. Annually, we evaluate the business needs and define the

implications for people and competence based on those needs. The People and Competence Review of 2017 targeted levels 1, 2 and 3 of management³, as well as some key competences. The outcome was a plan for how to build business competence, covering areas such as strengthened leadership (based on our identified leadership capabilities) and sustainability knowledge. This three-year plan forms the basis for prioritizing learning initiatives, and it is reviewed every year.

Attract and recruit

Respect, equal treatment and equality are fundamental to our work with More Högånäs. We believe that diversity is a success factor, no matter where in the company you work. Our Committee for Diversity and Equality, which mainly operates and focuses on our sites in Sweden, continuously works to highlight these challenging issues in ongoing dialogues with labour union representatives and other key stakeholders. Our internal diversity policy is currently only applicable in Sweden, but dialogue about such a policy across our global operations has been initiated. During 2017, we started sending out a directive to always strive for 50/50 men and women in the longlist of candidates in any recruitment process. This needs to be more clearly followed up in 2018, and explicit goals must be set.

³ Level 1 = Group management, Level 2 = Managers direct reporting to a Level 1 manager, and so on.

Composition of governance bodies

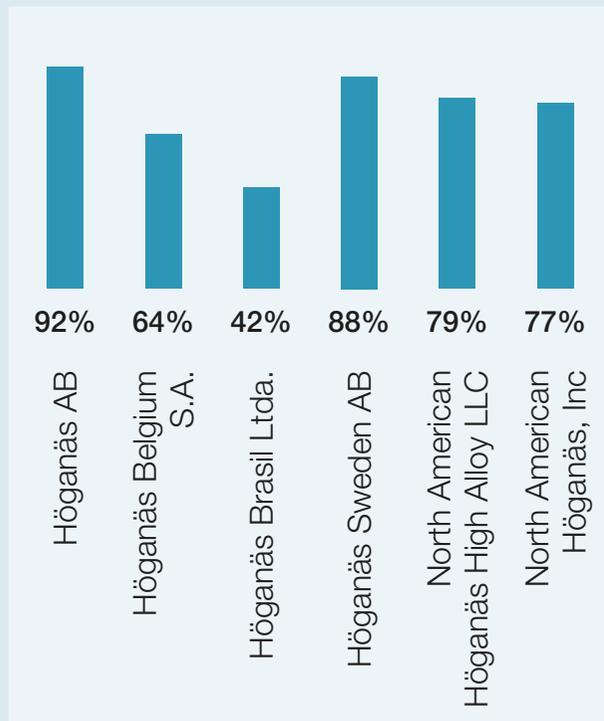
	Men	Women	Age <30	Age 30–50	Age >50
Board of Directors	82%	18%	0%	45%	55%
Level 1 – Group management	80%	20%	0%	60%	40%
Level 2 – Reports directly to member of Level 1	70%	30%	6%	53%	42%
Employees	84%	16%	16%	58%	29%

In 2017, no women were appointed as new members of Group management or the Board. One woman left Group management, while none left the Board. For other employees, see previous figures.

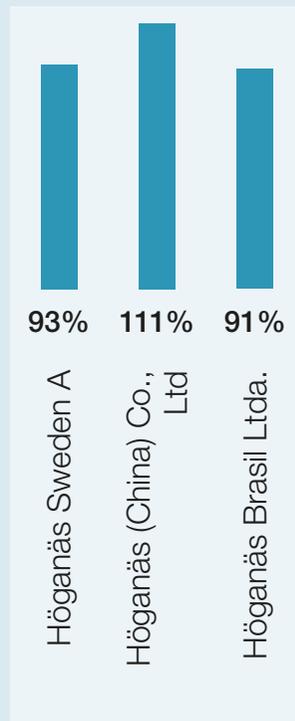
We acknowledge that we must improve on gender equality and thus add more dynamics to the organization. We are not happy about having only 16% women in our total workforce; we believe we can do better. We also see that we have an opportunity to develop and recruit more women to leadership positions (although, the proportion of women among managers is higher than the proportion of women in our total workforce). The low number of women in leadership positions is partly also reflected in the salary ratios of men to women, for example in Brazil (see figure on the following page). Another reason for the unbalanced gender salary ratio is that we have very few women with the key competencies and specialist assignments that often allow higher salaries. Hence, to change this

Salary ratio, women to men

White-collar



Blue-collar



Definition of significant location: production/operation with greater capability/impact in relation to other plants within the company, and number of employees exceeding 50. Locations with less than five female employees are excluded.

situation, we need to encourage more women into key competence areas such as material, automation and process engineering. Salary mappings are conducted on a yearly basis to identify gender pay gaps and provide a clear picture of how we can improve to reach equal remuneration.

We strongly believe that everyone working at Höganäs contributes with their competence, personal leadership, and commitment to develop their assignments, as well as to perform and deliver. As a responsible employer, we aim to offer a great and meaningful place to work, where individuals and teams can fulfil their potential and ambitions, have a healthy and sustainable lifestyle, and be rewarded in a fair and adequate way based on performance and competence. ■

73%

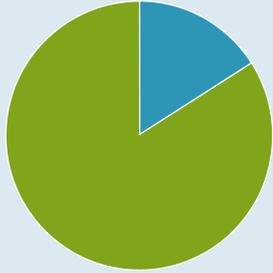
of Höganäs' employees are covered by collective bargaining agreements.

“Respect, equal treatment and equality are fundamental for how we work.”

Ann-Sofie Räftegård,
Senior Vice President
Human Resources

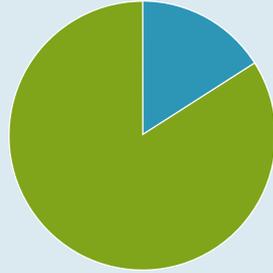


Höganäs Group: Total number of employees 1,888 (head count)



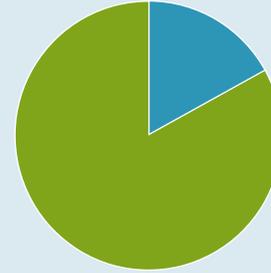
Gender

- Women: 307 (16%)
- Men: 1,581 (84%)



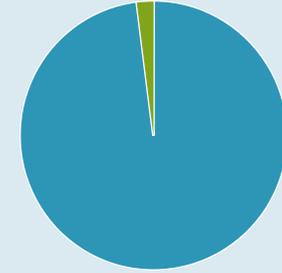
Permanent contract

- Women: 295 (16%)
Europe: 176
South America: 18
North America: 47
Asia: 54
- Men: 1,523 (84%)
Europe: 822
South America: 146
North America: 349
Asia: 206



Temporary contract

- Women: 12 (17%)
Europe: 9
South America: –
North America: –
Asia: 3
- Men: 58 (83%)
Europe: 46
South America: –
North America: –
Asia: 12



Full-time vs. part-time

- Full-time: 1,851 (98%)
Women: 289
Men: 1,562
- Part-time: 37 (2%)
Women: 18
Men: 19



Growing with China

The first spade of sand was added to the foundations of a new mixing station in Höganäs China. The current quality control laboratory needed to be improved to match the growth of the Chinese market. With this new laboratory, we believe that we will be an even more attractive company to work for.



On a roll in Taiwan

Höganäs Taiwan has started its Sustainability Journey by combining training with team-building activities and discussions about how to reach our goal of sustainable development.



Renata sees the big picture

In June, Renata Alvim said goodbye to her colleagues at Höganäs in Brazil for a three-month exchange in Höganäs, Sweden. "It was very exciting to start a new job that was totally different from what I do here in Brazil, where I am in purchasing. In Sweden, I was in customer service, so now I know both sides," says Renata.



A marathon effort in Sweden

Two hours and fifty-five minutes is the new Höganäs office record for running a marathon, when around sixty employees participated in the first marathon arranged in the town of Höganäs.



Building communities and responsible partnerships

Building communities and responsible partnerships

As a local metal powder producer with a global business, we have a responsibility and an opportunity to build communities and responsible partnerships. Our business perspective is straightforward: we thrive when the community thrives.

» **WE THINK THAT** the products we supply are of benefit to society, but building communities entails more than that. Responsible partnerships, where we work together to champion human and labour rights, anti-corruption, the environment and the highest business ethics, are of equal importance. As individuals, we depend on many community services and, as a company, we encourage personal engagement. We believe partnership and transparency are essential to building communities, and we hope that this report will inspire stakeholder interchange.

Local dialogue

We actively seek out and listen to input from stakeholders – not least in our local communities – but this is an area where we need to improve. We want to talk to our neighbours about their expectations



“We have a responsibility to maintain an active and transparent dialogue with the local community.”

Ulrika Rask-Lindholm, Senior Vice President Communications

and what they want us to do better. Dialogue, transparency and partnership will direct Höganäs’ focus when we interact with the societies in which we do business.

Our large operations in Höganäs and Halmstad in Sweden require a constant awareness of local needs and demands. As the second largest employer in Höganäs municipality, we have a responsibility to maintain an active and transparent dialogue with the local community. We inform the community about our activities and invite people to dialogue through our newsletter *Insikt*, which is published and updated online continuously. It is also printed and distributed in the local community two to three times a year.



At our production sites in other countries, we engage in community dialogues on a needs basis, and this we need to improve. A particular challenge here is to work more systematically and find the 'Höganäs way' for stakeholder dialogue at all our sites, drawing inspiration from the good examples in Höganäs and Halmstad.

Building communities

An open and transparent dialogue with local communities naturally leads to local community building projects. One example is a project initiated in 2016 to redesign our harbour area in Höganäs, Sweden, to improve bicycle and pedestrian lanes along the shoreline. The work is still at the planning stage, together with Höganäs municipality. During 2018, the inhabitants of Höganäs municipality will be invited to give their input on the plans.

Put residual heat to use

Use of residual heat from our production sites in Sweden has, throughout 2017, provided enough heating and hot water for 3,000 homes. We are also exploring further use of residual heat for the benefit of local farmers. This work will continue during 2018, with the aim of bringing new job opportunities and contributing to locally and sustainably produced food¹.

Support to local organizations

At all our locations around the globe, we have a long history of supporting the local communities in which we operate. Our most

¹ See also chapter "Climate Neutral Operations"

substantial donations are given to support children's development in underprivileged areas, local fire departments and youth sports. Lately, we have started a partnership with Plan International – a humanitarian organization that advances children's rights and equality for girls. During 2017, this initiative made it possible for Höganäs employees to donate a Christmas gift from the company to Plan International's different projects. The partnership with Plan International will be expanded to projects relating to water access over the coming year.

In line with our global commitment, we are currently in the process of developing a Group policy for community engagement and donations.

Bringing young talents onboard

Höganäs has a tradition of working on projects with universities and research institutes. Our experience is that the projects broaden competence and bring added knowledge and value to all the involved organizations and wider society. For this reason, we regularly sponsor postgraduate studies and offer students opportunities to work on thesis projects. Moreover, each year we employ about 100 students during summer time at our Swedish sites, offering them valuable insights and often a start to their professional career.

Consolidating the supply chain

Höganäs is a materials producer, and our supply of raw materials, energy and transports is where we must focus when consolidating the supply chain. Höganäs is a hub for local business – more than half of our raw materials are sourced locally within the country of



We have long relations with many of our strategic suppliers. In 2017, we celebrated 100 years of continuous business relations with the Swedish mining company LKAB.

operation. Moreover, we source maintenance, consultancy and entrepreneur services within the country of operation, with only a few exceptions.

