

# Sustainability <sup>2012</sup> Report



**FL**SMITH

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## About this report

The 2012 Sustainability Report contains the FLSmidth Group's efforts in relation to Corporate Social Responsibility (CSR) and sustainability. It includes the FLSmidth Communication on Progress to the United Nations Global Compact.

In 2012, we have aligned our Sustainability Report with our Annual Report and consequently adopted the divisional structure. The consequence of a divisional structure as opposed to a market structure is that some of the case studies in this report are placed within the division where they organisationally belong although they might also have been grouped with a different industry. The reason is that many of our product and research activities relate to more than one industry which underlines our strategy of being a One Source supplier to both the cement and mineral industries.

The reporting period is 1 January 2012 to 31 December 2012 and in this year's report we have consolidated the data from the last three years (2010 – 2012), whenever possible and relevant. Moreover, this report includes case studies from our local entities and business units around the world.



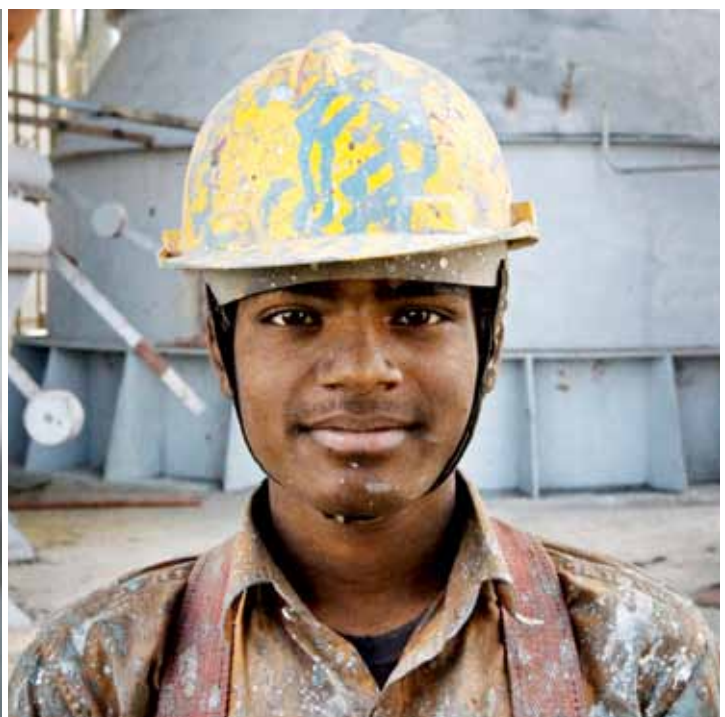




# One Source in a Global Context

■ FLSmidth is a leading supplier of technologies and services to the global cement and minerals industries. With activities spread all over the world, the global challenges that our customers face in their respective industries have become a central part of our business strategy. The global context has changed. So have our strategic objectives. As a one-source supplier of sustainable cement and minerals technologies, we strive to address the global challenges inherent in the industries we serve. Our focus is on building a closer relationship with our customers by thinking innovation and seeking excellence in everything we do.





### Growth, change and challenges

The global economy is growing. As economies open up, a clear shift in trade, production and consumption from developed to developing countries and emerging markets has occurred. A driver of change in many organisations, globalisation has brought a new competitive environment with increased environmentally driven technological innovation and new customer preferences.

The growing global economy has led to an increase in commodity demand. Although a dramatic growth in demand is experienced, this is not new in itself. However, what makes the current rise in demand for commodities unique is the broad understanding of the correlation with climate change and ongoing resource constraints. These have become drivers of change and challenges for the industries that FLSmidth serves.

Most governments, states, businesses and many citizens are aware of the climatic impact of the surge in CO<sub>2</sub> emissions associated with meeting market demands. Without major changes, the current level of global CO<sub>2</sub> emissions is foreseen to lead to a global temperature increase exceeding two degrees Celsius, which again could result in an ice-free Arctic and a dramatic sea level rise that could result in a potential global environmental catastrophe.

It is becoming increasingly difficult to expand the supply of commodities, especially in the short run. While there may not be an absolute shortage of resources such as water and energy — the perceived risk of one, has spurred efficiency-enhancing innovations.

The links between natural resources is becoming increasingly important. Consider the potential ripple effects of water shortfalls at a time when roughly 70 percent of all water is consumed by agriculture and 12 percent by energy production.

### A new way – our vision

At FLSmidth, our strategy is to minimise the impact on the environment while meeting the demands from the growing global economy. We have chosen to be the preferred full-service provider that constantly pursues innovation to meet these challenges. We seek ways to improve output and decrease resource input while increasing output, as well as ways to decrease fuel usage, reduce energy and water consumption, while producing less CO<sub>2</sub> emissions. These are challenges that are imposed on the industries we serve by the global drivers of change, and we strive to deliver solutions to these challenges.

We believe it is possible to create value for money for our customers by making more efficient and durable solutions, while addressing social issues such as environmental performance. By addressing global challenges through innovation and local presence, we seek to show our commitment to our customers, and to society in general.

Within each of our key industries, our research and development strategies are among other things, focused on increasing productivity while using fewer resources – a “more for less” strategy.

Our primary value proposition is based on a holistic life-cycle approach, where we want our total cost of ownership to be lower than our competitors, based on more sustainable, durable, cleaner, safer, and eco-efficient technologies. In our Group Strategy, we commit to continuously develop products and solutions that are more sustainable – both in the production and in operation of our technologies. Not just because it is good corporate social responsibility, but also because it is good business – for our customers and for FLSmidth.





# 2012 highlights

A warm welcome to the third FLSmidth Corporate Social Responsibility report submitted to the United Nations Global Compact.

The year 2012 has been a transformational year characterised by expansion and the launch of our new company vision and strategy. With that also came a new organisational structure with four divisions – Customer Services, Material Handling, Mineral Processing, and Cement.

Moreover, working with a new vision and business strategy has also brought renewed commitment to our CSR and sustainability work and prospects. In our 2012 report, we continue to bring forward how we work within key areas related to people, safety, and the delivery of sustainable technology – areas that also link with our company vision and strategy.

There are many motivating aspects of being a global company, and many tasks. With our 2012 report, we are placing FLSmidth in a global context with regards to the sustainability agenda and in relation to the global drivers of change.

CO<sub>2</sub> emissions, water scarcity, energy and resource constraints are all elements that influence the world we live and operate in. In this year's report, we have expanded the section related to the environmental dangers that influence our industries – and thereby our own company. The case studies in this section of the report illustrate how we live and execute our new vision of being *"...our customers' preferred full-service provider of sustainable minerals and cement technologies"*.

One key issue for us is the safety of our people. We want to ensure that our employees are safe and that the procedures and standards in place enable us to reach our commitment to a safe working environment.

Last year, we announced our company target of lowering the injury rate (LTIFR) to three by 2015. One initiative in meeting this target

has been the implementation of safety measures in managers' objectives and bonus schemes.

We also realise that although we have taken several important steps to ensure that we will lower the number of injuries, it remains a focus area that needs our utmost attention – every day. Regrettably, we lost one employee in 2012 and that is one too many.

In 2012, we welcomed several new companies to the FLSmidth family and we are working closely with these companies to implement safety standards and procedures, so that we all are aligned with the FLSmidth commitment to a safe working environment, with no injuries.

With growth and expanded activities as experienced in 2012, we acknowledge the accompanying task of being a responsible employer and business partner. By the end of 2012, we numbered 15,900 employees, and welcoming new talent to our organisation is a very evident outcome of our strategy. That brings responsibility for more people and a responsibility – not only to live up to – but also pass on our company culture, which is based on three values: competence, responsibility and cooperation.

Through our new vision, we are underlining that our core business activities and sustainability are closely linked. We will continue to incorporate this commitment to responsible business conduct into our business operations and decisions.

We recognise that an on-going effort to keep improving our procedures and internal compliance activities is needed. However, we also believe that we have taken the first steps to a more systematic approach and we will continue on that path.

With some of the highlights from 2012 and a firm commitment to stay on board with the UN Global Compact, I wish you pleasant reading and hope that you will find the information useful and interesting.

Jørgen Huno Rasmussen  
Group CEO, FLSmidth



**Jørgen Huno Rasmussen**

Group CEO  
FLSmidth



# Four divisions: Challenges and Solutions

■ FLSmidth is a leading supplier of complete processing plants, equipment and services to the global copper, gold, coal, iron ore, fertilizer and cement industries. We help our customers meet changing industry requirements, market demands and environmental regulations.

For the past 130 years, research and development has played a crucial role in our continued growth. Our research and development investments place particular emphasis on the use of alternative fuels, reduced emissions and waste, improved heat recovery, lower power consumption, minimised water consumption, increased plant capacity, availability and operating efficiency and minimising safety risks.

We recently signed a EUR 130 million-loan agreement with the Nordic Investment Bank to support our research and development activities that take place in our centres of excellence located around the globe.









# Customer Services Challenges and Solutions

## Customer Services – Challenges

The Customer Services division is following the latest developments and long-term trends in both the cement and mineral industries. We focus on topics that affect our ability to create shared value, such as CSR issues, and on understanding how the global drivers of change will impact our customers – and our business.

In our Sustainability Development department under the Customer Services division, we develop services and technologies that enable our cement customers to live up to the expectations in their industry. A general concern across industries is the need for reducing emissions, while maintaining high production. Waste Heat Recovery, Alternative Fuels and Supplementary Cementitious Materials are technologies have the potential to become some of the solutions to this global challenge for the cement industry (page 13).

The Operation and Maintenance (O&M) business in our Customer Services division can deliver a complete organisation for a customer if outsourcing is required. Finding the right people with the right skills can be a challenge for the industries we serve, in some locations. At FLSmidth, one of the competitive advantages lies in the people we employ. With our O&M activities, local presence has been established in many countries around the world – both on a short and long-term basis. With that we take our commitment to developing the skills of our people seriously, and we ensure that safety is a top priority.

The CSR approach in O&M involves developing ties with universities and communities to raise local skill levels. New jobs and educational opportunities contribute to the general development of society, and help develop the skills that the industry needs. As FLSmidth's Operations and Maintenance business grows, training and skill development is playing a significant role in strengthening local communities. The partnership between FLSmidth and the Helwan University in Cairo is a good example of this local support (page 14).

Being a global company, local presence and acceptance is key to the business. Therefore, our Supercenters are strategically located to support minerals and cement operations and work as a partnership with our customers and the local community – and is an important part of our CSR work. With three Supercenters already opened and four more on their way, each centre is designed to be sustainable and environmentally friendly (page 15).

## Customer Services – Solutions

### Waste Heat Recovery

#### Challenge:

#### *Conserving energy while maintaining productivity*

Faced with rising operating costs, and tighter emission regulations and in some cases an unreliable power supply, manufacturers around the world are seeking new ways to cut down their power consumption. However, lowering consumption is not the only option. Based on proven technology, FLSmidth's comprehensive Waste Heat Recovery (WHR) systems are ideal for new or existing cement or minerals plants. The WHR system provides a significant amount of a plant's power needs at no extra fuel cost, reduces its carbon footprint and may save precious water. And as governments around the world launch tax initiatives and subsidies to encourage manufacturers to reduce their carbon footprint, the global demand for WHR installations is rising.

### The Waste Heat Recovery System

Based on Kalina Cycle® technology, FLSmidth provide one of the most efficient waste-heat-to-power systems available. Depending on the carbon emission intensity of the grid power being replaced, WHR can save a 5,000 tpd cement plant more than 60,000 tonnes of CO<sub>2</sub> a year. Based on an average electric grid price of 0.12 USD/kWh and an operating cost of 0.01 USD/kWh for a WHR unit, a plant can save a massive USD 6 million a year in energy costs.

### Case Study: Star Cement

Star Cement in the United Arab Emirates invested in a 6,850 tpd capacity Pyro system for its Ras Al Khaimah cement plant in 2006. Satisfied with the system's performance, in 2011 the company asked FLSmidth to upgrade the plant's existing clinker cooler in order to reduce operating costs and reduce the clinker temperature.

The upgrade was a success, and a year later Star Cement signed a contract for a Waste Heat Recovery System. Working closely with Star Cement, FLSmidth designed, engineered and supplied a 4.75 MWe (gross) Kalina Cycle® WHR system, based on a 28°C ambient temperature. With the Kalina Cycle® technology, power generation can be optimally adjusted to the ambient temperature. During the winter season, for example, the ambient temperature is as low as 8°C and at this temperature, the WHR plant generates up to 5.2 MWe (gross).

Compared to a conventional Rankine Steam Cycle or Organic Rankine Cycle-based technologies – and under the same input conditions at Star Cement – the Kalina Cycle® technology provides more than 20 percent higher power generation.

With the most efficient technologies available installed at its Ras Al Khaimah cement plant, Star Cement ensures the facility is cost-effective and sustainable.

### Alternative Fuels

#### Challenge:

#### *Efficient production with less dependence on fossil fuels*

Due to rising energy costs and increasingly strict energy and environmental regulations, alternative fuel technology is becoming an important factor in controlling costs. To gain a competitive

edge, many cement and minerals producers worldwide have set ambitious targets for increasing the use of alternative fuels – waste-derived, as well as biomass.

As a technological leader in this field, our goal is to be the preferred supplier of alternative fuel-based solutions for the cement and minerals industries. We develop and supply complete alternative fuel solutions that allow cement and minerals producers to utilise up to 100 percent alternative fuel in their pyro-processing installations. The alternative fuel thereby becomes the primary fuel, without decreasing production capacity or product quality.

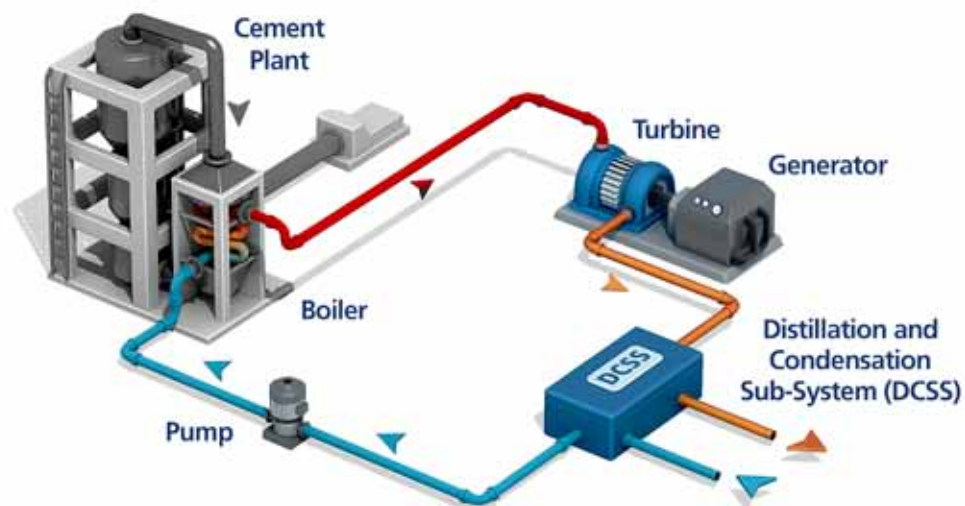
### Supplementary Cementitious Materials

#### Challenge:

#### *Higher productivity with less energy consumption*

The global demand for cement is growing rapidly and is expected to double by 2050. This increase is primarily driven by the rapid development of infrastructure, housing and industry in countries like China and India. However, cement production currently accounts for almost five percent of global manmade CO<sub>2</sub> emissions, so the potential for new types of cement that can be produced with lower CO<sub>2</sub> emissions and lower clinker content is key to being able to meet the global development needs without increasing greenhouse gas emissions.

Supplementary Cementitious Materials (SCM) include materials with cement-like properties that can be used as a supplement to clinker. Some of the most common SCMs are natural and synthetic pozzolan, flyash and slag. With the right approach, SCMs can provide environmentally friendly cement, without compromising product quality.



Other benefits include:

- Lower operating costs
- Adherence to strict emissions limits
- Increased production
- Reduced carbon footprint by 25 percent or more
- Potential revenue from recycling waste

FLSmidth has developed a new Flash Calciner System for producing SCMs providing unique benefits compared to other technology options. With minimal moving parts and better control in the activation, the calciner system lowers plant maintenance requirements while significantly reducing the lifetime operating cost compared with traditional SCM systems. But most importantly, the flash calciner design is very efficient; with normal clay moistures, it utilises less than 600 kcal/kg. As a result, replacing 35 percent of the clinker with calcined clay will reduce the overall carbon footprint of the traditional cement producing process by about 25 percent. FLSmidth can apply the same patent-pending process to convert traditional kiln systems with comparable results.

In a pilot system, FLSmidth has produced high quality synthetic pozzolan from clays supplied by leading cement producers and is currently developing industrial scale SCM solutions for these specific installations.

### Operation and Maintenance

#### *Challenge:*

#### *Improving production, organisation and quality while reducing emissions*

An operation and maintenance contract is a long-term agreement – both for the customer and the local community. From a sustainability perspective, this is especially important to us, as it provides valuable feedback from customers and from the communities where we work. When we operate and maintain a plant for an extended period, we build up a significant local presence and with that, a responsibility to the surrounding community.

### Technical and organisational upgrade

Egypt's National Cement Company signed a seven-year operation and maintenance contract for two production lines in Cairo with FLSmidth in 2012. Faced with an aging plant and increasing pressure from the local community to curb dust emissions, the aim of the contract is to raise production capacity, improve product quality and dramatically reduce dust emissions.

FLSmidth will supply the complete organisation to run the plant, supply spare parts and consumables, as well as implement a maintenance system to secure maximum availability and apply best practices in the pursuit of operational excellence. The majority of employees will be local, and over time it is hoped that the management team will also be Egyptian nationals, either from our own career development program, or from the Egyptian cement industry.

The two 3800-tpd production lines have been in operation since the mid-1980s. The technical upgrade that FLSmidth is supplying for the two lines includes a new ATOX™ mill, new top cyclones in the preheater, new FLSmidth® CrossBar™ coolers, Duoflex™ main burners, new kiln drives, a CemScanner™ and bag filters. The goal is that by early 2014, each line will have a production capacity of 5,200 tpd and emissions will be reduced.

### Helwan University

#### *Challenge:*

#### *Developing talent where it is needed most*

In 2010, FLSmidth initiated a public-private partnership with the Helwan University in Egypt. The aim of the partnership is to improve the quality and quantity of graduates who have an interest in the cement industry. In many emerging economies, public-private partnerships are an important driver of development within a specific sector.

When the first FLSmidth operation and maintenance contract was signed in Egypt in 2007, there were 26,912 graduate engineers in the country, which then numbered around 81 million inhabitants. It was therefore clear that educating qualified engineers for the cement industry would benefit the industry in general, FLSmidth and the community. When the project kicked off, the cement industry was growing steadily and the future for qualified engineers looked promising.

Three years on, there have been a number of challenges to overcome. The most important and unforeseeable was the Arab spring, which threatened the project in 2011. But the partnership was honoured throughout this time, with all partners maintaining a strong commitment to the project.

To date, 33 students have graduated from the Helwan University program:

- 9 have been recruited by FLSmidth
- 8 have been recruited by other companies (not in cement industry)
- 10 have been recruited by the military
- 6 are unemployed where we expect to recruit 3 to be lab engineers in the cement diploma degree.

From this partnership, we have demonstrated the capacity and the ability to lift the skill level of an organisation and local employees to an internationally competitive level, with improved efficiency, greater knowledge and improved safety.

The next phase of the partnership will raise the qualification level at the FLSmidth Helwan Cement Institute from a certificate to a diploma degree, which will be launched February 2013. Approved by The Supreme Council of Higher Education, the training will help increase efficiency, strengthen the knowledge base and improve safety at plants throughout Egypt.



### Community College in India

#### Challenge:

#### *Developing talent where it's needed most*

In India, a new technician training partnership has been initiated with the renowned Vellore Institute of Technology (VIT), and the Indian Society of Technical Education (ISTE). The aim of the two-semester certificate program is to pass on experience from FLSmidth's 130-year history, provide up-to-date training and improve the quality and quantity of graduates. An alternative form of education, the aim is to empower individuals through appropriate skills development.

There are now 19 students undergoing training. The students will be placed at Operation & Maintenance (O&M) sites for the second semester for practical training. At the end of their training, they will be available for employment at O&M sites as technicians. Through this initiative, we hope to maintain a strong foothold as an attractive employer with Indian graduates.

### Supercenters

#### Challenge:

#### *Building local competencies*

FLSmidth is building all-in-one service centres around the globe. With an increased focus on safety and requests from some mines to have a large portion of work done offsite to replace and repair items, the FLSmidth® Supercenters are located near mining and cement activities and will provide localised services and support.

To support our vision of getting closer to our customers, the Supercenters are tailored to solve customer challenges. Through close collaboration with customers, the Supercenters will offer

programs to teach, train and help customers better understand the processes, systems, and the equipment that they operate. The training programs will also help operating staff increase their skills and bring them up-to-date with safety guidelines and practices, which in turn will improve the plant's efficiency and help secure safe operations.

The third Supercenter opened in Arequipa, Peru following the successful establishment of Supercenters in Santiago, Chile and Perth, Australia. With a commitment to grow the business in Peru and stay at the forefront of efficiency, sustainability and environmentally friendly production, Country Head, Mr. Jesus Cabrera explains: "We decided to take this project a step further and contribute to the development of our society. So the courses we offer our customers and miners will also be offered to university students. Our customers have suggested a number of topics and are interested in including the environment and safety."

Supercenter Director, Romy Martin, elaborates: "A unique element of the FLSmidth® Supercenter concept is our community outreach and we believe in impacting the local societies with what we do best, which is offering knowledge, training, and the development of people. When we are developing our local societies, we are also improving and enhancing our business and our customers' businesses. All our Supercenters will host training programs and educational meetings to enrich the community."