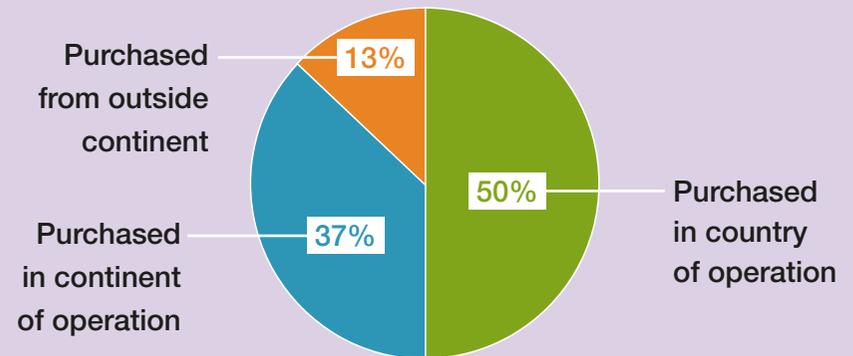
Our suppliers and subcontractors play a vital role in our business, so we expect them to demonstrate high standards. However, our commitment to take the lead in creating a sustainable business has given us new perspectives on our supplier relations, and we need to strengthen our supply chain management accordingly. Therefore, we have updated our expectations and enhanced our communication with the supply chain through our new Code of Conduct for Suppliers – a new model for supply-risk identification and a tool for supplier evaluation. Besides the Code of Conduct, our suppliers are required to fill out a standardized questionnaire covering the following areas:

- ★ Management systems
- ★ Environment
- ★ Social performance
- ★ Quality

As we believe in the power of collaboration, we wish to work together with our upstream partners to support them in their development towards social, economic and environmental sustainability. During 2017, ten trusted suppliers agreed to test the function and relevance of the improvements we made. The results and feedback were reassuring, and we are now ready to launch the initiative. The updated Code of Conduct for Suppliers sends a clear message and will serve as a starting point for a refocused supplier dialogue when it is introduced this year.

Supply of direct materials by spend

Höganäs sources about 50% of its direct materials locally in the country of operation.



On-site audits

All new suppliers are approved following an evaluation process that includes compliance to Höganäs Code of Conduct for suppliers. During 2017, no major changes in the supplier base were made. For existing suppliers, we perform frequent audits whenever required. In 2017, we carried out 25 on-site audits among our raw material suppliers – none of which required further action. Guidelines and policies regarding on-site audits will continue to be sharpened, and audits will be performed with consistent regularity. We will also put stricter requirements on performed due diligence among our suppliers and will take active measures to better cover all sustainability areas in our supply chain management.

Conflict materials

Last year, Höganäs implemented a revised system for ‘conflict minerals’ management and control. Our Code of Conduct for suppliers and official documents published by the Responsible Minerals Initiative serve as the basis of our work.

Our Conflict Minerals Compliance Policy requires all direct material suppliers to submit a Supplier Certification Form. All suppliers are encouraged to develop compliance policies that are compatible with the OECD’s Conflict Minerals Guidelines.

High-risk suppliers must conduct sufficient due diligence to allow them to verify that any minerals used or supplied are conflict-free. In one case last year, we deepened the compliance assessment by asking the supplier for detailed reassurances; the case was successfully sorted out with the supplier.

Conflict minerals are minerals mined in conditions of armed conflict and human rights abuses, and which are sold or traded by armed groups. Conflict minerals are cassiterite, columbite-tantalite, gold and wolframite.

Artisanal mining in the Democratic Republic of Congo

We have adopted a deeper approach towards human rights in the artisanal mining of concentrates in Congo. Höganäs is in close dialogue with its suppliers to make sure that sourcing of Cobalt originates from artisanal-free concentrates. No evidence of artisanal mining practices was identified during 2017.

The term artisanal and small-scale mining (ASM) refers to mining practised by individuals, groups or communities often informally and/or illegally. The practice occurs predominantly in developing nations. A common definition for this sector has not been adopted, as its legal status, defining criteria, and local definitions vary from country to country.

Suppliers of transport services

With customers and suppliers all over the world, we depend on efficient transportation and suppliers of transports. The transport suppliers are contracted on annual basis, or sometimes longer after an approval process where commercial, environmental and safety aspects are considered.

An annual evaluation is performed on all suppliers of transport services where their performance, reported changes, updated certificates and commercial issues are considered. When a contract expires, a new qualification and selection of a supplier is made.

In addition to these systematic evaluations, Höganäs performs spot-checks on vehicles arriving to our sites. Quality aspects such as abrasion, tyre quality and sufficient space to secure the goods are typical issues when we talk to the drivers. We think that presence and attention send strong messages to our suppliers and their employees. In 2017, only minor issues regarding delivery performance were reported, and all were resolved together with the supplier.

Höganäs is constantly reviewing ways of improving transport efficiency by offering vendor-managed inventory (VMI), using trains for transportation and switching from land to sea transport. Read more about this work in the chapter Climate Neutral Operations. ■

3 questions about corruption

to Fredrik Vinnerborg, Sales Director, Eastern Europe

How widespread is corruption in the countries you work with?

“There is without a doubt a widespread culture of corruption in many of them. For the most part it isn’t an open, obvious kind of corruption, but you can sense it and pick up on the signals. That’s why it is important for us to be vigilant for those kinds of signals.”



Fredrik Vinnerborg

Could there be business benefits for Höganäs in engaging in corrupt activities?

“Quite the opposite. Besides the fact that corruption as such is disgraceful, we know that if we were always competing on equal terms, then we would always be among the top alternatives. Therefore we have everything to gain from trying to stamp out corruption.”

How important is Höganäs’ anti-corruption policy for your work?

“It is an important and useful tool to have behind us. We have to speak clearly and show that Höganäs, being active in the global marketplace, is a company with high ethical values and a zero-tolerance approach to corruption.”

Zero tolerance for child labour

Making sure that suppliers and subcontractors adhere to Höganäs' code of conduct requires constant vigilance. In some parts of the world, this is a more pressing issue than in others.

AS VARIOUS FORMS of corruption and unacceptable practices, such as child labour, are a reality in his country, Kumar Iyer, Head of Operations and Technology at Höganäs India, says he and his team are always on the lookout for signs that the code of conduct is being violated.

Kumar tells the story of how a supplier was audited because, during a routine visit, he had noticed children on the premises.

"I thought about the possible connection and later, after discussing it during the More Höganäs conference, we decided to conduct an audit of the supplier. The definition of child labour in Indian law is very convoluted, yet any form is, of course, unacceptable for us at Höganäs. In this case, we had to make an informed decision about whether we could continue working with this supplier."



On two occasions, senior team members from Höganäs India visited the supplier and spent a full day going through the company's various processes and discussing the matter with the management there.

Kumar says that during the audit it became clear that no children were involved in any of the suppliers' activities and that the children he had seen during his routine visit had probably just accompanied their parents to the facility. Even so, as a precaution and safety measure, the supplier was instructed not to allow children inside the factory premises at all.

"Our code of conduct for suppliers strongly reflects our values and principles," says Kumar. "It shows our respect for all human beings and is a barometer for what is acceptable. Some suppliers grudgingly accept our requirements, only to realize later that they are benefitting from living up to our requirements."



Sustainable offerings and long-term profitability

Sustainable offerings and long-term profitability

As one of the globally leading providers of metal powder solutions, we feel a duty to initiate and lead the sustainable transition necessary to meet future challenges and rapidly changing market demands.

The power of metal powder

We are convinced that metal powders can contribute to sustainable development and thereby solve many of society's pressing challenges, such as resource scarcity, shortage of clean water and conversion to renewable energy use. Metal powder technology provides opportunities in many of those areas:

Powder metallurgy components

The design of structural components as pressed and sintered powder metal parts has many inherent advantages over competing metalworking technologies. Using powder metallurgy, complex parts that are close to net-shape, and with good part-to-part uniformity, can efficiently be mass-produced with few production steps. This leads to high material utilization, low energy consumption and reduced waste. PM components can also be engineered



“We believe that sustainable offerings are a prerequisite for long-term profitability.”

Raissa Kruse,
Sustainability Manager
– Economic & Social

with unique value-adding features, such as wear- and corrosion resistance, thermal properties and filtration capability.

Electromagnetic applications

Rotating and linear machines, sensors, fast-switching solenoids and inductive components can be optimized by using metal powders such as soft magnetic composites (SMC). The uniformity of the powder's electromagnetic properties in all three dimensions enables maximized utilization of the active materials, thereby minimizing the amount of copper windings and permanent magnets needed.

Surface coating

The primary aim of thermal surfacing techniques, such as laser cladding and plasma transferred arc welding (PTA), is to improve a

component's resistance to, for example, wear or corrosion, and thus increase its lifetime. This is done in a cost-effective and sustainable way, as the component itself can be made in a low-alloyed material, and only the surfaces exposed to wear and/or corrosion are coated with a high-alloyed material. Our metal powders can beneficially be used for the production and reconditioning of working parts within a broad range of industries, such as automotive, agriculture, mining, oil and gas, pulp and paper, plastics, glass or steel.

Environmental

As water shortage has become an urgent matter in many places across the world, we are happy to offer metal powder-based solutions for drinking water purification that can improve the lives of millions of people worldwide. Our portfolio also includes a process for industrial wastewater treatment, and media for soil and groundwater remediation.

Additive manufacturing

Even though an immature technology, we believe that additive manufacturing has sustainability benefits. Potential advantages are improved resource efficiency in both the production and use phases, due to the added design freedom, plus extended product life – not least because of the stronger person-product affinity of customized goods. Industry can influence at least some of the possibilities within this emerging area, such as the optimization of both materials and processes for maximized resource utilization.

Making more with less

We are convinced that our products benefit society – not only today but also in the future. However, we are not stopping there, but investing into product sustainability within the different application areas of metal powders. As we worked with energy and resource efficiency and waste reduction for a long time before we consolidated them into our sustainability strategy, we can proudly present a couple of successful initiatives now.

- ★ Within powder metallurgy, we have developed a resource-efficient solution for the popular iron-copper-carbon powder mixes, and driven an industry-wide initiative to prove weight-savings for metal powder-based gears.
- ★ SMC-based traction motors and motors for auxiliary automotive systems, such as water pumps, demonstrate the material utilization advantages of using metal powders.
- ★ Within surface coating, we offer iron-based solutions to replace hard chrome plating. In close cooperation between a customer and our tech centre, we have also developed and evaluated an iron-based coating specially designed for continuous caster rollers.
- ★ Our iron-based media for the removal of hexavalent chromium from drinking water is not only technology accepted by the California State Water Resources Control Board, but is also a perfect example of a closed material loop combined with renewable energy use.
- ★ Our brazing team has, among other things, developed filler metals specially adapted to the health requirements for tap water heat exchangers.

(More details can be found on pages 56–59.)

Data and decisions

Notwithstanding the previously mentioned successes, we believe that a more thorough quantification of the environmental and social footprints of products is necessary to channel industrial activities towards sustainable development. In 2017, therefore, we started two initiatives with the goal of mapping metal powders' environmental performance.

Internally, we kicked off systematic work with life cycle assessments (LCA), so far with a focus on cradle-to-gate analysis covering the parts of our products' life cycle, which we can directly influence. Obviously, these data give useful input for qualified decisions concerning internal changes and improvements in production or supply, as well as new product developments. However, we are not publishing any LCA data yet, as it is currently unclear how best the data should be presented and used.

Moreover, we have started and are driving an industry-wide initiative on life cycle assessments within the European Powder Metallurgy Association (EPMA), starting with a lighthouse project to quantify the complete life cycle impact of a specific powder metal part.

A common challenge for companies at the top of the supply chain is to predict or drive coming market trends; the same is true of life cycle requirements and life cycle data. We are convinced that detailed, reliable and transparent data for all stages of the life cycle – raw materials processing, production and distribution, use phase and end of product life – are needed for sustainable industrial development. However, despite our extensive knowledge on metal powders and their application, we are today lacking experience of industrial ecology and the much-needed balance between

optimization of our own processing, our customers' production, distribution and use phase, and the design of closed material loops. Therefore, we have started an internal project with the aim of strengthening our development processes and clarifying our products' sustainability goals. We would also welcome any industry-wide or cross-industry initiatives providing additional input.