Preparations are underway to launch three centres at Antofagasta, Chile, Delmas, South Africa, and Tucson, USA in 2013, with another planned for Mongolia in 2014. FLSmidth now has seven of these centres built or in the pipeline across the globe.



# Material Handling Challenges and Solutions

## Material Handling – Challenges

The Material Handling division provides material handling solutions primarily for the coal, iron ore, and fertiliser industries. This division also contains the Air Pollution Control Business Unit which provides clean air solutions and the Automation Business Unit that provides automated solutions all across our industries. Lastly this division also contains the MAAG Gear Business Unit.

To meet the ever-increasing global demand for ore, the number of open pit mines is on the rise, existing open pit mines are becoming deeper, mining rates are increasing and cut-off grades are falling. And the deeper the open pit, the higher the cost of truck hoisting. Together, these changes are increasing the environmental impact of each tonne of extracted ore.

To help mitigate the environmental impact of open pit mining, Pit Crushing and Conveying (IPCC) solutions offer a cost-effective and flexible material handling method. Traditionally, shovels and trucks are used to transport the extracted rock to the crushing stations. With an IPCC solution, hauling distances are shorter and fewer trucks are required, which means less manpower is needed, energy consumption is lower and CO<sub>2</sub> emissions from the truck cycle time are reduced. IPCC solutions also reduce the cost of trucking and can be adapted to meet the specific needs of coal and iron ore mining, and waste removal.

The world's fastest growing fossil fuel, coal, now accounts for around 30 percent of global energy consumption. At FLSmidth we do not try to argue that coal produced energy is the most sustainable solution, however, in many emerging economies, coal is the only feasible short and medium-term solution for meeting the growing demand for energy.

At FLSmidth, we recognise that we have an obligation to develop technologies that ensure that coal is produced in the cleanest and safest way possible. Our dedicated coal research team is working on solutions to improve the recovery rates from small mining operations.

The fertiliser market is mainly driven by four factors: population/ GDP growth; dietary changes; biofuel crop development and arable land per capita.

Global population growth is gradually slowing down, but income growth and living standards are increasing faster than ever. With global GDP/capita forecast to grow at over two percent each year, the demand for fertiliser in relation to GDP growth is estimated to increase by at least two percent each year. In addition, changing dietary habits, increasing demand for biofuel crops and the diminishing amount of arable land per capita are seeing demand for fertilisers rise.

## Material Handling – Solutions

### FLSmidth® Product: KOCH® Pipe Conveyor

#### *Challenge:*

#### *Transport of material without environmental damage.*

A pipe conveyor is essentially a belt wrapped into a tube. More versatile than conventional conveyors, pipe conveyors are also more environmentally friendly.

The KOCH® Pipe Conveyor is ideal for transporting all types of material, from cement and coal, to phosphate granulates and wood chips. Experts in conveying technology, FLSmidth designs and engineers closed conveying systems. We currently have more than 300 pipe conveyor installations in operation around the world, including the world's longest, measuring 8.3 kilometres, in Peru.

The KOCH® Pipe Conveyor completely encloses the material for 95 percent of its journey, ensuring no material is spilled or blown away. Ideal for long distances and problematic topographic areas, the Pipe Conveyor ensures the dust-free and low noise transport of bulk materials over roads, tracks, waterways or open seas, as well as through existing plants and environmentally protected zones. Even contaminated material can be conveyed without any negative environmental impact.

### The FLSmidth® Gas Suspension Absorber

#### Challenge:

#### Reducing SO<sub>2</sub> emissions.

Our Air Pollution Control department is in constant search for new solutions to meet increasingly stricter emission regulation. In the United States, the proposed National Emissions Standards for Hazardous Air Pollutants (NESHAP) imposes the strictest limits on cement plant emissions in the world – especially for organic hydrocarbon emissions. Recent changes to the NESHAP standards that will take effect in 2015, include for example, reducing mercury emissions to 90 percent below present World Bank limits. These new regulations will help reduce the level of hazardous air pollutants, but require a prompt response from cement industry equipment manufacturers.

To help U.S cement plants meet the new emission standards, FLSmidth developed the Gas Suspension Absorber (GSA). A semi-dry scrubber system, the GSA has a flexible multi-pollutant control device that provides a very high level of SO<sub>2</sub>, HCl and mercury removal. The FLSmidth® Gas Suspension Absorber optimises absorbent re-circulation and helps keep operating costs to a minimum. Installed and tested at the Norcem plant in Brevik, Norway, the GSA exceeded its performance parameters, achieving a 97.3

percent reduction in SO<sub>2</sub> emissions and a 95.2 percent reduction in HCl emissions. The emissions testing also showed a 90 percent reduction in mercury, proving that the equipment can meet the proposed NESHAP emission standards.

The GSA is very efficient at processing lime slurry and dramatically reduces the need for fresh lime in the system. Based on gas suspension technology, the GSA builds up a very high concentration of fly ash, dust particles and lime inside the reactor. And compared to conventional systems, the maintenance costs for the GSA are extremely low due to few moving parts, less wear and tear and a simple stationary nozzle.

#### Case Study: Gas suspension absorber technology reduces emissions at the Daye Huangshi Iron and Steel Co. in China

Recently, a GSA was applied to a sinter line at the Daye Huangshi Iron and Steel plant in China. One of the most critical steps in the steel production process, the sinter line prepares iron ore before entry into the blast furnaces. Cost-efficient and space-saving, the GSA can remove up to 97 percent of the sulphur dioxide without creating waste-water pollution, and is therefore one of the best available technologies for desulphurization of sinter lines.





A great success for Huangshi Iron and Steel, the iron industry is now aware of the benefits of applying this technology to sinter lines. And with over 400 potential installations in China alone, FLSmidth is ready to help reduce emissions from the iron and steel industry in China.

### **Coromax® Pulse System**

#### **Challenge:**

#### ***Dust emissions in the atmosphere***

As air pollution control regulations get tougher, minerals and other heavy industries have to find new and better ways to reduce their particulate emissions. Electrostatic precipitators (ESP) have long been the preferred equipment for dedusting large volumes of gases produced by industrial processes and are a popular method available to control dust emissions. But conditions such as low humidity, very fine dust particles and high resistivity applications can make the dust difficult to collect, which severely impedes the ESP's operational efficiency.

#### **The solution**

The Coromax® pulse system, developed by the Air Pollution Control department, seeks to address this challenge. An ESP's dust collection efficiency depends on the dust's electrical resistivity – if it's too high the ESP's performance is dramatically reduced. To overcome this problem, FLSmidth designed the Coromax pulse system. Now in its fourth generation, the Coromox pulse system reduces ESP dust outlet emissions by 50 percent and cuts power consumption significantly.

When dust emissions exceed permitted levels, ESP efficiency must be improved. One solution is to build a larger precipitator. This option takes up more space, requires a plant shutdown – and it's expensive. A more effective solution is to replace the traditional DC power supply with an FLSmidth Coromax pulse system. This not only keeps plant downtime to a minimum during installation, it also dramatically reduces power consumption by almost 30 percent and emissions by half.

Small, versatile and efficient, the Coromax pulse system is a smart way to capture high resistivity dust and avoid back corona. Easily installed on the roof of the ESP, the Coromax pulse system takes up little space, reduces plant power consumption and cuts dust emissions. This is great news for the industry and for the environment.

### **Baosteel China installs Coromax pulse system**

In accordance with its 2011 five-year plan, the Chinese government has reduced the amount of national dust particle emission levels by 50 percent compared to the 2009 level. In January 2013, FLSmidth will deliver 16 Coromax pulse systems to the Baoshan Iron & Steel plant in Shanghai.

One of the largest steel producers in the world, the Baosteel complex is located in Shanghai, and as such there is a huge focus on effectively reducing dust particle emissions from the plant.

### **Continuous Emission Measurement System**

#### **Challenge:**

#### ***Meeting national emission legislation requirements***

Tougher emission legislation is driving the need for effective emission measurement systems. Previously, stack emission analysis was often performed solely to meet local legislation requirements. Today however, many plants impose their own even stricter standards as a part of a sustainability program. In most countries, measuring stack emissions is required if waste is burned in the kiln in order to reduce production costs.

If waste is burned, the feeding will in most cases only be permitted if the stack gas analysis system is in full operation. To document stack emissions, a Continuous Emission Monitoring (CEM) system can be a solution used to validate and report the data in the correct format.

FLSmidth's Continuous Emission Monitoring system can submit reports according to any national standard. We can supply both the production equipment and the know-how to operate at minimum emission levels, as well as the emission gas analysis equipment required for temperature, pressure, flow, dust and gas analysis (IR, UR, LUM, FTIR – and prove the results).





# Mineral Processing Challenges and Solutions

## Mineral Processing – Challenges

The mining and minerals processing industries are facing increasing energy and water costs, difficulty in finding mining and processing ore bodies, and increasingly complex processes for obtaining environmental permits.

Local communities, national governments and non-governmental organisations are also exerting increasing pressure on the mining and mineral industries. Mutual understanding and good relations are therefore critical to the successful development of a project. Companies working in these industries are trying to strike the right balance between environmental concerns, safe and secure working conditions, as well as respect for international labour conventions and human rights.

A growing number of companies are looking to create shared value with the communities in which they are located by forging links between society and corporate performance. This trend, which now has a firm hold in the mineral industries, redefines companies as creators of shared value for all stakeholders, instead of solely generating profit. Through the creation of wealth and sustainable business conduct, they strive to live up to the expectations of the societies where they operate.

Global mining companies are also exploring ways to incorporate shared value into their business practices. The groundwork is being laid for new ways to generate innovation and growth, not only for the mining companies and their stakeholders, but also for the benefit of society.

Obtaining environmental and operation permits can be a time consuming and complex process. Mining companies and technology suppliers must adhere to strict environmental standards in the industry. In some regions, more than 300 permits are required. Community understanding and goodwill are fast becoming dealmakers or breakers when it comes to obtaining final permits. FLSmidth develops equipment that aims at being environmentally

sustainable, and that can be an important part of our customers' communication with local communities and to obtaining a licence to operate.

Other sustainability-related challenges facing the mineral industries include water supply, energy consumption and payback ratios. Water is a critical issue in dry mining districts; however, sea water is now becoming a viable alternative in some areas.

## Mineral Processing – Solutions

### Automated tailings filtration

#### Challenge:

#### Water recovery and environmental reclamation

Recent developments in FLSmidth's filtration technology have enabled mining customers to increase their water recovery, as well as maximise the dryness of the cake from tailings in the mining process. "More companies want a dry cake that they can stack," says Todd Wisdom, Director of filtration products at FLSmidth. "In response, we developed the biggest automatic filter press in terms of capacity per machine."

FLSmidth's AFPIV™ minerals pressure filters are installed at the end of the minerals processing line to assist in the recovery of water for re-use in the process. This specialised equipment helps support the environmental reclamation process and speeds up the re-vegetation of the surrounding landscape.