Small steps to closing the loop

A more obvious aspect of closed material loops is to productize side-stream materials. In most of our manufacturing processes for metal powders, different kinds of by-products are generated. Depending on the properties of these materials, they can be used in various applications, often unrelated to how our main products are employed.

The bulk of our side-stream products are processed from different slags;

examples of usage for these materials are as construction materials in roads or as raw material for the manufacturing of stone wool (insulation material). Other side-streams include zinc recovery from melting furnace dust and recovery of iron from other dusts¹.

At the Ocean Conference – held in June 2017 at UN headquarters in New York – Höganäs signed a voluntary commitment on the use of by-products from the steel industry



Stone wool is one example of a product made from side stream material.

¹ More information is found in the chapter Future-Proof Business

for water purification. We are now engaged in a partnership research project in Sweden (Minrent) to explore the possibilities of purifying water of phosphorus by using tailored filter materials made from slags. Lab and pilot-scale studies have shown that close to 100% of phosphorus can be removed from water by using slag. Phosphorous is present in many anthropogenic waters, and causes eutrophication in lakes and oceans, The fact that large and important agricultural areas are often close to the sea, poses a potential conflict between the need to keep the farmlands fertile and the possible phosphorus leakage into the sea from these areas. Small, privately owned sewage facilities are another major sector causing leaks of phosphorous into lakes and oceans. When using our by-products for water purification, it will contribute to decreased eutrophication. At the end of their life, the saturated filter materials can find use as either a fertilizer and soil enricher, or as a slag former in steel and metal production.

We participate regularly in cooperation projects on side-stream products, such as the recently finished project ‘Slagphalt’, which was a cooperation between the steel industry, asphalt industry, research institutes and authorities. The project has shown some major benefits with slag asphalt, such as higher shear strength (important in, for example, roundabouts), higher friction and significant noise reduction. These results have created a higher demand for slag asphalt and opened up new usage areas for steel slag.

Sustainable development needs partnerships

In general, we believe that sustainable development needs partnerships and knowledge sharing. Höganäs has a long tradition

of working on projects with our customers, universities, research institutes, and other industry partners. The projects’ scopes often include both our and our customers’ technology areas at all technical readiness levels. In most cases, projects are funded by governmental authorities, with Höganäs as a co-funding partner, together with other companies with similar interests. Besides these projects, Höganäs is also active in several centres of excellence and competence, focusing on, for example, materials science and raw materials. The table on the next page gives some examples. ■

Cooperation projects

ERMAT: Efficient use of residual materials

Creation of a platform for increased usage of residual materials as a complement to virgin raw materials within Europe, with the aim of reaching zero deposits. Network project within EIT RawMaterials*, 2016–2018. (Footnote: EIT RawMaterials, initiated by the EIT (European Institute of Innovation and Technology) and funded by the European Commission, is the largest and strongest consortium in the raw materials sector worldwide. Its vision is a European Union where raw materials are a major strength. Its mission is to boost competitiveness, growth and attractiveness of the European raw materials sector via radical innovation and guided entrepreneurship.)

Min-PET: Mineral products from Petrit-T side-stream technology

The use of a mineral side-stream, Petrit-T, as a raw material for geopolymer products. This will divert 20,000 tonnes per year of material from being landfilled, as well as offering a new raw material for cement and acoustic panels. Network project within EIT RawMaterials*, 2016–2018.

Minrent: water filtration with mineral-based by-products as a sustainable treatment technology

The project aims to explore the specific industry mineral residues that can assist in the separation of substances that we do not want to get into the environment, such as phosphorus into the Baltic Sea or metals into groundwater. University and cross-industry project, 2016–2018.

INNOKOMP, Innovative powder-based component technology

This project's aim is to exploit metal powder technologies' resource efficiency by developing new product solutions for end users based on a combination of different metal powder technologies, and thereby increase the rate of development and competitiveness of advanced powder components. University and industry partners, 2017–2019.

ReLed-3D: resource-efficient and flexible production in the automotive industry through additive metal manufacturing

This project addresses the entire value chain from design and design optimization to quality aspects. The main objective is to develop design and manufacturing methods for a resource-efficient additive manufacturing of components in the automotive industry. University and industry partners, 2017–2020.

NESS: Nanotechnology Enhanced Sintered Steel Processing

This research project aims to match the needs of future sustainable manufacturing of complex components with the capabilities of powder metallurgy. It comprises the development of generic methods and models for the analysis of manufacturing economics and sustainability. University and industry partners, 2016–2020.

Inspiring industry to make more with less

'High-precision toolbox' for iron-copper-carbon mixes for powder metallurgy:

Höganäs' new high-precision toolbox for customizing Fe+Cu+C mixes is proof of our constant search for solutions that will take powder metallurgy to the next level. Providing benefits such as significantly improved copper distribution and dimensional stability, it enables production with extremely tight tolerances, the highest possible raw material utilization, and a reduced need for machining and minimized scrap levels. Nearly 100% of the starting materials reach the finished product. As yields of both green and sintered components are increased, energy use per kilogram of finished parts is minimized. Due to perfectly tailored powder compositions, we can meet the physical and mechanical demands of our customers' specific applications. Moreover, the lubricants used in this new generation of Fe+Cu+C mixes are free of metallic stearates, which leads to less furnace depositions and in turn reduces the need for maintenance. Our toolbox also fully eliminates zinc emissions to the atmosphere.



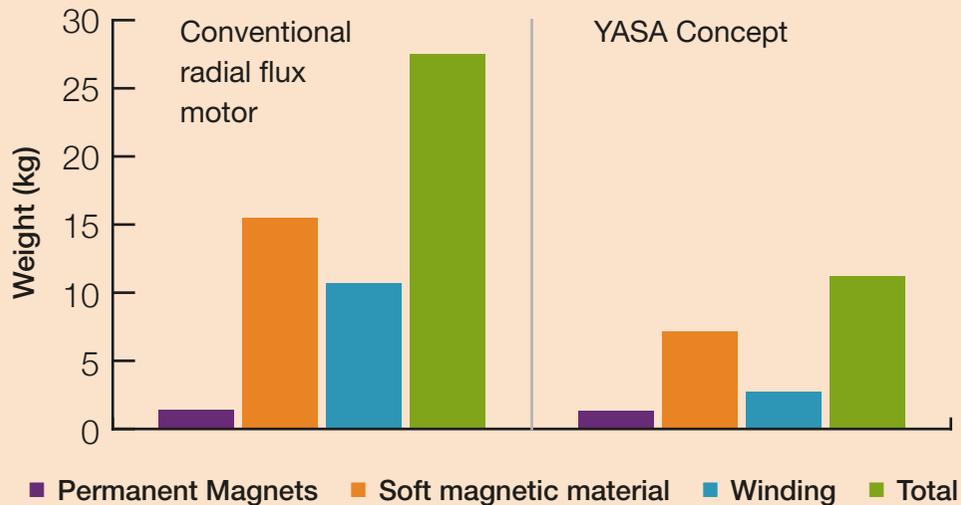
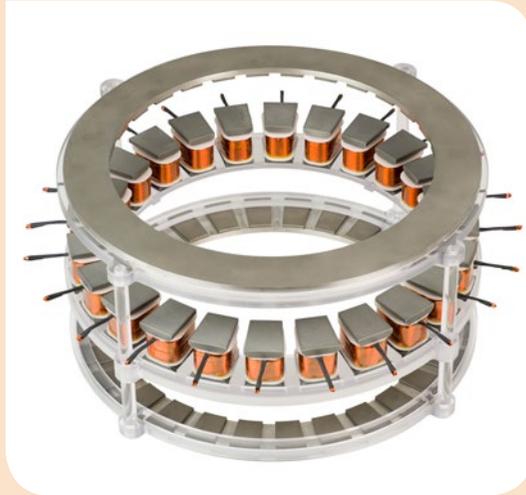
Powder metallurgy gears

In a cooperative development effort initiated and driven by Höganäs, twelve industry-leading part manufacturers, technology and engineering partners have successfully proven the technical concept, and design for the manufacture of powder metal gears for a popular European manual six-speed transmission. Through bench testing according to a typical European OEM test standard and test-driving, we have shown that powder metal gears can be designed lighter (1.7kg less for the complete assembly) than wrought steel gears in currently practiced manufacturing processes. Due to the near-net-shape benefit of powder metal gear technology, the manufacturing process chain is shortened considerably. The results are substantial savings in machining steps, waste and metal chip formation. The disposal of machining fluids and coolants is also reduced drastically. Thus, environmental benefits could be shown both for the production and the use phases of the gear.



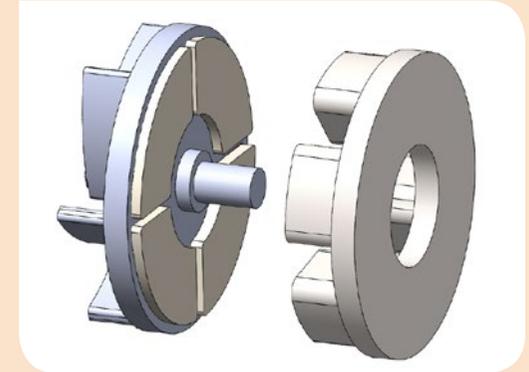
YASA concept

The so-called 'Yokeless And Segmented Armature' motor (designed by our customer Yasa Limited) takes full advantage of the additional design freedom from powder-based soft magnetic parts instead of laminates. The motor is optimized for traction applications and reaches a power density of more than five kW/kg. Moreover, the amount of permanent magnets and copper windings required is drastically reduced.



Water pump motor

A robust axial flux brushless direct current (BLDC) motor for integration with the impeller of an electric water pump for automotive applications can be beneficially designed using soft magnetic composites. Simplicity in manufacturing and application integration has been key for this technical concept, which our tech centre in Sweden has developed and tested for demonstration purposes. The stator is a single tool component and the sealing surface between the dry and the wet parts of the pump is flat. Moreover, this machine outclasses conventional radial flux BLDC motors regarding mass and volume.



Impeller and stator of an electric water pump.

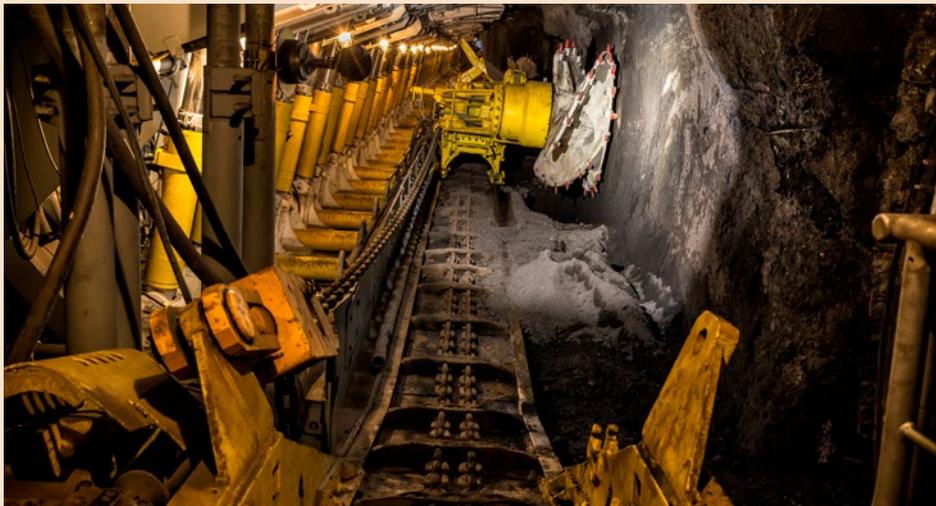


Replacing hard chrome plating

Roof support cylinders used in coal mining, like many other hydraulic cylinders, require a smooth surface with wear and/or corrosion resistance and are conventionally treated by hard chrome plating. As hexavalent chromium itself is carcinogenic, and the plating method also produces several rest products that are considered hazardous waste, industries are looking for viable alternatives. In close cooperation with a customer, our tech centre in Shanghai has shown that laser cladding with our iron-based surface coating powders offers superior properties compared to conventional hard chrome plating, as well as extended service life for the cylinders.

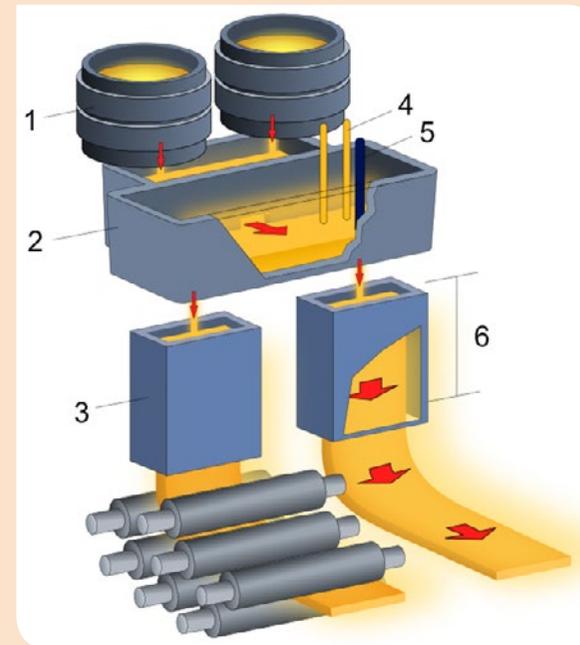


Shining surface without corrosion after 5,000 hours of salt spray testing.



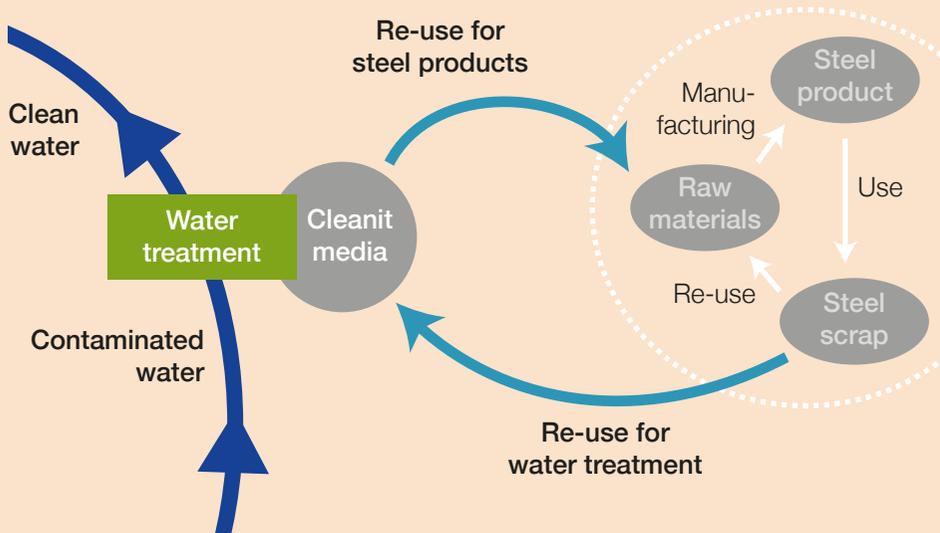
Laser cladding of continuous caster rollers

Following a customer request, our tech centre in Shanghai evaluated different surface-coating powders for the protection of steel rollers for continuous slab casting lines. The final solution – an iron-based powder customized for these specific needs – proved to have both technical and environmental advantages. Lower heat input, lower dilution, less material waste and the elimination of a post-welding annealing step were all realized without compromising productivity.



Drinking water treatment media: closing the loop

Our business area Environmental offers Cleanit®, an iron-based media for the purification of drinking water of carcinogenic hexavalent chromium. This water treatment media is produced from steel scrap using locally available hydropower. The powder particles are engineered for high porosity, large surface area and high reactivity, leading to improved contaminant absorption and longer media life. No hazardous by-products are released during the production process, and only an absolute minimum of well-established chemical additives is needed for the water treatment. Spent media is taken back and recycled into valuable products at our facilities, e.g., stainless steel powders for automotive powder metal parts. Recently, our powders gained technology acceptance from the Californian State Water Resources Control Board and the Californian Environmental Protection Agency.



Stainless steel joints without nickel or copper

The environmental standards applying to drinking water applications set stringent requirements on nickel and copper content released into drinking water. However, copper and nickel-based braze joints are traditionally used for heat exchangers. For this reason, we collaborated with a brazing customer and produced a solution based on our iron-based filler metals. The solution enabled a heat exchanger made entirely of stainless steel, joined without using any nickel or copper braze. The heat exchanger has been installed in a solar energy solution, which will be used for tap water heating.



Future-proof business



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Future-proof business

With our operations come responsibilities toward our customers, co-workers, owners and society. Running a safe, clean, efficient and long-term sustainable production is what we aim to do. The best sign of a future-proof business is that we, every day, gain our stakeholders' renewed trust.

➤ **WE AIM TO** achieve the highest possible quality in everything we do. An operational focus on quality reduces loss of material and energy, and reduces interruptions that can lead to failure of machines and equipment. Our focus on quality also leads to more reliable and stable processes, for example less need for unexpected repairs, and thus less exposure to risks. A consistent and reliable level of quality also has a positive impact on the sustainability of our customers' processes, providing them with the best prerequisites for the most efficient use of our products. The More Höganäs philosophy, with its agreed and documented ways of working, forms the basis of continuous improvement and knowledge exchange. No matter how rigorous the routines and regulations, quality can always be improved and we constantly work to meet and surpass expectations.

Zero Accidents – a vision and a culture

We are operating in an advanced technical industry – the production of metal powders – where safety always come first. Zero Accidents is our vision of a safety culture where dialogue and risk-elimination are key and where we never compromise safety. We call it 'Safety First'.

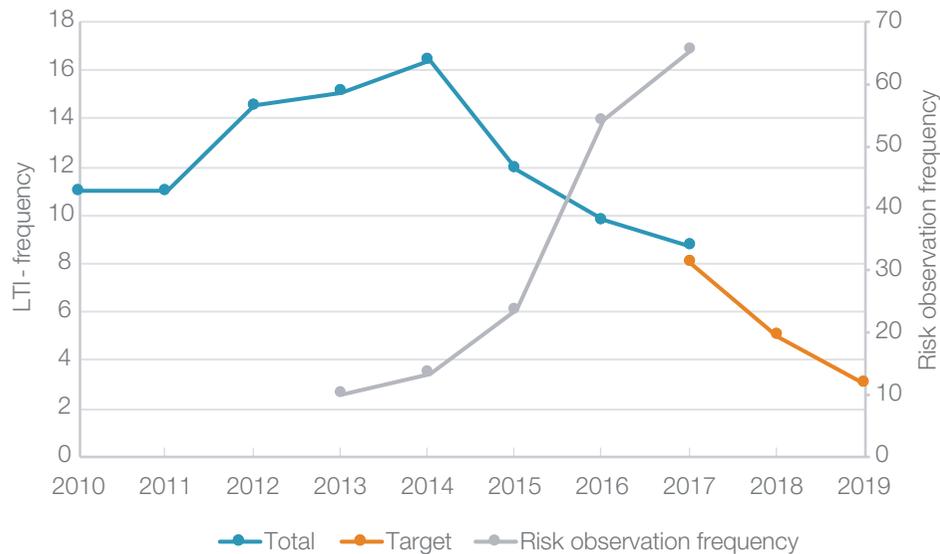
We have set a target to be the benchmark in the steel industry by the end of 2019. However, our track record shows that we still have a long way to go and that Safety First needs to remain our priority. The majority of work safety incidents occur in production, where operators are exposed to elevated risk. Our most common incidents and accidents are trips and burns. A limited number of employees are exposed to thermosetting resins; to prevent incidents, they undergo special training, and their exposure is monitored.



In total, 32 (34) lost time injuries among employees and 6 (5) accidents among contractors were reported in 2017 (2016 figures in brackets).

For the third consecutive year, the LTI-frequency is decreasing, but not at the expected rate. Last year, we introduced the Plant Risk Reduction Number as a key performance indicator (KPI) for the preventive work carried out. The risk reduction target was met at all sites in 2017.

In 2017, we also implemented a global incident and risk reporting system (MIA). This tool is used by all co-workers to report risk observations, near misses, incidents and accidents. MIA also supports problem-solving, investigation reports and actions all



Summary of accident rates in the Höganäs Group. Left axis: Lost Time Injury Frequency [LTI/10⁶ working hours] and targeted 2017 <8, 2018 <5 and 2019 <3. Right axis: Risk Observation Reporting Frequency [number of reported risk observations by the organization/lost time injury] and targeted 2017 ff >50.

in one place; this promotes the sharing of and learning from experiences, and gives a uniform process for incident and accident reporting.

Our safety work is supported by a company-wide Occupational Health and Safety Policy and Directive (OH&S), which states the direction and minimum requirements of the company. At all of our sites, a systematic OH&S is in place. At all large operational sites, there is also an organization with appointed safety engineers to support the organizations. We carry out risk assessments on a

regular basis and conduct safety rounds four times a year at all operations sites, and once a year in office environments.

All sites have, since 2017, a targeted leading indicator to reduce the risk level in all workplaces. This metric is called the 'risk reduction number' and is based on the reduction of risk points after the implementation of corrective action. We set a target of reducing risk by 1.5 risk points per person, and achieved a 3.2 score during 2017.

We promote a leading self approach of safety by involving all parties in the identification and mitigation of risks, thus creating a Zero Accidents culture that provides safe and healthy workplaces for everyone. In 2017, several areas of improvement have been implemented by acting with a Safety First mindset. Some of the improvements at our global production sites are listed below:

- ★ In Brazil, a project was undertaken to build an outside ladder with a platform that facilitated the access to the cranes for the maintenance team. To minimize the risk of burn injuries in the atomization process, protective shields have also been installed.
- ★ To focus on the high risks in our melt shops, a Best Practice Group was formed last year with participants from all the meltshops in the company. A first meeting, held in Johnstown in September, enabled participants to share experiences and implement best practice at all our meltshops. The Best Practice Group is now established and the work will continue in workgroups and physical meetings to follow up progress and continuously share best practices.
- ★ In North America, Safety Hazard mapping has been a successful way to identify risks and is a way to actively engage staff in analyzing potential safety risks in the workplace. Potential hazards are identified and prioritized for mitigation, and the staff

participate in the mitigation process. All co-workers at the North American operations underwent training to support the process.

- ★ In India, the local work environment committees (safety committees) have different focus areas every month regarding potential safety risks. The observed risks are then reported in MIA and an action plan is set up to tackle them. This has helped get a clearer focus and engagement within the team.
- ★ In the mixing station in Japan, new safety rails and floor were built to prevent falling from a station when opening the valve of the bin.
- ★ In Korea, a special working table was built to facilitate the sieve cleaning and improve working conditions. The improvement also made it possible to connect the vacuum cleaner to the table so that dust emissions during cleaning were minimized. A new workstation with safety rails was built for operators tying flexbags after packaging to prevent operators from falling.
- ★ In Tonbridge, United Kingdom, there was a project to review all process instructions on the shop floor and to retrain staff with a focus on safety precautions for each operation.
- ★ In Höganäs, Sweden, risk assessment models have been revised, standardized and implemented into MIA. Risk assessments were conducted for all operations during the year. Another project during 2017 was taking an inventory of all older machinery at the site to ensure the necessary safety standards. Action plans are in place to replace or upgrade machinery that does not fulfill standards. In Halmstad, a project was started to clarify rules, standards and markings in high-risk areas around the furnace.