Pressure filters are the most effective way of squeezing moisture from the remaining tailings to create a filter cake with a less moisture content. This enables mining companies to stack and compact the tailings and start the re-vegetation process much earlier.

What is more, the filtered dry tailings concept means plants use much less water compared to similar concentrator plants. When combined, the advanced filtered dry stack tailings technology makes for a more environmentally friendly mining site.





### **FGD Scrubber Blowdown Systems**

#### **Challenge:**

#### **Reducing SO<sub>2</sub> emissions from coal and oil power plants**

For electric power plants, reducing gas emissions while maintaining safety and profitability is a major challenge. Sulphur dioxide (SO<sub>2</sub>) emissions are a natural by-product of coal or oil-fired boilers. To reduce these emissions, Flue Gas Desulphurization (FGD) was introduced as a way to convert the SO<sub>2</sub> contained in the flue gas into gypsum by adding lime or limestone in a wet scrubbing system.

The equipment required to separate gypsum is only a small part of a power plant's overall capital investment. FLSmidth's FGD solution helps plants meet regulatory requirements, while transforming SO<sub>2</sub> gas emissions into a safe and potentially useful by-product. The gypsum can be used in applications such as the production of wall-board, or as material in cement, road base and structural fill. And because it's a stable material, it's also suitable for landfill.

Since the introduction of the FGD solution, FLSmidth has led the development of thickening and dewatering SO<sub>2</sub> scrubber sludge technology.

### **Paste Thickener Equipment**

#### **Challenge:**

#### **Solving water scarcity**

Water scarcity is also a major challenge, as many ores are mined in remote locations or in arid climates. An example of this is Chile's Atacama Desert where many new mining projects are using seawater instead of fresh water. The driest desert in the world, the Atacama is composed mostly of salt lakes, sand and felsic lava. And because the majority of the Atacama Desert mining projects are located at high altitudes, pumping seawater to the mines is costly and complicated.

To reduce the amount of water lost to the disposal of tailings at the end of the process, FLSmidth® paste thickening equipment is utilised to maximise water recovery.

Once the minerals have been successfully removed from the ore during the processing stages, the tailings are fed into sedimentation tanks, known as tailings thickeners, to settle the remaining solids and separate them from the water used during the process. The tailings are then normally fed into tailing ponds where it is left to allow any excess water to evaporate or dissipate back into the soil.

FLSmidth's paste thickener equipment increases the underflow solids concentration and reduces the amount of water entering the tailings pond for more effective tailings management – and helps conserve precious water for reuse within the plant while lowering overall water consumption. This is a key factor for mining customers, who often find it difficult to secure water rights for their operations.

FLSmidth's high-density thickener equipment will help dewater tailings at a large plant currently under construction in the Atacama Desert. FLSmidth is supplying design, engineering, and process equipment for the copper and molybdenum plant, and on completion, the plant is expected to process approximately 105,000 tonnes per day of primary and secondary copper ore. FLSmidth's thickeners will be an important part of the plant's tailings management water conservation system.

### **High Pressure Grinding Roll**

#### **Challenge:**

#### **Saving energy and water – and reducing the carbon footprint**

Grinding is often the most energy intensive process at a mining site. FLSmidth's High Pressure Grinding Roll (HPGR) crushers use at least 25 percent less energy than traditional semi-autogenous grinding mills. The harder the ore, the greater the energy savings, and because these high-pressure grinding roll crushers typically reduce the amount of steel lost through wear, the amount of energy required to produce the steel is also reduced.

Recent test results show that the wide-spread use of FLSmidth® HPGR crushers could reduce greenhouse gas emissions from the grinding process by as much as 30 percent. A dry grinding unit, the HPGR does not require water during operation, so water consumption is also reduced. With the possibility for further dry mining downstream and the potential for dry recovery, mining companies could reduce their water consumption completely in certain minerals extraction operations, such as with precious metals recovery.







# Cement Challenges and Solutions

## Cement – Challenges

The cement industry is responsible for about five percent of global manmade CO<sub>2</sub> emissions – around 50 percent is from the chemical process, 40 percent is from the burning of fuel and 10 percent is from other processes. The cement industry emits nearly 900 kg of CO<sub>2</sub> for every 1000 kg of cement produced.

The European Union (EU) has the most stringent CO<sub>2</sub> regulations in the world. Within the framework of EU's emissions trading system, a benchmark of 766 kg of CO<sub>2</sub> per tonne of clinker was set for the industry in 2011. This target is currently achieved by less than 10 percent of all plants. In Western Europe, the average rate is 858 kg of CO<sub>2</sub> per tonne of clinker. Five percent of all plants have emission levels in excess of 1000 kg of CO<sub>2</sub> per tonne of clinker.

Besides CO<sub>2</sub> emissions, some of the long-term environmental challenges facing the cement industry are energy efficiency, water consumption and hazardous dust emissions. These are areas where FLSmidth's research and development initiatives are having a positive impact. We have created new business units that focus on sustainable solutions, based on previous research and development initiatives, such as Alternative Fuels, Waste Heat Recovery, and Supplementary Cementitious Materials (SCM). Based on the success of these solutions FLSmidth will continue to develop enhanced emission control technologies and processes to reduce a plant's CO<sub>2</sub> footprint.

We continuously strive to develop the best available technology for the cement industry in order to support the environmental agenda, while maintaining a strong production focus. With that strategy, FLSmidth has achieved groundbreaking results by delivering total solutions that improve environmental performance and production – two essential elements of our service delivery offerings. The Ste. Genevieve plant set world records when it was inaugurated in 2009 and has shown the way for many new solutions. Although it has been up and running for a couple of years, it still serves as a case study of possible solutions to various environmental challenges.

## Cement – Solutions

### **FLSmidth provides full solution for Ste. Genevieve**

#### **Challenge:**

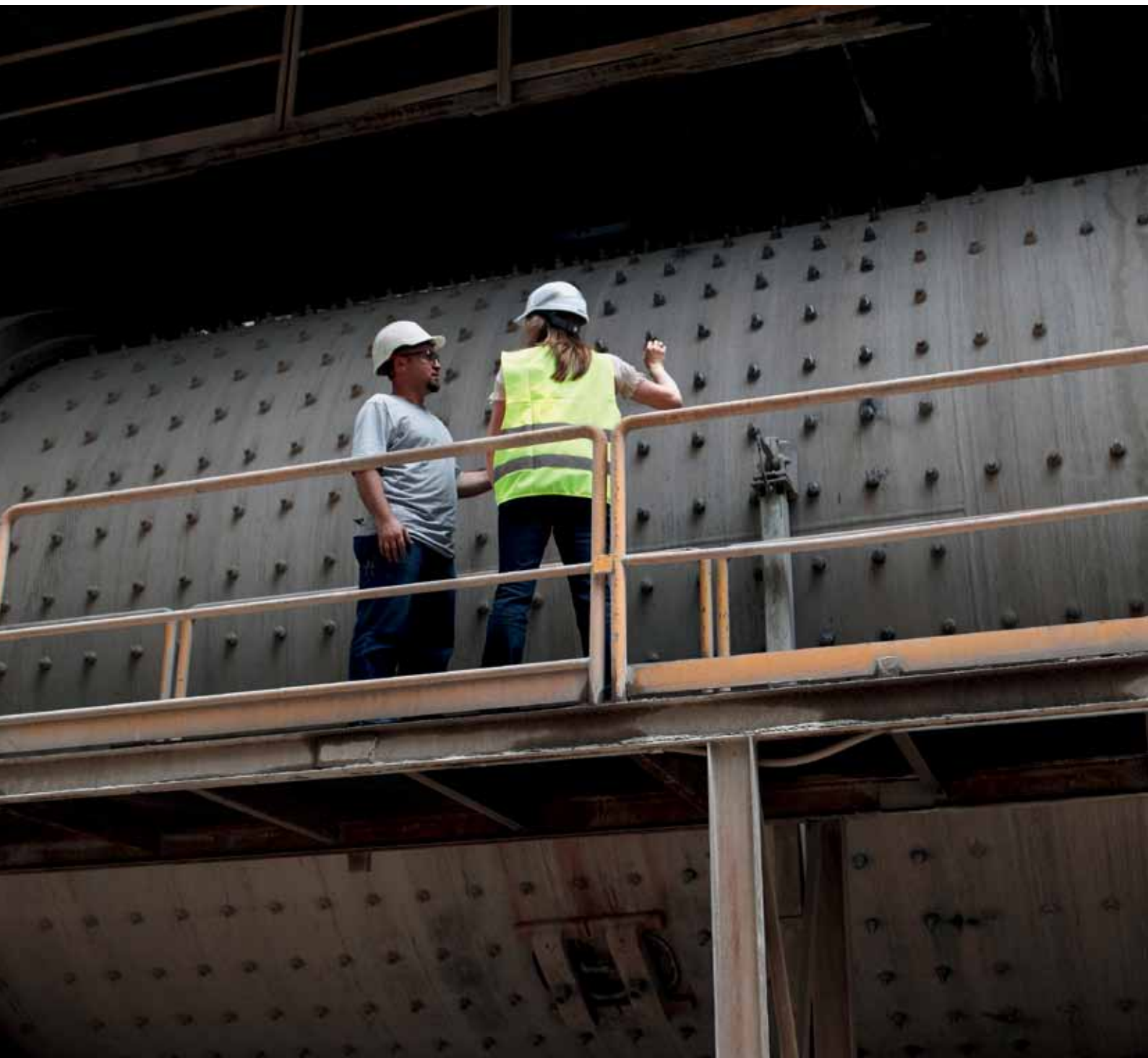
#### ***Meeting demands for increased production and environmental performance***

The Ste. Genevieve cement plant in Missouri, USA has a clinker capacity of 12,000 metric tons per day and a cement capacity of 4 million metric tons year. What makes this plant unique is not only its size, but also the very strict efficiency and environmental goals applied to the site development, construction and operation.

Ste. Genevieve is one of the few cement plants in the United States that is NESHAP compliant and requires no replacements or further investments. Designed and constructed to be future ready, the plant uses sustainable FLSmidth® technologies, which has proven beneficial for the plant owners, Holcim.

Located close to a nature reserve and the Mississippi River, it was paramount that the planning and development process minimised the environmental impact of the plant. New technologies and customised solutions were applied in order to install one production line with the production capacity of two lines, which would preserve the surrounding landscape during the development and construction phase. This was achieved through close customer contact and open dialogue.

The plant's emissions limits are among the lowest in the world, and set new standards in the United States. More than 600 engineers from FLSmidth centres around the world helped contribute to this achievement. Within the first three months of operation, the massive plant's kiln clinker production reached 13,160 metric tonnes per day (tpd) – the first single kiln production line to break the 13,000 tpd limit.



### The In-line calciner

#### Challenge:

#### *High production demands with low emissions levels*

The natural environment around the Ste. Genevieve plant posed constraints with regard to space. Consequently, the hybrid design consists of two bottom stage cyclones that each split into a twin preheater tower, and was invented in close collaboration with Holcim engineers.