All new hires in 2017, including all temporary hires, received safety training, including local safety procedures, as part of their



The Safety & Environment Week in Brazil is an annual event and part of a regulatory requirement outlined in current Safety Standards in Brazil. It aims to increase awareness about health and safety and to prevent accidents at work.

job introduction. All necessary personal protection equipment is provided by Höganäs to all employees.

We work consistently toward establishing state-of-the-art workplaces through:

- ★ Annual emergency exit drills.
- ★ Identifying high-risk workplaces and eliminating risks there.
- ★ All accidents, incidents and risk observations being reported, investigated and mitigated with the highest priority in MIA.
- ★ All risk assessments being reported in MIA using the same risk management model by 2018.
- ★ Continuing to target risk reduction as an operational KPI at all sites.
- ★ Creating an uncompromising safety culture characterized by active involvement by all parties.

Next-level clean factories

During 2017, Höganäs continued its proactive work to, as far as possible, eliminate exposure to dust and hazardous substances in the workplace – far beyond current regulations. The need for the usage of personal protection equipment should be reduced to a minimum, and we have set ambitious target levels for two indicator¹ elements, cobalt and nickel, to be reached by 2020 at all our workplaces. All sites are fulfilling local national requirements, though not the tougher company requirements at all places. Local action plans are being developed after measurements were made in 2017 at all sites, and continuous evaluation is part of the process.

An extensive programme to identify sources of dust release was carried out during 2017, and improvements are now underway. All production sites have identified special areas for improvement, where dust emissions can be reduced. Mitigation of exposure includes improving ways of working and training, but also technical improvements such as new dust filters and vacuum cleaners, and more enclosed and automated operations where powder can be released. This precautionary approach will be completed and maintained at the target levels.

Reusing, recycling and eliminating waste

With an annual production of about 500,000 tonnes of metal powder and about 150,000 tonnes side-stream material, we are committed to minimizing waste in our operations. We develop solutions for waste minimization, and we have now gone even

¹ Cobalt at max 0.02 mg/m³ inhalable fraction (TWA1) and nickel (metallic), at a maximum of 0.005 mg/m³ respiratory fraction (TWA) to be reached by 2020 at all workplaces in the Höganäs Group.)



At the atomizing plant in Halmstad, the side-stream material gets a new life as products. The slag from the atomization plant becomes a product with excellent characteristics for the construction of roads. “Petrit® E has a higher abrasion resistance than the natural rocks used in traditional asphalt,” says Björn Haase.

further by setting a long-term goal for Zero Waste and targeted the reduction rate.

All our waste and by-products have the potential to be reused and transformed into products. In 2017, 77 percent of all our process-related side-streams and 70 percent of all our non-process related waste² was put to new use. 0,6 percent of the side-stream materials were sent to safe destruction or landfill as hazardous

² Non-process related waste amounts to 1.6 percent of the sum of all waste and by-products.

waste (Classified according to local waste regulation in respective country of operation). Part of our side-stream materials, such as classified fractions of slag, can be directly recycled as raw materials or as consumables in our own production.

We have developed a range of products from side-stream materials, such as fillers in asphalt, construction materials and raw material for the production of stone wool, just to mention a few. We are also currently exploring the possibility of using mineral-based by-products as filter media for water treatment purposes, and to produce lime additive products used in agriculture, which improves the quality of the soil for agriculture. Two of our most useful product developments are Petrit® E and Petrit® T, which are both made out of slag. Petrit® E can be used to replace gravel in road construction and Petrit® T functions as a lime replacement.

As far as possible, non-process specific waste is sorted on-site, before being transported to local waste handling, such as material reclaim, reuse or landfill. Examples of non-process specific wastes are used oils, electrical cables, spent batteries and broken pallets.

Leftover side-stream material after recovery is considered waste and is sent to landfill at approved sites.

During 2017, several actions and projects were started to reach the goal of Zero Waste. Some of these projects are listed below:

- ✦ In Brazil, big bags in good condition are sold for reuse and big bags with labels or damaged bags are used in the production of new bags. Also, used lubricating oil is collected and sold to companies that refine it. Slags are processed by magnetic separation to reuse the metal fractions, while the rest of the material is used in asphalt and concrete. Baghouse filter dust is sold instead of being discarded.
- ✦ In Japan, plastic reusable pallets have been introduced to handle flexbags in-house.
- ✦ At our operation sites in India, ladle refractories are reused and cyclone dust is processed in a magnetic separator, so that iron particles can go back into the process (re-melting). This results in 10 percent less dust going to landfill.

Turning landfills into local gems

In the community of Höganäs, Sweden, we have an on-site landfill that is expected to be in use up until 2030. There, we store process-related material of the lowest risk class, such as slag and a moderate amount of filter dust containing pure iron. We section the landfill, only keeping small areas open, and regularly water it to prevent dusting. Closed parts of the landfill are successively being restored and opened to the public for recreational purposes. The area now also attracts wildlife and has become an important resting place for migrating birds.



Zero Waste

2026: More than 95 percent of all our process-related side-stream materials to be put to use.

2020: More than 85 percent of all our process-related side-stream materials to be put to use.

Result 2017: 77 percent of all our process-related side-stream materials were put to new use.



Höganäs has started to work in new ways due to the scarcity of water in the municipality of Halmstad. “We are testing the use of seawater to cool rest products and to reduce dust,” says Charlie Wedell, manager at Höganäs plant in Halmstad.

During Höganäs’ more than 200 years of history, we have used other landfills. Closed landfills in Ale (Bohuslän) and Rögla (Skåne) have deliberately been prepared to support bio-diversity. At Rögla, the rare red-necked grebe is now nesting, and the site is also included in the local community “landscape preservation plan” (Naturvårdsplan).

Höganäs applies and follows the REACH (2007) and ROHS (2011) restrictions on the use of hazardous substances and chemicals.

Responsible use of water

Water is used in our operations in a number of ways, such as for cooling metallurgical processes by heat exchange, by circulating it over a cooling tower or a secondary heat exchanger. In Sweden (Halmstad and Höganäs sites), the heat exchange is used to produce district heating.³ We use 1.7 million m³ of water to cover a total process need of close to 28 million m³ of water yearly. We do this by recirculation and on average water is used 16 times. Minor losses of water in cooling towers and in bleed flows are replaced. The percentage of recirculation is 90–99 percent in these systems, rendering a water reuse rate of 10–100 times.⁴ Following an exceptionally dry period, ground water levels in the Halmstad region in Sweden fell to the point where the community needed to ration

³ More about this in the chapter “Climate neutral operations”.

⁴ The only exception is at the Stony Creek site, where the (non-contact) cooling water is pumped from and returned to the same creek without any recirculation. The only effect on the creek is a very local (a few metres) temperature effect.

Group summary generation of residual products and waste

Process related			
Total (tonnes)	Total reclaim and reuse	Landfilled at landfill or sent for safe destruction	Total reclaim and reruse
151,255	117,203	34,052	77%
Non-Proces related			
Total (tonnes)	Total reclaim and reuse	Landfilled at landfill or sent for safe destruction	Total reclaim and reruse
2,406	1,677	729	70%

water use. Our co-workers took on the challenge to find savings in tap water use. There are savings to be made by exchanging tap water with sea water in parts of the operation. This is now under evaluation.

Responsible use of water

In Belgium, installation of motion detectors in bathrooms and showers have reduced water consumption by 1.1 million litres per year.

A upcoming project in 2018 to replace open cooling towers with a central cooling system will potentially reduce water consumption by approximately 7 million litres per year.

Water is also used in the atomizing process, where molten steel is atomized into the desired particle sizes. The water is treated, cooled and largely recycled in the atomizing process again. Some water is lost in the cooling towers as vapour, and a small amount is also exchanged in order to maintain the water quality, rendering an average of about 90–96 percent recirculation grade in these systems. Water for hygiene and consumption (e.g., dust binding and slag quenching) is also needed. These waters are treated on-site or, alternatively, sent off to external water treatment plants. ■

Group summary of total water consumption and average recirculation grade.

Flows are marked as in the figure below.

Total process use (included recirculated water) (B+C+D)	29.3 million
Total consumption (A)	1.8 million
For non-contact cooling purposes	1.0 million
For atomising	0.7 million
For hygiene and other non-process use	0.1 million
Average re-circulation of water	16 times

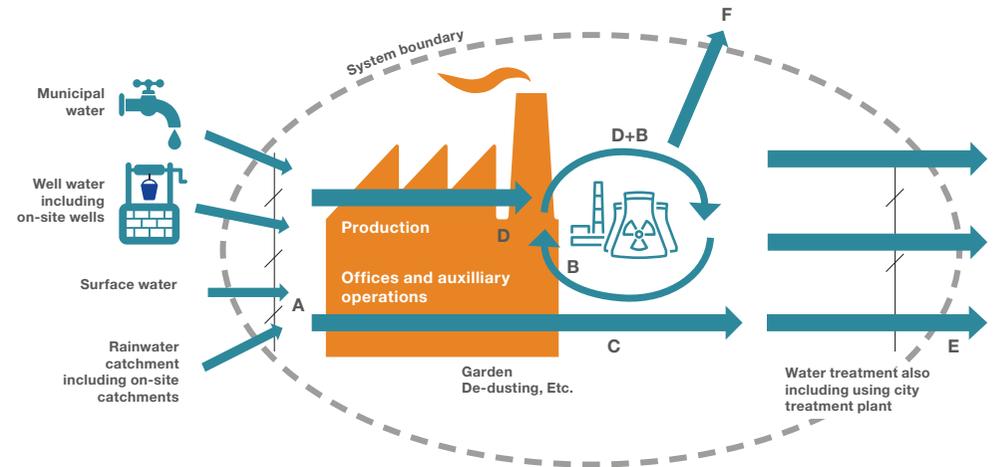


Illustration of main water use at melting and annealing operations. 'A' is total consumption regardless of source, 'B' is internal process recirculation, 'C' is non-process related use of water, 'D' is water tapped into process systems, 'E' is discharge from site and 'F' illustrates losses to air as vapour, mainly through water cooling towers.

A man with a shaved head and a black t-shirt is sitting at a desk in a control room. He is smiling and looking towards the right. In front of him are several computer monitors displaying various data visualizations, including maps and charts. The room is dimly lit, with the primary light source being the screens. The text "Climate neutral operations" is overlaid in white on the right side of the image, with a small green horizontal line underneath the word "operations".

Climate neutral operations

Climate neutral operations

As a producer of iron and metal powders, Höganäs emits greenhouse gases and thus contributes to climate change. We at Höganäs continuously strive to reduce our climate footprint with the long-term vision of becoming climate neutral. The aim is for Höganäs' products to be the first choice for customers and end users with consideration to climate impact.

» **HÖGANÄS' VISION ENTAILS** considering the climate impact of everything we do in our direct and indirect business activities. Our vision regarding climate neutral operation implies a responsible, energy-efficient and fossil carbon-minimizing production, which includes everything from the import of raw materials to the final delivery of our products. This will strengthen our ability to serve our customers with solutions that will reduce their climate impact.

This means careful monitoring of emissions, efficient use of energy and raw materials, choosing efficient transports, and gradually changing to renewable resources. We do this with a focus on both climate and business. During 2017, Höganäs started mapping risks and opportunities to drive toward a climate neutral operation, and we will continue in 2018 to formulate goals and actions in a comprehensive climate strategy.