FLSmidth's Low-NOx In-line Calciner (ILC) is designed to keep NOx emissions to a minimum. The ILC is designed to reduce the NOx emitted from the burning process in the kiln at the duct on the outlet of the rotary kiln. All the fuel for the calcinations process is introduced into this riser duct, without the addition of combustion air. To further improve the NOx reduction, a high temperature is maintained by controlling the addition of material as cooling medium to this zone. After the reduction zone, the gases enter the calciner vessel where hot air from the cooler is added for the full combustion of the fuel. This technique gives the best conditions for NOx reduction in the industry.

### The OK™ mill

#### Challenge:

#### *Increase production and lower energy consumption*

The FLSmidth OK™ vertical roller mills at Ste. Genevieve are designed to grind a large variety of cement types and slag. When used to grind normal cement, the energy consumption of an FLSmidth OK™ mill is 30-40 percent less than traditional ball mill systems, and up to 50 percent less when used to grind fine slag or cement.

The OK™ vertical roller mill has a higher capacity than a ball mill. The largest ball mill can produce up to 300 t/h OPC, whereas the roller mill can produce more than 400 t/h. This makes the OK™ vertical roller mill very cost-effective and more environmentally friendly.

The drying, grinding and separation process in a mill is combined in one unit. And because it has a low noise level, the mill can be placed outdoors, which reduces the civil construction costs and improves the working environment.

The design of the rollers and the roller mill concept makes the mill extremely efficient. Curved, with a groove in the middle of the segment, the surface of the roller allows the air to escape when the clinker is compressed. This also helps reduce vibration levels during operation, which can affect output and efficiency.

### Carbon capture and storage

#### Challenge:

#### *Reduce CO<sub>2</sub> emissions in the cement producing process*

Finding effective ways to reduce CO<sub>2</sub> emissions is a challenge for the cement industry. On a global level, approximately five percent of all CO<sub>2</sub> emissions come from the cement industry. However, there is no viable alternative to concrete as a major global construction material. Other materials can be substituted in some cases, but not for large-scale applications. In 2012 the global cement production was 3.5 bn tonnes and estimated to grow 4-5 % in the coming years.

As a supplier of sustainable technologies for the cement industry, FLSmidth must rise to this challenge. In our Sustainability Development department we develop and supply in CO<sub>2</sub> reducing solutions and technologies such as Supplementary Cementitious Materials, Waste Heat Recovery and Alternative Fuels (see page 12-13). We also entered into a cross-industry collaboration with the European Cement Research Academy (ECRA), where we participate as an associate member of the ECRA Carbon Capture & Storage (CCS) Project. Together with customers, competitors and leading researchers, we are helping to investigate the feasibility of CCS as a sustainable cement technology and finding solutions to address the global CO<sub>2</sub> challenge.

Known as Carbon Capture & Storage (CCS), the technology is not expected to be ready for market for many years and at present is in a pre-commercial research phase.

The collaboration is now in its development phase and ECRA is currently applying for funding to conduct tests.





# Focus areas – Progress Made

■ This 2012 progress report is the third on our commitment to CSR and sustainable business conduct. This year, we wish to consolidate the efforts we have made over the past three years by communicating our progress within each of our CSR focus areas. Therefore when possible and applicable, this section will include data from the reporting years 2010, 2011 and 2012.









# People

## Human resources policy: Respecting people and diversity

Our human resources policy states that we strive to conduct our business with the highest ethical standards, integrity and professionalism.

Our stance on labour practices is clear; “FLSmidth offers competitive employment conditions and remuneration and recognises employees’ right to be organised and bargain collectively. We respect and support human rights and do not engage in child or forced labour”.

The policy also emphasises that equal opportunity is a basic tenet: “We offer equal opportunities...irrespective of gender, age, ethnic or national origin and religious beliefs, disability, political or sexual orientation and family status”.

*More information on our human resources policy can be found on [www.flsmith.com](http://www.flsmith.com)*

## Responsibility to our people

FLSmidth’s most valuable resource is our employees and we believe it is our responsibility to ensure their wellbeing in all aspects relevant to their job.

A key aspect of responsible business conduct is a company’s obligation to respect and protect human rights. The UN Guiding Principles on Businesses and Human Rights, released in 2011, sets a global standard for preventing and addressing the adverse impacts on human rights linked to business activity.

At FLSmidth, we do our utmost to ensure that we respect and support human rights through our operations, policies and procedures. This is fundamental to the way we operate and reflect our company values. However, we also acknowledge that we have areas where internal procedures can be improved. Consequently, in 2012 an internal assessment was completed that to reveal areas where FLSmidth might have an adverse impact on human rights, and to uncover areas where improvements can be made.

The following are some of the areas highlighted in the internal assessment, as well as areas where our company can make an impact and influence human wellbeing.

### Employees

FLSmidth employs 15,900 people around the globe and have policies and procedures in place that support good and safe working conditions, development opportunities and equal opportunities.

A number of activities are combined in order to provide consistent compliance and ensure the integration of HR-related policies and procedures:

Every second year, an Employee Engagement Survey is conducted at FLSmidth to measure the satisfaction and motivation rate amongst our employees. Moreover, the survey provides the opportunity for all employees – anonymously – to disclose if any breaches of company policies or procedures have taken place.

Every second year, an HR Compliance Review is conducted in order to improve compliance with our company policies with regard to labour, working standards and regulations, health and safety policies and standards, and more generally with our CSR policy and training targets.

### Sites and projects

For several years, FLSmidth have worked to strengthen its approach to health and safety on site, and in our in-house production, including safety training for employees working on site.

One area identified for improvement includes developing more specific internal procedures on how to mitigate risks related to human rights in general. Furthermore, human rights have been incorporated as a separate point for assessment in a new internal business review procedure that will be launched in 2013.



### Suppliers

In 2010, we initiated a Responsible Sourcing project with the objective of making CSR an integrated part of the procedure for assessing suppliers. See page 42 for more information on the project and progress made.

### Consolidation of activities from 2010 report – 2012 report

#### Employee Survey:

	2008 SURVEY	2010 SURVEY	2012 SURVEY
Response rate (% of all employees)	84	88	89
Satisfaction rate (on a scale from 0-100)	73	71	72

#### Human resource data:

	2010 REPORT	2011 REPORT	2012 REPORT
Number of employees	11,229	13,200	15,900
Countries with operations	40	50	50
Female managers	Not reported	7.2 %	9.2 %

### Case study: People Development

There are many exciting career opportunities at FLSmidth. In order to navigate the opportunities, employees at FLSmidth can choose to follow one of three defined career paths – specialist, manager or project manager.

A range of development activities support employees with moving down the path they have chosen. However, managers and Group HR found that those choosing the specialist path were not as well supported as those following the manager and project manager paths. They found that Specialists were supported with developing their functional competencies but that there was not enough support for developing cross-functional competencies.

Specialists typically develop their functional skills through research, engagement with peers, research institutes and professional organisations as a result of increasingly complex job assignments related to their specialism. However, Specialists also operate within the frame of the team, the organisation and the customer and in order to operate successfully within this frame, there is a range of non-functional knowledge and skills which need to be developed. As the depth of the specialism increases, so does the breadth of the frame. This means that the range and depth of non-functional

knowledge and skills also changes. For example, the communication skills required of Specialists early in their career is different to those required by Specialists further on in their career.

Managers and Group HR therefore developed the Cross-functional training for Specialists.

The training is structured in 7 modules and support Specialists with their development throughout their career. The modules have been grouped into three steps to reflect this. Since we do not have a common title structure at FLSmidth, the three steps have been named 'Specialist', 'Senior Specialist' and 'Lead Specialist'. They give an indication of what is most relevant for those early in their career as opposed to those further on in their career.

The training was launched in November 2011 and is:

- delivered globally
- by experts
- FLSmidth certified.

It is expected that 444 employees will participate in the Cross-functional training for Specialists in 2013 and to date, the training has been rated 'excellent' by participants.



## Follow up on targets and initiatives:

TARGET AND INITIATIVE	2012 ACTIVITIES	2013 TARGETS
Employee development initiatives	<ul style="list-style-type: none"> <li>– Performance and Development Reviews (PDR) are conducted annually. New systematic approach has been implemented in Valby, Denmark and Bethlehem, USA (16 % of all employees)</li> <li>– Courses conducted to support the Specialist, Project Management, and Leadership career-paths have been conducted. E.g. in 2012, 121 employees took part in Project Management training</li> </ul>	<ul style="list-style-type: none"> <li>– Roll out of a systematic PDR process in more countries</li> <li>– To be able to report on total amount of training days for all employees</li> <li>– Continue conducting courses to support the Specialist, Project Management, and Leadership career-paths in more countries</li> </ul>
Employee survey	<ul style="list-style-type: none"> <li>– In August 2012, a new survey was conducted. Follow up on the survey outcome took place in the fourth quarter of 2012 throughout the organisation</li> </ul>	<ul style="list-style-type: none"> <li>– Follow up on action plans will continue in 2013, with an overall corporate focus on leadership quality and people development</li> </ul>
Compliance review	<ul style="list-style-type: none"> <li>– Evaluation of the 2011 HR compliance review and follow up on action plans were handled from the head-office in Valby, Denmark</li> </ul>	<ul style="list-style-type: none"> <li>– Conduct a new compliance review in 2013</li> </ul>
Diversity target	<ul style="list-style-type: none"> <li>– Communication of diversity target to the local entities was initiated</li> <li>– Pilot project was established in Denmark and resulted in several action items to be initiated in 2013</li> <li>– A closer follow up procedure on diversity items, with reporting requirements as part of the quarterly financial reporting was launched</li> </ul>	<ul style="list-style-type: none"> <li>– Continue working with action items with the objective of increasing the number of female managers</li> <li>– Employ more female managers than the reported 9.2 % in 2012</li> </ul>

## Human resources data

## Age distribution



< 30 (23%)
30 - 39 (33%)
40 - 49 (23%)
50 - 59 (15%)
>59 (6%)

## Seniority



< 2 (33%)
2 - 4 (21%)
5 - 10 (26%)
> 10 (19%)

## Gender



Male (85%)
Female (15%)

## Geographical distribution



Denmark (11%)
USA (17%)
India (23%)
Germany (4%)
Australia (6%)
Other (39%)

## Job-function



Technical and engineering (incl. design and product engineers, mechanics, electricians, technicians, trouble shooters etc.) (59%)
Non-technical (incl. administration, management, sales and project management etc.) (41%)

# Health & Safety

## Health & Safety Policy – creating a safe working environment

Our Health and Safety Policy demonstrates our FLSmidth commitment to provide employees with a healthy and safe working environment and addresses the responsibility of all managers and employees to ensure the same.

The H&S Policy prioritises complying with relevant laws and regulations, proactively assessing and striving to reduce occupational injuries, continuous improvement, implementing documented management systems, providing appropriate training, and taking measures and evaluating security risks related to travel and working abroad.

The H&S Policy also addresses the health and safety conditions related to products, technologies, services and instructions.

*More information on the safety policy can be found on [www.flsmidth.com](http://www.flsmidth.com)*

## Building a safety culture

At FLSmidth, we are committed to improving our safety performance. Employees working on customers' construction/project sites, operating cement and mineral plants, or our own manufacturing units are exposed to potential high health and safety risk. Therefore, we are striving to ensure that this type of work can be done safely.

In 2012, we consolidated our safety organisation ensuring that all major FLSmidth locations have a competent HSE officer to train and implement health and safety procedures. Safety has been included in the cash incentives for relevant managers, hereunder targets for the safety performance to ensure continued management attention. This approach will continue in 2013.

We have implemented a set of initiatives with the objective of reducing the number of injuries and creating more awareness in the organisation around safety (ref. initiatives summarised under the paragraph "Follow up on targets and initiatives").

## Following up on injuries

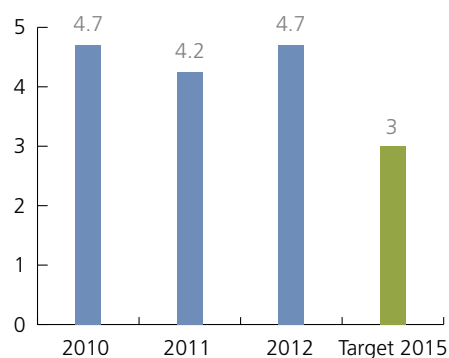
Safety performance in terms of reported injuries is constantly being monitored in FLSmidth, and the 2012 data shows an unfortunate increase of 12% in the Lost Time Injury Frequency Rate (LTIFR) which has increased from 4.2 in 2011 to 4.7 in 2012.

In this regard, we have had to take into consideration that the composition of companies within the group has changed due to large acquisitions in 2012 and due to new Operation and Maintenance (O&M) activities. Targeted efforts are made to align these activities with the FLSmidth safety procedures and standards.

Furthermore, we can see an underlining trend in the data that looks promising. If acquired companies and new O&M activities were excluded from the 2012 injury data, the LTIFR would be 3.4, which is comparable with 2011 results of 4.2. We expect that the ongoing integration of new companies will result in a considerable improvement within 1-2 years and that our long-term target of reaching a LTIFR of 3 in 2015 can be sustained.

We are saddened to report that one tragic fatality took place in 2012 due to a traffic accident on a public highway. Though FLSmidth continuously evaluate on the safest ways of travelling for the company, road safety continues to be a considerable risk in many countries where we operate.

## Consolidation of activities from 2010 report – 2012 report





	Number of injuries					Number of lost time injuries					Lost time injury frequency rate (LITFT)*					Lost time injury severity rate (LITSR)**				
	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008
Technology, sales, projects, service and administration	69	24	46	34	45	18	10	19	9	19	1,0	0,7	1,3	0,6	1,5	16	21	34	21	36
Production units	141	81	90	107	135	73	36	44	51	68	9,6	6,0	9,0	7,3	11,7	225	144	312	92	228
Operation and Maintenance	61	46	17	-	-	20	16	6	-	-	4,1	4,1	1,9	-	-	152	220	42	-	-
Cembrit	81	53	49	35	41	40	48	43	24	36	21,8	25,8	23,2	14,8	22,1	607	458	492	487	593
FLSmidth	352	204	202	176	221	151	110	112	84	123	4,7	4,2	4,7	3,6	6,0	119	110	128	79	135

\* LITFT=Lost Time Injuries per million working hours

\*\* LITSR=Number of lost working days per million working hours



### Safety data:

	2010 REPORT	2011 REPORT	2012 REPORT
Fatalities - FLSmidth employees	4	0	1
Safety training hours per employee	Not reported	2.5	5.7
FLSmidth sites audited	Not reported	Not reported	12

### Follow up on targets and initiatives:

TARGET AND INITIATIVES	2012 ACTIVITIES	2013 TARGETS
Certifying O&M sites OHSAS 18001	<ul style="list-style-type: none"> <li>– 1 certificate obtained covering 3 operating sites.</li> </ul>	<ul style="list-style-type: none"> <li>– To have additional 3-4 sites certified – including sites in Egypt and Chile</li> </ul>
Adding safety training to the safety metrics	<ul style="list-style-type: none"> <li>– Safety training has been added to the safety metrics</li> <li>– 5.7 hours of safety training conducted per employee</li> </ul>	<ul style="list-style-type: none"> <li>– Start defining targets for training efforts</li> </ul>
Adding safety to managers cash incentives	<ul style="list-style-type: none"> <li>– Safety has been added to managers cash incentives for most parts</li> </ul>	<ul style="list-style-type: none"> <li>– Continue implementation and transparency of process</li> </ul>
Lowering LTIFR to 3 by 2015	<ul style="list-style-type: none"> <li>– LTIFR = 4 for 2012 was set as a stage gate towards the target in 2015</li> </ul>	<ul style="list-style-type: none"> <li>– The 2012 target was not achieved and therefore maintained in 2013, LTIFR = 4</li> </ul>
Conducting Group HSE audits at FLSmidth locations by the global safety organisation	<ul style="list-style-type: none"> <li>– 12 FLSmidth locations audited in 2012</li> <li>– Standardisation of audit procedure was initiated</li> </ul>	<ul style="list-style-type: none"> <li>– 1 audit of each site every year app. 40 audits per year conducted by the Group Safety Organisation</li> </ul>
Global Safety training programs for FLSmidth technical supervisors	<ul style="list-style-type: none"> <li>– Training materials developed</li> </ul>	<ul style="list-style-type: none"> <li>– Launch the safety training program for all FLSmidth technical supervisors</li> </ul>
Safety policy	<ul style="list-style-type: none"> <li>– The Safety policy has been evaluated and improvement areas identified</li> </ul>	<ul style="list-style-type: none"> <li>– Launch a revised Safety policy with more focus on management obligations and behavioural safety</li> </ul>
Standardising the safety procedure	<ul style="list-style-type: none"> <li>– Continued the work towards standardised procedures for safety and health covering the the whole Group</li> </ul>	<ul style="list-style-type: none"> <li>– The standardisation process will continue to ensure compliance with local regulations and a basic internal FLSmidth standard</li> </ul>

### Case study – FLSmidth MAAG Gear in Poland

We put our policy into practice through our Health and Safety organisation and have continued last year's practices of conduction audits at FLSmidth's own manufacturing sites.

In the spring of 2012, an internal audit was conducted at the FLSmidth MAAG Gear facilities in Poland. Like in most cases, the audits are conducted by our own global safety organisation which is also working on standardising the audit procedures.

Monika Grabowska-Sztajnke, Safety Specialist at our unit in Poland, was involved in the audit and the subsequent activities. The visit by the Health & Safety Advisor resulted in an action plan that included a number of improvement activities. For Monika Grabowska-Sztajnke and her colleagues, it was an important learning experience.

"Both during and after the audit, we met with an experienced colleague who helped us identify areas for improvement and we also identified several easy wins. Having a fresh pair of eyes to evaluate our premises has been a very valuable experience to us and one we have learned from" Monika Grabowska-Sztajnke explains.

### Case study – Safety Task Force in Chile

An increasing number of injuries at customer's sites in Chile in 2011 and the beginning of 2012, prompted FLSmidth Chile to establish a Task Force Group to implement immediate steps to improve safety onsite.

The Task Force was quick to implement measures to improve safety, and positive results were visible shortly afterwards.

With LTIFR at the customer's locations having moved from 4.0 in 2011 to 1.5 in 2012 the efforts to strengthen the safety culture at FLSmidth Chile already look promising. The most significant result was achieving 0 Lost Time Injuries at our customer's site and only one medically treated injury after the creation of the task-force and implementation of a range of measures. This includes activities from focus on basic skills of the employees, additional training, better documentation (included risk assessment and work instruction) – and more management resources and a strong safety organisational structure. The Task Force Group also proposed a number of long-term initiatives to be implemented by the Safety organisation in Chile. Positive feedback from several customers underlines the success of this process. It is important to recognise the efforts made by the Operation & Maintenance and Customer Service departments, who achieved a LTIFR at 1.0 and 0.0 respectively in 2012. However, hard work is still ahead for the FLSmidth Chile organisation and the focus now is on developing a Health, Safety and Environmental system that can maintain the high level of safety and ensure implementation of corrective actions in future. External HSE certification (OHSAS18001 and ISO 1400) of Operation & Maintenance Chile is part of this process as is ensuring good integration of FLSmidth product companies and Supercenter in the HSE management system in Chile.



# Governance & Compliance

## **The Code of Business Conduct – our integrity framework**

The FLSmidth Code of Business Conduct was introduced in 2008 and was amended in 2012 to include a clear statement on our zero-tolerance policy towards facility payments.

The Code encompasses three key areas:

1. Compliance
2. Business practices
3. Company assets and financial integrity

FLSmidth practices a zero tolerance towards bribery, including facilitation payments and corruption, violations of competition/anti-trust regulations and violations of export control regulations. We expect integrity and fairness in all of our business dealings.

*More information on the Code of Business Conduct can be found on [www.flsmidth.com](http://www.flsmidth.com)*

## **Developing the Group's new Compliance department**

In the 2011 report, we launched a new Global Governance and Compliance department to facilitate and support the already existing integrity and compliance framework and adherence to Compliance policies in FLSmidth.

Throughout 2012, the new compliance function was introduced to all business units in FLSmidth. Local compliance representatives were appointed to continue rolling-out and advise on the compliance policies locally. More than 100 compliance representatives have now been appointed and trained worldwide under the concept "Train-the-Trainer". With this approach, we continue to emphasise the importance of local responsibility, enforcement and ownership when rolling out new policies and conducting local training sessions for relevant employees.

## **Speak-up**

FLSmidth's internal "Speak-up" function has been established to deal with any situations in which an employee may get suspicious about other employees' possible violations of our Group's Compliance policies. Employees are encouraged to report to his or her immediate local superior or local management if they are aware of violations. The Group General Counsel and Head of Group HR can be contacted in cases where an employee cannot contact his or her own manager, and the Chairman of the Board in cases involving Executive Management.

The cases are dealt with locally, and in 2012 we experienced a low number of suspected cases of misconduct. A few of these cases led to dismissals or other termination of contracts, while the rest turned out to be groundless.

By the end of 2012, the Board of Directors decided to file for approval with the relevant Data Protection Authorities of cross-border investigations of cases.

When approval has been granted, the Board will evaluate, whether a new Whistleblower Policy relevant for the whole FLSmidth Group.