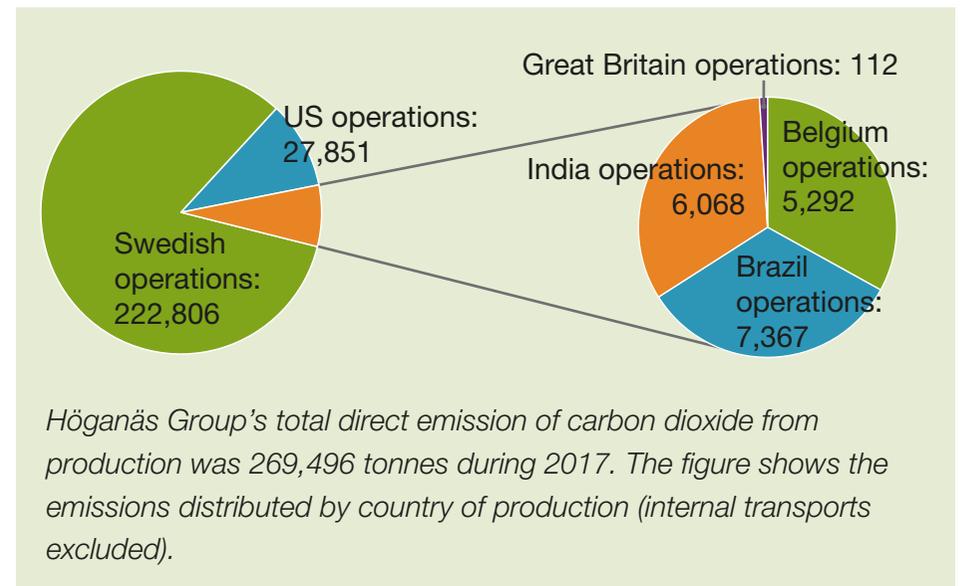
Monitoring the carbon footprint

By monitoring our emissions of carbon dioxide, we know where they originate in the value chain. This information enables us to set an efficient long-term strategy.

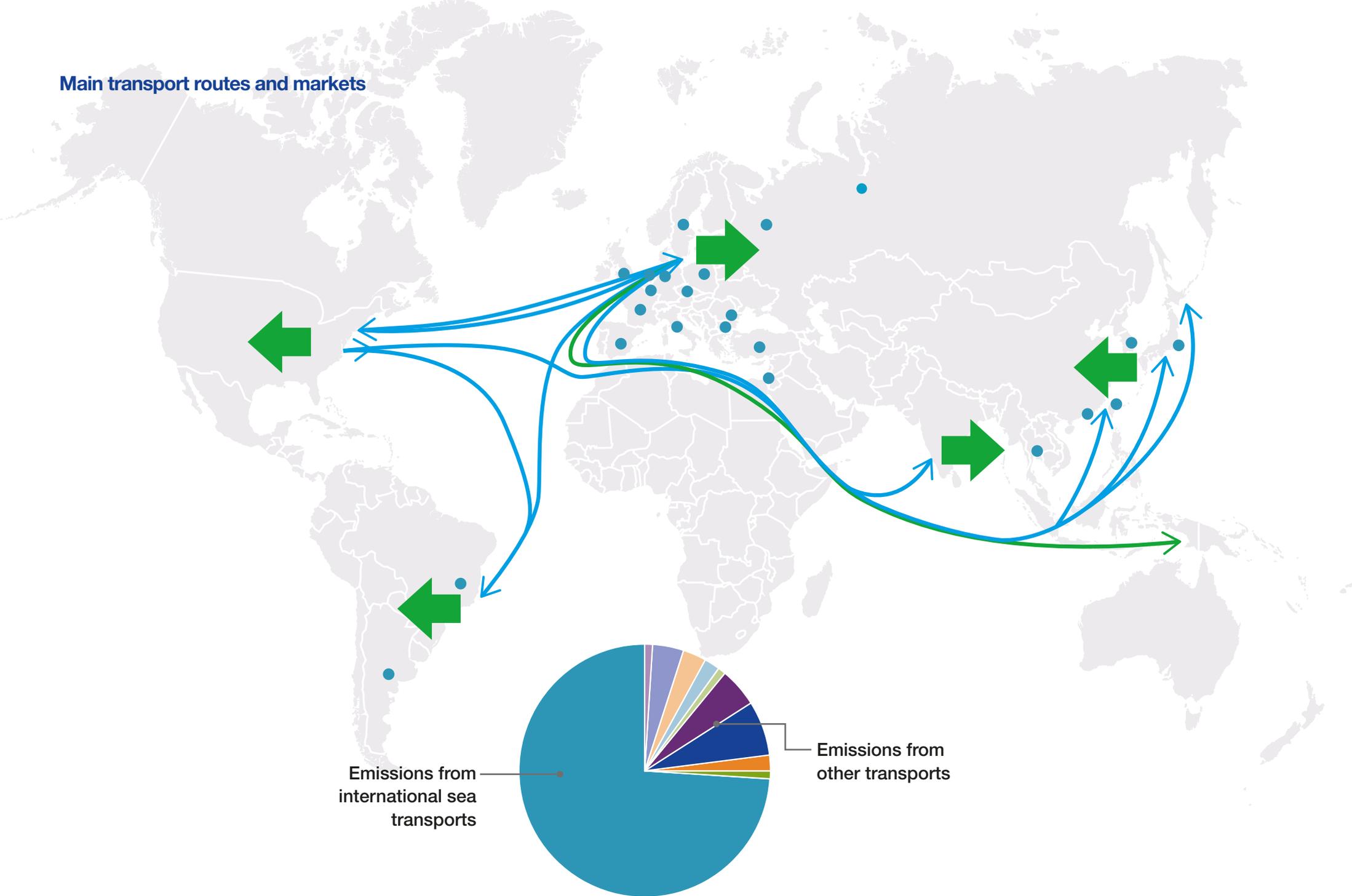
Direct company emissions from production (Scope 1)

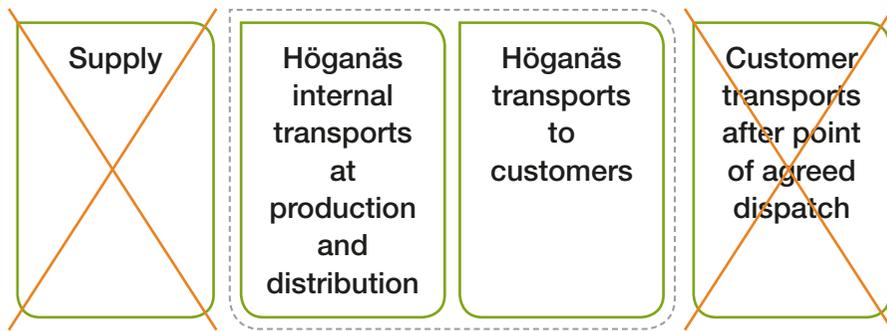
Höganäs monitors its direct emissions of carbon dioxide within all production units. Production in Sweden is subject to the EU-ETS¹ cap and trade scheme, which aims to cap European climate gas emissions and progressively reduce the cap to mitigate climate impact. Höganäs handed in 222,806 European Emission Units under the cap to compensate for its direct emissions during 2017.

¹ European Union – Emissions Trading System according to Directive 2003/87/EC



Main transport routes and markets





Boundary for the transport emission model

Keeping an eye on transport emissions

Höganäs' direct transport emissions are calculated using a distance-based method with default emission factors from public and recognized databases. For those areas where local emission factors are missing, proxy data has been used, taking the emission factor from other areas or an internationally available factor.

The model works according to the following principles: every customer dispatch recorded in the business system triggers a calculation based on the combination of product dispatched, customer identity, and the internal transports pattern (type of transport, distance and coupled WTW*-emission factors) to the point of delivery, i.e., the route. Emission factors and route information are updated and emissions are recalculated every second year in the model. The model generates an estimated value of total direct carbon emissions from transports.

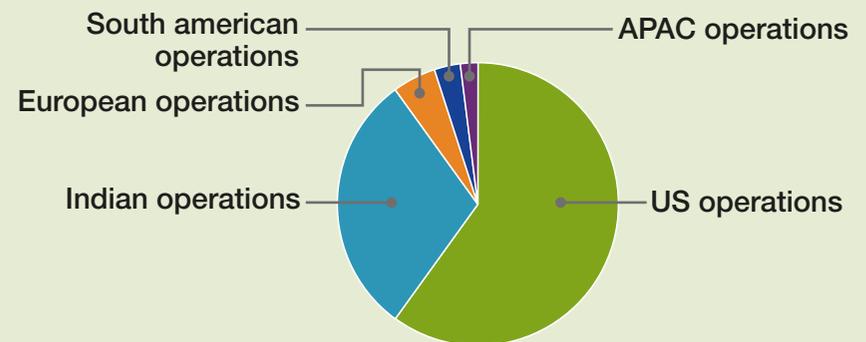
*WTW or wheel-to-wheel data includes emissions caused by the production of the fuels used for transport.

Höganäs transports contributed to an estimated 34,000 tonnes of carbon dioxide during 2016. A new calculation of the emissions will be made during 2018. International sea transport is the main contributor.

Indirect emissions deriving from purchased energy carriers (Scope 2)

Indirect emissions come from our purchase of electricity for operations. The indirect total emissions of carbon dioxide from electricity purchased for the group totalled an estimated 103,000 tonnes for 2017.

Höganäs' operations at Niagara Falls run exclusively on hydroelectricity. Swedish operations are supplied with a mix, mainly of hydropower and nuclear power. Despite being the largest consumer of electricity in the group, the indirect emissions generated from Swedish operations only account for 10 tonnes



Distribution of Scope 2 emissions of carbon dioxide, totalling an estimated 103,000 tonnes, between Swedish, US and Belgian operations.

of carbon dioxide. The Brazilian operations are supplied over an electricity grid powered mainly by hydroelectricity.

Höganäs aims to refine the Scope 2 reporting, as more reliable grid data are made available.

Value chain emissions (Scope 3)

During 2017, we mapped a selection of our products using a Life Cycle Analysis (LCA) approach. The results indicate that significant emissions in the value chain are from supplied materials. This year, we will look to gather and report upstream data as far as possible. Our target is to be able to also start reporting Scope 3 emissions from 2020.

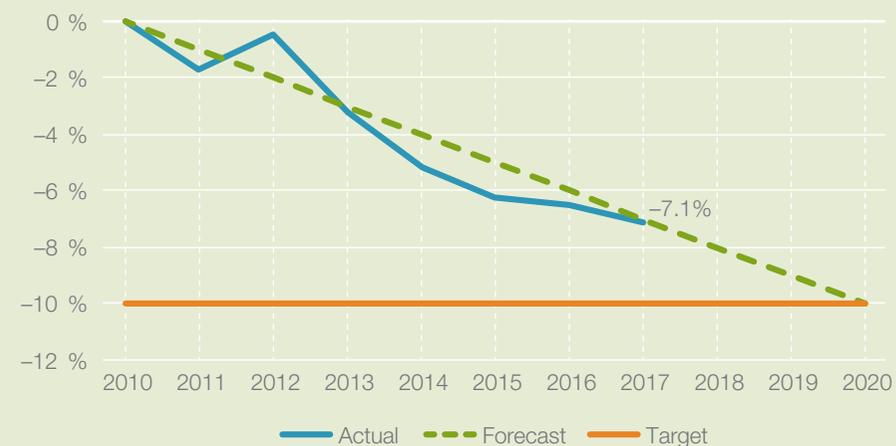
Energy efficiency and energy conservation

The best way of minimizing cost and climate impact is to avoid unnecessary use of energy. Höganäs has a long and successful history of reducing the use of energy per unit produced. Our present energy efficiency initiative, the 'Energy Challenge', has the goal of a 10 percent reduction in energy use per produced ton of metal powder between 2010 and 2020, which is a challenging goal. By the end of 2017, we achieved 7,1 percent as a result of ways of working, continuous improvements, installation of modern technology and process development.