#### Follow up on targets and initiatives:

TARGET AND INITIATIVES	2012 ACTIVITIES	2013 TARGETS
Amendment of existing policies	<ul style="list-style-type: none"> <li>– The Code of Business Conduct and the Anti-bribery &amp; Anti-corruption Policy have been amended, with a clearer provision on our zero-tolerance towards facilitation payments and as well an amendment to our stand on charity</li> </ul>	<ul style="list-style-type: none"> <li>– Continue improving the compliance-instructions, templates and, if needed, updating any existing Compliance policies</li> </ul>
Establishing an internal Compliance Organisation	<ul style="list-style-type: none"> <li>– 100+ local Compliance representatives have been appointed</li> <li>– Train-the-Trainer sessions have been conducted</li> </ul>	<ul style="list-style-type: none"> <li>– Continue building up and strengthening the worldwide Compliance-organisation</li> </ul>
Training of employees (e-learning)	<ul style="list-style-type: none"> <li>– Code of Business Conduct e-learning course has been rolled out to the whole FLSmidth Group</li> <li>– The e-learning course has been translated into 8 languages and is mandatory for all employees</li> <li>– 40 % of all employees have completed the module</li> </ul>	<ul style="list-style-type: none"> <li>– Continue rolling out the e-learning course</li> <li>– The objective is that all employees must have completed the Code of Business Conduct e-learning</li> </ul>
Establishing an internal Export Control Organisation	<ul style="list-style-type: none"> <li>– Export Control Coordinators have been appointed</li> <li>– Appointment of a National Export Control-Officer in countries with more than one business unit is requested and emphasised</li> <li>– The Board of Directors has adopted a new Export Control Policy applicable to all FLSmidth business units</li> </ul>	<ul style="list-style-type: none"> <li>– Continue building up and strengthening the worldwide Export Control-organisation and roll-out the Export Control Policy</li> </ul>
Monitoring and internal audits	<ul style="list-style-type: none"> <li>– Random audits occur frequently by our controllers or other staff functions</li> </ul>	<ul style="list-style-type: none"> <li>– More specific monitoring and internal audits to follow up on roll-out of and compliance with our Compliance policies</li> </ul>
New Whistleblower Policy	<ul style="list-style-type: none"> <li>– The Board of Directors decided to file for authorization to cross-border investigations</li> </ul>	<ul style="list-style-type: none"> <li>– Upon approval, re-evaluation of the "Whistleblower" Policy</li> </ul>







# Responsible Sourcing

## The Code of Supplier Conduct – stating expectations

In 2012, FLSmidth introduced the Code of Supplier Conduct, which sets out our expectations to our suppliers.

Our focus areas and areas where FLSmidth expects suppliers to demonstrate that they have adequate policies and management systems in place to assess, manage and ensure that adverse impacts are minimized, are as follows

- Human rights, including labour standards (as per internationally recognised legislation, conventions, etc.)
- Safe and healthy working conditions
- Managing environmental impact and risks
- Business ethics (e.g. internationally agreed standards for anti-corruption)
- Quality of supply and sub-supplier requirements

## The Responsible Sourcing initiative

In line with the UN Global Compact, we are using our sphere of influence in areas where we have potential high risk and impact.

On a global scale, we have around 8,000 equipment suppliers, so we have chosen to work with the initial group of strategic suppliers in areas related to responsible and sustainable business conduct. This group numbers 542 suppliers.

In 2012, we continued to develop and implement our new procedures for Responsible Sourcing at our five technology and project centres - Bethlehem (USA), Salt Lake City (USA), Wadgassen (Germany), Chennai (India) and Valby (Denmark). Late in 2012, the new procedures were rolled-out in China, where training was conducted at our own workshop in Qingdao.

Moreover, our Group Quality department introduced a new global procedure for evaluating new suppliers, and CSR areas have been integrated into this. The new procedure will be implemented throughout 2013.

## Case study: Assessing new suppliers

In 2012, we conducted pilot projects with new suppliers to test our CSR assessment procedures, as well as a set of audit tools. As part of this, an experienced internal auditor visited a new potential supplier in India. The purpose of the audit was to evaluate quality capabilities and CSR-related conditions.

The review revealed several areas related to safety and health that needed to improve before the supplier could be approved. An even larger challenge during the audit was the presence of a child at the workshop – a child who was working for a sub-supplier to the supplier in question. The conditions of the employment were not clear to us and consequently, we had a discussion with our potential supplier to find a solution, so that no breaches occurred.

The final outcome of the audit was a corrective action plan that must be implemented before the supplier can be approved for business. We chose to take an active role in developing the action plan and entered into a dialogue with the supplier on how to make the necessary improvements in order to build their capabilities in the areas identified for improvement.

**Follow up on targets and initiatives:**

TARGET AND INITIATIVES	2012 ACTIVITIES	2013 TARGETS
Training of employees in Responsible Sourcing	<ul style="list-style-type: none"> <li>– Class-room training of relevant employees in six entities</li> <li>– 885 employees have taken the e-learning module</li> </ul>	<ul style="list-style-type: none"> <li>– Train more employees in relation to the further roll-out of procedures</li> </ul>
Implementation of CSR procedure for existing suppliers, including CSR self-assessment for 875 existing suppliers	<ul style="list-style-type: none"> <li>– Implemented in six locations</li> <li>– 542 suppliers have received a supplier self assessment</li> <li>– 361 suppliers have responded</li> <li>– Assessments of 243 supplier responses</li> </ul>	<ul style="list-style-type: none"> <li>– Implement procedures in the remaining locations with purchase functions and submit CSR Self Assessment to more suppliers.</li> <li>– Collect and assess the remaining supplier surveys</li> </ul>
Introducing new global procedure for approval of new suppliers	<ul style="list-style-type: none"> <li>– Procedure for approval of new suppliers was launched in Q4 2012, with CSR now part of the assessment criteria</li> <li>– The FLSmidth Code of Supplier Conduct is a part of the documents issued to new suppliers</li> </ul>	<ul style="list-style-type: none"> <li>– Implement the global procedure for approval of new suppliers</li> <li>– Conduct supplier approval assessments according to the new global standard</li> <li>– CSR-related areas will be a part of the entry requirements for potential new suppliers</li> </ul>

# Carbon Footprint

## Environmental Policy – our commitment to the environment

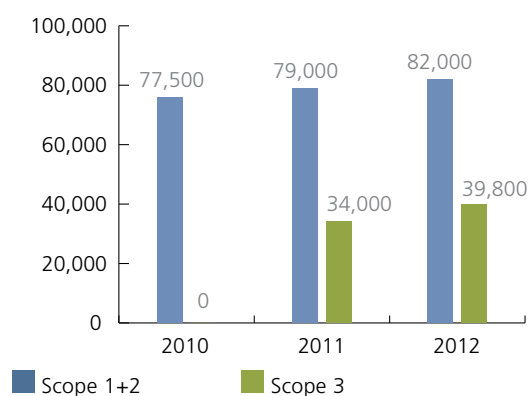
In addition to the newly launched vision on delivering sustainable technology, we also have our Environmental Policy that entails reducing the consumption of energy and natural resources, and as far as is possible, reducing or eliminating emissions. Besides a full life-cycle focus on products and services, this policy also focuses on our own in-house consumption of energy.

More information on the environmental policy can be found on [www.flsmidth.com](http://www.flsmidth.com)

## Managing our own carbon footprint

FLSmidth publishes an annual report on our internal carbon footprint to the Carbon Disclosure Project (CDP). The following information is based on the preliminary data for the CDP report to be published in May 2013.

## Consolidation of activities from 2010 report – 2012 report

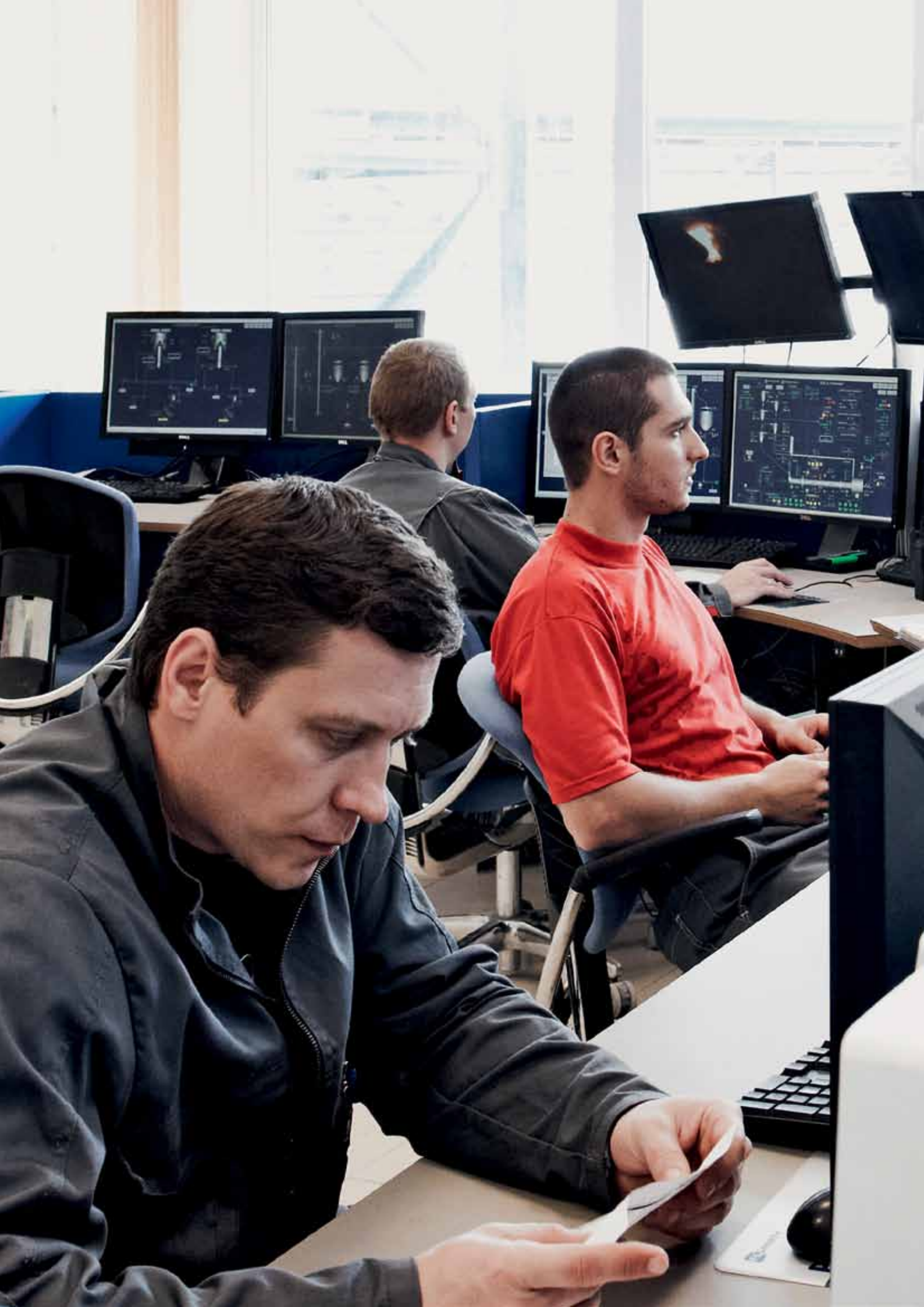


FLSmidth's carbon footprint in 2012 amounted to 82,000 tonnes CO<sub>2</sub> reported from scope 1 and scope 2. The figures from 2012 show an increase of 3.7% compared to 2011. 39,326 tonnes CO<sub>2</sub> is derived from Cembrit's production of fibre cement, which in 2011 amounted to 39,000 tonnes CO<sub>2</sub>.

## CO<sub>2</sub> footprint compared with business growth:

	2010 CDP REPORT	2011 CDP REPORT	2012 CDP REPORT
Tonnes of CO <sub>2</sub> scope 1+2	77,500	79,000	82,000
CO <sub>2</sub> scope 1+2 in relation to total revenue	3.8	3.6	3.3
CO <sub>2</sub> scope 1+2 in relation to number of employees	6.9	6.0	5.5
CO <sub>2</sub> scope 3 (business travel)	Not reported	34,000	39,800
CO <sub>2</sub> scope 3 in relation to total revenue	Not reported	1.5	1.6
CO <sub>2</sub> scope 3 in relation to number of employees	Not reported	2.6	2.6





# Overview of FLSmidth

## Who we are

FLSmidth is a leading supplier of equipment and services to the global cement and minerals industries. FLSmidth supplies everything from single machinery to complete cement plants and mineral processing facilities, including services before, during and after construction.

**Our vision is to be our customers' preferred full service provider of sustainable minerals and cement technologies.**

FLSmidth offers world-class products, facilities and systems, backed by tailored consultancy and support services. Our wealth of knowledge and resources means that we are able to provide one source solutions for even the most challenging requirements, worldwide.

FLSmidth invests heavily in developing new solutions to meet the important future energy and emissions challenges of our customers.

**FLSmidth has over the past 130 years developed a business culture based on three fundamental values: competence, responsibility and cooperation.**

## What we do

FLSmidth supplies the minerals and cement industries globally with everything from engineering, single machines and complete processing plants, to maintenance, support services and operation of processing facilities. Our core strengths are our market-leading product range, our ability to implement, manage and maintain projects, and our unmatched operation of minerals and cement processing plants, worldwide.

Through years of innovation and experience, FLSmidth has developed a vast global pool of specialist engineering resources that is unique within our market. We focus on cement, coal, copper, gold, iron ore and fertilisers, and are a one source supplier of products, solutions and services for these industries.

Today, we offer comprehensive, flexible and global services. With offices in more than 50 countries and service centres in our primary regions, we are on site to help customers with every stage of their operational processes, from strategic planning to overcoming everyday challenges, as well as facility lifecycle management.

## FLSmidth in numbers

More than  
**130 years** of  
FLSmidth history

App.  
**15,900**  
employees

Presence in  
more than  
**50 countries**

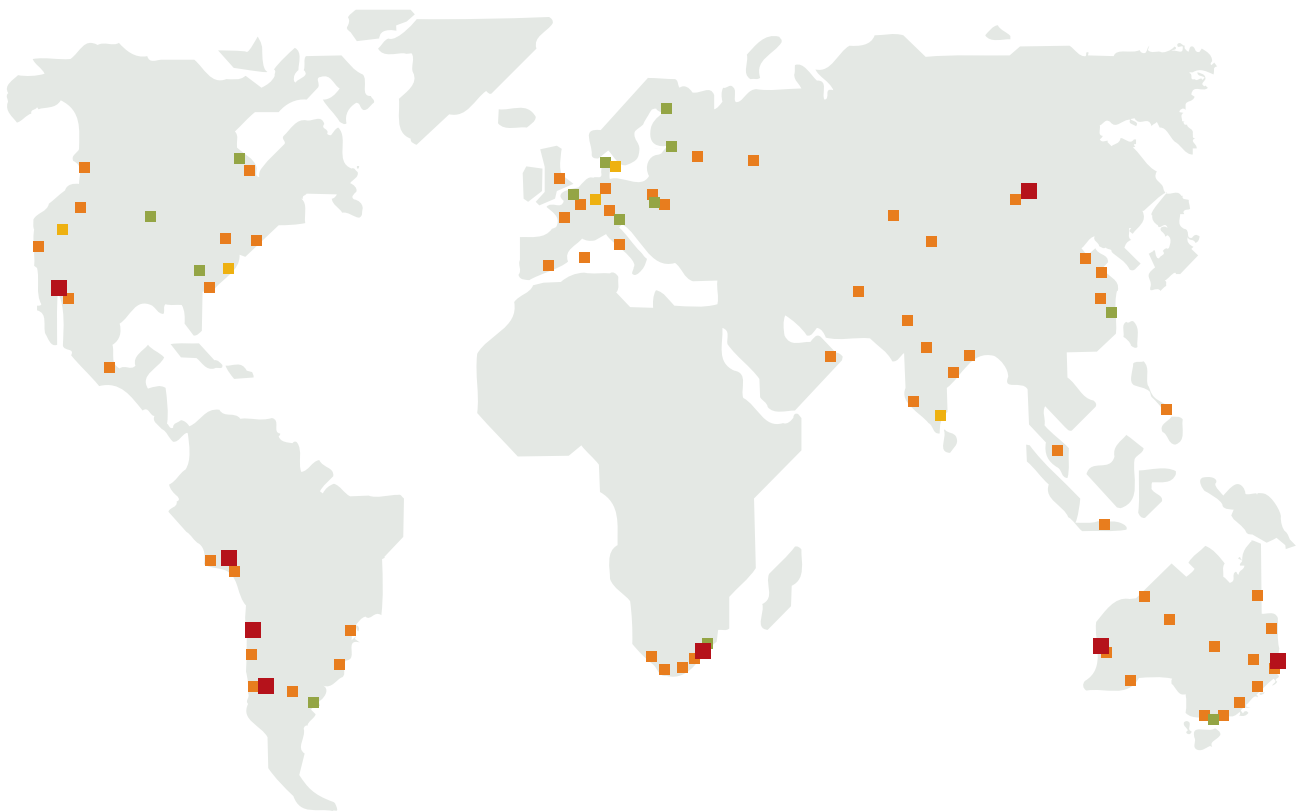
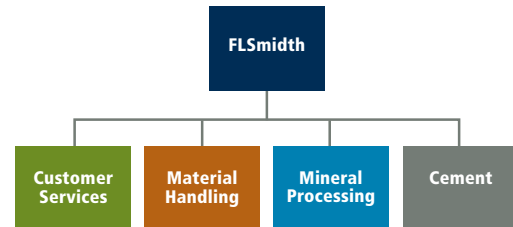
Revenue of  
**EUR 3,338 million**  
in 2012

## How we are organised

FLSmidth is present in more than 50 countries and has major project and technology centres in Denmark, the USA, Germany and India.

The company is headquartered in Valby, Denmark, and employs approximately 15,900 people worldwide.

- **Supercenters**
- **Project and Technology centres**
- **Production**
- **Sales and representation offices**



Invested  
EUR 47 million  
in research and  
development  
in 2012

Out of all  
managers 9.2%  
are women



# Our Approach - In Short

At FLSmidth, we have built on 130 years of history in our approach to sustainable business conduct, also referred to as Corporate Social Responsibility (CSR).

## Corporate values:

- > Competence
- > Responsibility
- > Cooperation

## Vision:

We will be our customers' preferred full service provider of sustainable minerals and cement technologies.

## Definitions:

**Corporate Social Responsibility (CSR):** The term cover our selected focus areas defining our approach to responsible business behaviour and sustainable business development from the perspective of our own company and from the industries we operate within.

**Sustainable technology:** Our approach to research and product development, with the highest attention to environmental challenges related to energy consumption, emissions levels and water scarcity.

## Strategy:

It is FLSmidth's CSR strategy to have our CSR initiatives linked with and supportive of our business strategies. We continue to strengthen our focus on sustainable technology, safety and people development while creating shared value for our stakeholders.

## The FLSmidth CSR Board:

The CSR Board was established in 2010 and has quarterly discussions about our strategy and development opportunities.

Members of the CSR Board include:

- Jørgen Huno Rasmussen, Group CEO
- Pernille Friis Andersen, Group Communications/IR
- Anders Høeg, Group Supply Chain & Quality
- Egon Toft, Operations and Maintenance
- Jakob Lyngsø Andersen, Group Human Resources
- Michael Skovgaard Christensen, Group Governance & Compliance
- Ann-Katrine Havris Lundgaard, Group CSR

## Focus areas:





# An Overview

SOCIAL NUMBERS	2010 REPORT	2011 REPORT	2012 REPORT
EMPLOYEES	11,229	13,204	15,900
GENDER - % FEMALE EMPLOYEES	-	16	15
GENDER - % FEMALE MANAGERS	-	7.2	9.2
EMPLOYEE ENGAGEMENT (satisfaction rate)	73	71	72
SAFETY – LTIFR	4.7	4.2	4.7
SAFETY TRAINING HOURS (per employee)	-	2.5	5.7
FLSMIDTH SITES AUDITED (HSE AUDIT)	-	-	12
ENVIRONMENTAL NUMBERS	2010 REPORT	2011 REPORT	2012 REPORT
SCOPE 1 – CO <sub>2</sub> (TONNES)	24,000	23,000	27,550
SCOPE 2 - CO <sub>2</sub> (TONNES)	53,700	55,900	54,450
SCOPE 3 - CO <sub>2</sub> (TONNES)	-	34,000	39,800
ECONOMIC NUMBERS (EURm)	2010 REPORT	2011 REPORT	2012 REPORT
REVENUE	3,107	2,952	3,338
PROFIT FOR THE YEAR	223	193	175



UN GLOBAL COMPACT	
<b>Principle 1:</b> Businesses should support and respect the protection of internationally proclaimed human rights	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 2:</b> Make sure that they are not complicit in human rights abuses	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 3:</b> Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 4:</b> The elimination of all forms of forced and compulsory labour	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 5:</b> The effective abolition of child labour	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 6:</b> The elimination of discrimination in respect of employment and occupation	Human Resources Section page 30 Responsible Sourcing Section page 42
<b>Principle 7:</b> Businesses should support a precautionary approach to environmental challenges	Customer Services Section page 12 Material Handling Section page 16 Mineral Processing Section page 20 Cement Section page 24 Carbon Footprint section page 44
<b>Principle 8:</b> Undertake initiatives to promote greater environmental responsibility	Customer Services Section page 12 Material Handling Section page 16 Mineral Processing Section page 20 Cement Section page 24 Carbon Footprint Section page 44
<b>Principle 9:</b> Encourage the development and diffusion of environmentally friendly technologies	Customer Services Section page 12 Material Handling Section page 16 Mineral Processing Section page 20 Cement Section page 24 Carbon Footprint Section page 44
<b>Principle 10:</b> Businesses should work against corruption in all its forms, including extortion and bribery	Responsible Sourcing Section page 42 Compliance Section page 38

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CVR No. 58180912