Operations in Sweden have certified their energy management systems since 2006, and we have set a target that, by 2021, all major production shall follow suit and certify their energy management according to ISO 50 001.

Processing metals at high temperatures results in residual energy that can be useful for other purposes. By using the same energy

Energy Consumption Höganäs Group



Höganäs Group's energy conservation. Reduction of specific energy consumption (energy per tonne of produced product) compared to base year 2010. Actual saving at end of 2017 was a 7.1% reduction.

again, the total use of energy can be significantly reduced. Höganäs continues to search for new possibilities to expand the use of residual heat, both internally and with external partners.

Höganäs' operations in Sweden use residual energy for low temperature processes and for heating of buildings and tap water. For a number of years, we have also exported residual heat to local community district heating networks. During 2017, Höganäs exported 53,000 Megawatt hours to the local district heating systems in Höganäs and Halmstad. The exported heat

was equivalent to heating and providing hot water to approximately 3,000 homes² in the colder Swedish climate.

In 2017, we took another step in this direction, when Höganäs made an agreement with an energy system consultant and

² Calculated on an average of 17 Megawatt hours used per household for heating and hot water.

Air pressure and energy consumption reduced at additive plant

The air pressure at the Additives Production Plant in Sweden has been reduced by 45 percent. The improvement means a reduction of 1.5 percent of Höganäs' entire electricity consumption at the Höganäs site, which corresponds to the energy required to heat 50–60 homes.

Certified Energy Manager with the mission to save energy

Jacob Maruschok, at Höganäs North America, has passed the Certified Energy Manager (CEM) credential, which is an internationally recognized certification developed by the Association of Energy Engineers. "I will utilize my knowledge of energy systems, along with my understanding of our processes, to achieve energy savings within all departments of Höganäs in North America," says Jacob.



Jacob Maruschok

developer, to develop new regenerative industrial infrastructure projects. Warming and possibly supplying carbon dioxide to greenhouses is one potentially interesting win-win idea. The intention is to find a commercial solution during 2018.

Long-term, Höganäs aims to find a viable use for residual energy at all its production facilities.

Renewable energy and raw materials

Höganäs' direct emissions from production are dominated by the use of fossil carbon, mainly at:

- ★ The reduction of magnetite and in the processing of scrap in the electric arc furnace
- ★ The use of natural gas and LPG³ as fuel
- ★ The use of raw materials like scrap, containing carbon
- ★ Internal transports

Hence, finding commercially feasible renewable alternatives for carbon sources and fuel is necessary to make important steps toward carbon neutral operations.

54 percent of all raw material comes from recycled or renewable materials. The total amount of raw materials used is 600,000 tonnes.

The Probiostål project

In 2017, the Probiostål construction of a pilot plant based on the Woodroll[®] process commenced at the Höganäs site in Sweden.

³ Liquefied Propane Gas

Once operational, Höganäs will prove the technology for the future supply of renewable fuel gas and reduction coal (i.e., bio-coke).

Probiostål is a joint research and development project between the Swedish steel industry, Cortus Energy AB, various universities and the Swedish authorities Swedish Energy Agency and Swedish Environmental Protection Agency. There are currently few realistic alternatives to fossil fuels for Höganäs, due to the need for precise control, high temperature and purity – but this project has the potential to change that. The ultimate plan is for this technique to be made available for use by the entire iron and steel industry. The Woodroll® plant can eventually revolutionize the industry's efforts in phasing out fossil fuels.

A number of lab studies were performed in the early stages of the project, demonstrating the possibility of gasification of biomass to synthesise gas, hydrogen and biochar. The process is called Woodroll®. To verify the results and economical aspects, tests on an industrial scale over a longer period are necessary.

Among the project participants, Höganäs is the only industrial user of both natural gas, hydrogen and coal. The pilot-scale project in Höganäs provides a unique opportunity to evaluate process coal from various raw materials, to learn how to use renewable fuel/ syngas, and to make an evaluation of the new technology on-site. The Woodroll® plant will be inaugurated during 2018 and run as a pilot for about a year.

Biogas

In parallel, Höganäs monitors the market for commercially available biogas. Our European and US sites are connected to natural gas



In November, we broke new ground in Höganäs by starting construction on the world's first plant for renewable energy gas and bio-coke.

pipe distribution networks, which is an advantage when assessing the possible future sourcing of biogas.

Electricity

Höganäs is dependent on large amounts of electricity for production purposes – some of which is produced using fossil fuels. Höganäs is addressing these indirect (Scope 2) carbon dioxide emissions with the aim of increasing the supply of commercially viable alternatives. It is Höganäs' strategy to use current market options for purchasing



These new solar panels at Höganäs in India will generate around 80 percent of the annual requirement for electricity at our office in Pune, India, and about 3 percent of the total plant requirement in Ahmednagar. More investments in renewable energy will come.

carbon dioxide-efficient electricity from renewable production at commercially sound prices.

The technology for producing renewable electricity, especially in the photovoltaic area, is evolving and we foresee that this will create interesting new opportunities in the energy market over time. Solar cell installations are becoming more affordable and reliable. In 2017, Höganäs invested in an installation at the Indian site. The local engineering team also saw an opportunity to use the solar panels to harvest the annual rains for internal use, replacing a large part of the water that today is drawn from the city water main.

A climate-effective win-win

Since 2012, Höganäs Sweden has had a partnership with the local wastewater treatment plant. In exchange for residual energy delivered from Höganäs to the wastewater plant to heat its bio-treatment step, Höganäs receives approximately 2 GWh biogas. This is a win-win, where both parties reduce their climate impact.

Reduced emissions from transports

With customers and suppliers all over the world, the supply chain inevitably means extensive transportation of goods and materials, which means emission of greenhouse gases. We export our products to customers all over the world, so we depend on efficient transportation. Höganäs supplies the markets mainly using “returning” international sea transports on the Asia-Europe and Asia-US routes.

International sea transports are globally interconnected and this is an area where Höganäs has only a small potential make its own improvements. For sea transports arriving to Höganäs harbour, however, we set requirements regarding the age of ships and the fuels they use.

Other examples of ongoing activities are:

★ Trains instead of trucks

Another focus is to use train transports instead of trucks wherever possible. In 2016, possibilities opened to access the Iberian market with train transports. This has led to us now using trains between Sweden and France, which alone takes about 800 tonnes of goods off European roads. This was possible only after bringing both suppliers and customers on board to shape this innovative logistics solution.



We are looking to get permanent permission for the HCT transports since, fully implemented, it would halve the number of transports needed.

* Shorter pallets

The finished goods are transported in shipping containers. In 2014 and 2015, Höganäs introduced a shorter pallet that allows about a 10 percent increase in fill ratio in each shipping container. The results are positive: Höganäs has reduced the number of containers it needs and also the volume allocation on feeders and overseas transport vessels. The shorter pallet is now the new standard.

* High-Capacity Transports

In 2016, Höganäs started testing High-Capacity Transports (HCT) on the Höganäs-Helsingborg route. HCT transport vehicles can carry two freight containers instead of one. Fully implemented, it

would halve the number of transports needed. The initial results from the 2017 data are promising: we exceeded the target level of 25 percent savings in fuel and recorded a 34 percent saving. We are now looking to get permanent permission for the HCT transports before investing in replacing the rest of our current carriages. ■

Climbing Mount Sustainability in the years to come



Climbing Mount Sustainability in the years to come

We at Höganäs bring opportunities to the market through our metal powder solutions and our knowledge. We believe that the inherent properties and endless applications of metal powders means they will be utilized in industry and society to a much larger extent than they are today. Metal powders do not only enable our customers to develop smarter solutions and new application areas; they also reduce material and energy consumption while making better and more cost-efficient products.

» OUR GOAL IS to be a sustainability leader, and our tool to achieve this is our strategy, 'Mount Sustainability', which is tightly connected to our vision Inspire industry to make more with less. The most important step for us to reach our goal is to continue to embed sustainability into our business plans and daily work. This final section of the report details Mount Sustainability's most immediate targets and our main plans for the years to come.

Höganäs embarked on a journey and we understand that there are challenges ahead that we have yet to discover. Our



“We do not compromise on safety and have set a target to be the benchmark in the steel industry by the end of 2019.”

Anders Bergman,
Sustainability Manager
– Environment & Safety

emphasis in the coming years will be on enhancing our stakeholder dialogue, systematically identifying threats and opportunities, regularly updating our materiality analysis and continuously fine-tuning our sustainability strategy and to have it integrated into our business plan and daily work. Major stakeholders in our value chain communicate a strong commitment to sustainability, with topics ranging from decoupling business and earnings from CO₂ emissions, to the origin and end of life of materials, to supplier demand for transparency on environmental and social impact.

■ A great and meaningful place to work

Making Höganäs a great and meaningful place to work implies that what we do is relevant and appreciated. The More Höganäs philosophy, which we launched in 2016 as our principal management tool, is the perfect enabler, turning passion, competence and leadership capability into results. We will continue to integrate our vision, values and principles as the backbone of necessary change. Training is still ongoing, and progress is continuously followed up within different parts of the organization.

To continue on our path up Mount Sustainability, we need to define our vision of a great and meaningful place to work in terms of goals and targets. First, then, we can set plans on how to achieve them. For example, gender equality and equal remuneration based on competence and performance will remain high on the agenda. The directive to strive for equal gender distribution among candidates in a recruitment processes is a clear signal, but needs to be further specified and followed up. Regarding equal remuneration, further analysis of the root causes is needed in order to formulate a strategy. We have access to data to work with and analyze, which may give additional valuable information.

As mentioned in earlier sections, the follow-up process of the people satisfaction survey is ongoing. A deeper analysis of the results is necessary before action planning, but we already know that focus areas must be:

- ★ Leadership and communication with management
- ★ How to avoid and handle stress
- ★ Continued competence development, including sustainability, leadership, and efficiency in ways of working

■ Building communities and responsible partnerships

Engagement in the supply chain will remain one of Höganäs' focus areas in the years to come. Following up on last year's successful test, in 2018 we will continue the introduction of our updated Code of Conduct for Suppliers, which puts more explicit demands on suppliers concerning healthy workplaces, healthy ecosystems and business ethics. We will also commence the transition to our new tool for supplier evaluation. The re-evaluation of all direct material suppliers will be finished before the end of 2019.

It is of great importance that all co-workers understand what is expected of them, concerning business standards and daily practices. The Höganäs Group Code of Conduct was adopted years ago to set out the principles by which we conduct our relations with business partners, shareholders, employees and the community. Our main focus is on business ethics, anti-corruption, social ethics and human rights, as well as the environment and confidentiality. During 2018, Höganäs will launch an updated internal Code of Conduct to clarify our ambitions and provide more explicit guidelines.

To systemize and streamline reporting of sustainability data, the implementation of a digital data-collecting tool was begun last year, focusing on several prioritized aspects. This work will continue in 2018 with additional aspects. Also, there will be continuous improvements, with automation of data collecting as an important goal. From 2018, data will be collected quarterly in order to facilitate follow-up on progress and enable proactive and transparent dialogues and measures.

During 2018, Höganäs will launch an updated internal Code of Conduct to clarify our ambitions and provide more explicit guidelines.

To facilitate activities in community projects, internal guidelines for social engagement have been prepared and will be launched and implemented this year. Local engagement in the communities where we operate will remain high on the agenda. In addition, Höganäs has initiated a co-operation together with Plan International to focus on access to clean drinking water in underdeveloped areas.

■ Sustainable offerings and long-term profitability

We believe that sustainable offerings are a pre-requisite for long-term profitability. To reach a complete portfolio of sustainable products and offerings, efficient development tools are needed. First of all, clear product-related sustainability goals need to be defined. For this reason, this year, we will run an internal project to systematically map and analyse our products' generic sustainability impacts over their complete lifecycle. This will help us to identify and prioritize existing gaps, and set well-defined development goals in our project processes.

To facilitate fact-based decision-making, we will also intensify our work with lifecycle assessment (LCA) and increase our resources for this work. The plan for 2018 includes both continuing systematic and detailed cradle-to-gate analysis of our metal powders and driving industry-wide activities. We have, therefore, started an LCA initiative within the European Powder Metallurgy Association (EPMA) and we are also in discussions with other industry associations.

We believe that the transition to industrial sustainability requires cooperation, so our strategy includes establishing partnerships within our value chains and with other industry partners, universities and research institutes. The goal is to extend our knowledge base and explore how we, together with our partners, can contribute

societal value in a future community based on a circular economy. Within this context, many challenging questions arise, especially around industrial ecology and closing material loops. We will definitely continue our ongoing projects concerning relevant use of our side-stream products and expand our focus the year to come. In addition, we would welcome any initiatives with industry partners and academia that provide additional input on the valuation of different lifecycle aspects, such as energy use during production and use phase, versus recyclability.

■ Future-proof business

Our co-workers are our most valued assets, so we have set ambitious goals for occupational health and safety. Our long term commitment to Zero Accidents is supported by boosted activities like:

- ★ Promoting a Zero Accidents culture with focus on developing clear expectations and monitoring of safety leadership
- ★ Continuous risk reduction including investment plans to reduce workplace risks
- ★ Training
- ★ Global sharing of best practice, such as melt shop safety workshops with participant from all our sites.

By 2019, our goal is to reach a lost time injury (LTI) frequency of less than three. To support this ambition, we work with preventive safety measures and have set a goal to reach an average risk reduction of at least 1.5 points per employee and year for this proactive work.

Another important goal is to eliminate exposure to dust and hazardous substances in the workplace. The need for the usage of

personal protection equipment in our factories should be reduced to a minimum. For this reason, we have set ambitious reduction targets for two indicator elements – cobalt and nickel – to be reached by 2020 at all workplaces in Höganäs Group.

Last year, 77 percent of all our process-related side-streams were reused or recycled. Our vision of Zero Waste is complemented by sub-targets. By 2020, we aim to put more than 85 percent of our side-stream materials to use, and more than 95 percent by 2026.

Another challenge regarding resource efficiency is to manage our water consumption – especially in regions with limited water supply. Our factory in India is situated in Ahmednagar, which is an area that periodically experiences water shortage. We have set the ambitious target of replacing more than 50 percent of our process water requirement there with rainwater harvested on-site by 2020.

■ **Climate neutral operations**

Climate neutral operations are our most ambitious vision, as well as one of our most challenging. We do not know if it is reachable but we know that we are dependent on others and we need to depend on technology advancements. To get closer, cooperation with industry partners, academia and society's various actors is necessary. Our next step is to prepare a group-wide climate strategy, including targets and a timeline during 2018.

One specific activity helping to reduce our climate impact is the Probiostål project, which aims to replace fossil fuels. With the pilot-scale plant, which currently is under construction at our site in Höganäs, Sweden, we plan to verify the Woodroll® technology commercially by 2020. If successful, the plant will be integrated

permanently with our operations and replace about 50 gigawatt hours of our energy per year from 2019.

Reducing our overall energy requirement will also remain in focus. Our Energy Challenge is targeted at decreasing our energy consumption by ten percent per tonne by the end of 2020, compared to the base year 2010.

Moving upward

In summary, we realize that we are at the very beginning of our journey up Mount Sustainability and, to accelerate our move upwards, we need to support our ambitions with more explicit targets and goals. With many good initiatives and engaged co-workers, however, we have a stable base upon which to build. We consider metal powders as sustainable assets in themselves, and we believe that we are well equipped to continue to develop sustainable offers and to inspire industry to make more with less. ■



Höganäs

Appendix

Appendix: Höganäs GRI index sustainability report 2017

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
GRI 101: Foundation	(GRI 101 does not include any disclosures)			
GRI 102: General Disclosures	Organizational profile			
	102-1 Name of the organization		This is Höganäs	Fulfilled
	102-2 Activities, brands, products, and services		This is Höganäs	Fulfilled
	102-3 Location of headquarters		This is Höganäs	Fulfilled
	102-4 Location of operations		This is Höganäs	Fulfilled
	102-5 Ownership and legal form		This is Höganäs	Fulfilled
	102-6 Markets served		This is Höganäs	Fulfilled
	102-7 Scale of the organization		This is Höganäs	Fulfilled
	102-8 Information on employees and other workers	Principle 6	A great and meaningful place to work	Fulfilled
	102-9 Supply chain		Building communities and responsible partnerships	Fulfilled
	102-10 Significant changes to the organization and its supply chain		This is Höganäs, Building communities and responsible partnerships, Sustainable offerings	Fulfilled
102-11 Precautionary Principle or approach	Principle 7	Climate neutral operations, Governance	Fulfilled	

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
	102-12 External initiatives		This is Höganäs, Sustainable offerings and long-term profitability	Fulfilled
	102-13 Membership of associations		This is Höganäs	Fulfilled
Strategy				
	102-14 Statement from senior decision-maker		CEO Statement	Fulfilled
	102-15 Key impacts, risks, and opportunities		This is Höganäs, Governance, Future-proof business, Climate neutral operations, A great and meaningful place to work, Climbing Mount Sustainability in the years to come	Fulfilled
Ethics and Integrity				
	102-16 Values, principles, standards, and norms of behavior	Principle 10	Governance, CEO statement	Fulfilled
	102-17 Mechanisms for advice and concerns about ethics		Governance	Fulfilled
Governance				
	102-18 Governance structure		Governance	Fulfilled
Stakeholder engagement				
	102-40 List of stakeholder groups		Höganäs and sustainability	Fulfilled
	102-41 Collective bargaining agreements	Principle 3	A great and meaningful place to work	Fulfilled
	102-42 Identifying and selecting stakeholders		Höganäs and sustainability	Fulfilled
	102-43 Approach to stakeholder engagement		Höganäs and sustainability	Fulfilled
	102-44 Key topics and concerns raised		Höganäs and sustainability	Fulfilled

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
Reporting practice				
	102-45 Entities included in the consolidated financial statements		About this report	Fulfilled
	102-46 Defining report content and topic Boundaries		Höganäs and sustainability	Fulfilled
	102-47 List of material topics		Höganäs and sustainability	Fulfilled
	102-48 Restatements of information			Not applicable
	102-49 Changes in reporting			Not applicable
	102-50 Reporting period		About this report	Fulfilled
	102-51 Date of most recent report		About this report	Fulfilled
	102-52 Reporting cycle		About this report	Fulfilled
	102-53 Contact point for questions regarding the report		About this report	Fulfilled
	102-54 Claims of reporting in accordance with the GRI Standards		About this report	Fulfilled
	102-55 GRI content index		Höganäs GRI index sustainability report 2017	Fulfilled
	102-56 External assurance		About this report	Fulfilled

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
Material topics				
GRI 200 Economic Standard Series				
Anti-corruption				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Governance, Building communities	Fulfilled
	103-2 The management approach and its components		A great and meaningful place to work, Governance	Fulfilled
	103-3 Evaluation of the management approach		A great and meaningful place to work	Fulfilled
	205-2 Communication and training about anti-corruption policies and procedures	Principle 10	A great and meaningful place to work	Fulfilled
Energy				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Climate neutral operations	Fulfilled
	103-2 The management approach and its components		Climate neutral operations, Governance	Fulfilled
	103-3 Evaluation of the management approach		Climate neutral operations	Fulfilled
	302-4 Reduction of energy consumption	Principle 8, Principle 9	Climate neutral operations	Fulfilled
Water				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Future-proof business	Fulfilled
	103-2 The management approach and its components		Governance (Environmental management system)	Fulfilled
	103-3 Evaluation of the management approach		Future-proof business	Fulfilled
GRI 303: Water	303-1 Water withdrawal by source	Principle 7	Future-proof business	Partially fulfilled
	303-3 Water recycled and reused		Future-proof business	Partially fulfilled

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
Emissions				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Climate neutral operations	Fulfilled
	103-2 The management approach and its components		Climate neutral operations, Governance	Fulfilled
	103-3 Evaluation of the management approach		Climate neutral operations	Fulfilled
GRI 305: Emissions	305-1 Direct (Scope 1) GHG emissions	Principle 7, Principle 8	Climate neutral operations	Fulfilled
	305-2 Energy indirect (Scope 2) GHG emissions	Principle 7, Principle 8	Climate neutral operations	Fulfilled
Effluents and Waste				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Future-proof business	Fulfilled
	103-2 The management approach and its components		Future-proof business, Governance	Fulfilled
	103-3 Evaluation of the management approach		Future-proof business	Fulfilled
	306-2 Waste by type and disposal method	Principle 8	Future-proof business	Fulfilled
Supplier Environmental Assessment				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	Principle 2	Building communities and responsible partnerships	Fulfilled
	103-2 The management approach and its components	Principle 2	Building communities and responsible partnerships, Governance	Fulfilled
	103-3 Evaluation of the management approach	Principle 2	Building communities and responsible partnerships	Fulfilled
GRI 308: Supplier Environmental Assessment	308-1 New suppliers that were screened using environmental criteria	Principle 8	Building communities and responsible partnerships	Fulfilled

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
Occupational Health and Safety				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Future-proof business	Fulfilled
	103-2 The management approach and its components		Future-proof business, Governance	Fulfilled
	103-3 Evaluation of the management approach		Future-proof business	Fulfilled
	403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities		Future-proof business	Partially fulfilled
Training and Education				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Höganäs and sustainability	Fulfilled
	103-2 The management approach and its components		Governance, A great and meaningful place to work	Fulfilled
	103-3 Evaluation of the management approach		A great and meaningful place to work	Fulfilled
GRI 404: Training and Education	404-1 Average hours of training per year per employee	Principle 6	A great and meaningful place to work	Fulfilled
	404-3 Percentage of employees receiving regular performance and career development reviews	Principle 6	A great and meaningful place to work	Fulfilled
Diversity and Equal Opportunity				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		A great and meaningful place to work	Fulfilled
	103-2 The management approach and its components		A great and meaningful place to work	Fulfilled
	103-3 Evaluation of the management approach		A great and meaningful place to work	Fulfilled
GRI 405: Diversity and Equal Opportunity	405-1 Diversity of governance bodies and employees	Principle 6	A great and meaningful place to work	Fulfilled

GRI Standard	Disclosure	UN Global Compact Principles	Chapter	Completion
Human Rights Assessment				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	Principle 1	Building communities and responsible partnerships	Fulfilled
	103-2 The management approach and its components	Principle 1	Building communities and responsible partnerships	Fulfilled
	103-3 Evaluation of the management approach	Principle 1	Building communities and responsible partnerships	Fulfilled
	412-2 Employee training on human rights policies or procedures	Principle 1	A great and meaningful place to work	Fulfilled
Local Communities				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Building communities and responsible partnerships	Fulfilled
GRI 413: Local Communities	413-1 Operations with local community engagement, impact assessments, and development programs		Building communities and responsible partnerships, Climate neutral operations	Fulfilled
Supplier Social Assessment				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary		Building communities and responsible partnerships	Fulfilled
	103-2 The management approach and its components	Principle 4, Principle 5	Building communities and responsible partnerships	Fulfilled
	103-3 Evaluation of the management approach		Building communities and responsible partnerships	Fulfilled
GRI 414: Supplier Social Assessment	414-1 New suppliers that were screened using social criteria		Building communities and responsible partnerships	Fulfilled