

UN GLOBAL COMPACT PRINCIPLES

Businesses should support and respect the protection of internationally proclaimed human rights	Impact Assessment Health and Safety People Development	page 10-15 page 16-19 page 20-29
Make sure that they are not complicit in human rights abuses	Health and Safety People Development	page 16-19 page 20-29
Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	People Development	page 20-29
The elimination of all forms of forced and compulsory labour	People Development	page 20-29
The effective abolition of child labour	People Development	page 20-29
The elimination of discrimination in respect of employment and occupation	People Development	page 20-29
Businesses should support a precautionary approach to environmental challenges	Impact Assessment Environmental Impact Product Cases	page 10-15 page 37 page 38-43
Undertake initiatives to promote greater environmental responsibility	Impact Assessment Environmental Impact Product Cases	page 10-15 page 37 page 38-43
Encourage the development and diffusion of environmentally friendly technologies	Impact Assessment Environmental Impact Product Cases	page 10-15 page 37 page 38-43
Businesses should work against corruption in all its forms, including extortion and bribery	Compliance	page 30-33

Sustainability Report 2014

Managing impact



Hours of safety training per employee

10

Up from 7.6

Whistle blower cases

12

Fatalities

0

Lost Time Injury Frequency Rate

2.7

Down from 3.9

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About this Report

The 2014 Sustainability Report describes the FLSmidth Group's Corporate Social Responsibility (CSR) efforts and is also FLSmidth's Communication on Progress to the United Nations Global Compact.

The scope of this Report is the entire FLSmidth Group. The case stories included have been selected because they represent the areas in which we have made significant progress during 2014.

The first large part of the Report describes progress within the FLSmidth focus areas, which are closely related to our business conduct. The second part of the Report consists of case stories about our technological and innovative progress, supporting our vision of delivering technology that creates sustainable value for our customers, and thereby also for their societies and the environment.

The reporting period is 1 January 2014 to 31 December 2014.

Hours of safety
training per employee

10

up from 7.6

Page 16

Lost time
injury frequency rate

2.7

down from 3.9

Page 16

Female
managers

10.3%

Page 25

Tonnes
CO₂

45,800

down from 82,000

Page 37

Substantial
whistle blower cases

12

Page 30

Regional Compliance
Representatives

12

Page 32

Fatalities

0

Page 16

CO₂
per employee

3.1

down from 5.4

Page 37

Responsible impact

Though some may find it tempting to scale down sustainability efforts in challenging economic times, in FLSmidth we have used the downturn to demonstrate our commitment to sustainability. We have achieved remarkable results in 2014, and I am proud to present them in this Report. I am confident that our commitment to sustainability will make FLSmidth come out of the cyclical downturn as a stronger and more valuable partner to our customers.

In 2014, we carried out an impact assessment in Egypt to assess the impacts of our business, gaining new insight into how we create value for our customer when we deliver on an Engineering, Procurement and Construction contract followed up by an Operation & Maintenance contract (EPC/O&M). The combined solution we call DBO – Design, Build, Operate. Based on a socioeconomic cost-benefit analysis, studies such as this are a very concrete way of quantifying the impact of a responsible approach. The impact assessment showed that by building a strong local organization and applying efficient and effective use of our own equipment and expertise, we delivered a 10 percentage point higher utilisation rate than the average of the Egyptian cement industry, while at the same time minimizing the socioeconomic costs. This shows that, due to our value-based approach, we are a quantifiably more valued partner to our customers than our competitors in the Egyptian cement industry.

Our commitment to keeping FLSmidth a safe workplace has been backed up by the implementation of an even stronger Health and Safety organisation in 2014. We reduced our number of safety-related incidents, resulting in a 29% drop in our Lost Time Injury Frequency Rate (LTIFR) from 3.9 to 2.7. Furthermore, we have made safety targets a mandatory part of our personal incentive plans for managers, setting it high on the agenda for every leader.

Continuously providing training and development opportunities for our people is essential for our long term success as a responsible employer. By investing in our global workforce, our employees tend to be retained by the company in greater numbers, they improve their employability and increase their skills over time. We also focused on strengthening the leadership competencies in FLSmidth by having 520 managers attending the Transitional Leadership Training program. Additionally, the Flying the Flag leadership training program, designed to strengthen competencies in value-based leadership and strategy, was initiated for our top 300 specialists and managers.

We operate in many countries, including some considered high risk for illegal activity. We do not tolerate unlawful behaviour in FLSmidth, which is a central point in our awareness campaign running throughout 2014. We significantly strengthened our guidelines for internal investigations. Further, we scaled up our internal investigations of potential fraud and corruption and implemented additional means for reporting them. Our new whistle blower hotline had 12 substantiated cases in 2014, indicating that our employees are aware of our commitment to ethical behaviour and willing to take action to strengthen our compliance efforts.

I hope you will enjoy reading about how we live up to our continuous commitment to UN Global Compact in this report.

Best Regards,
Thomas Schulz
Group CEO, FLSmidth & Co. A/S



We have used the downturn
to demonstrate our commitment to
sustainability and our customers.

Thomas Schulz
Group Chief Executive Officer

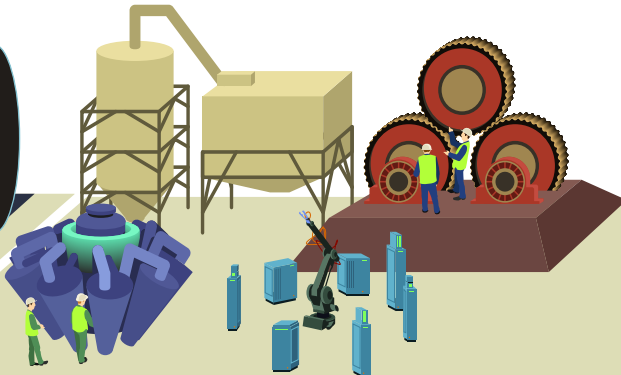
CUSTOMER SERVICES

Our Customer Services division includes customer services activities, O&M, Excel, retrofits and upgrades, Meshcape, FLSmidth Ludowici services and Pneumatic Transport and is a clear priority within FLSmidth.



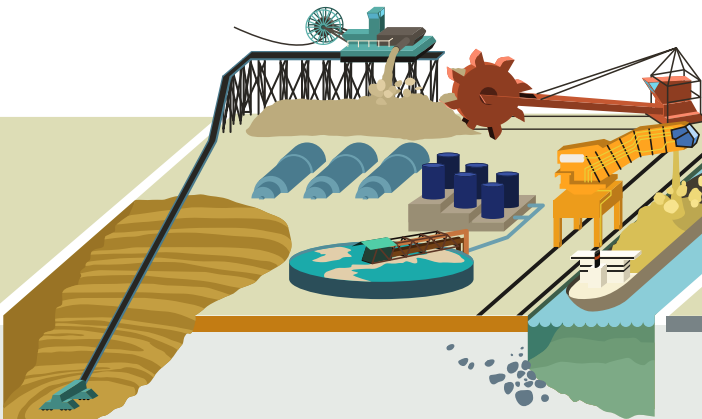
PRODUCT COMPANIES

The Product Companies division includes a number of product companies sharing supply chain and back office functions. The target of the Product Companies division is to globalise and grow FLSmidth's unique product brands.



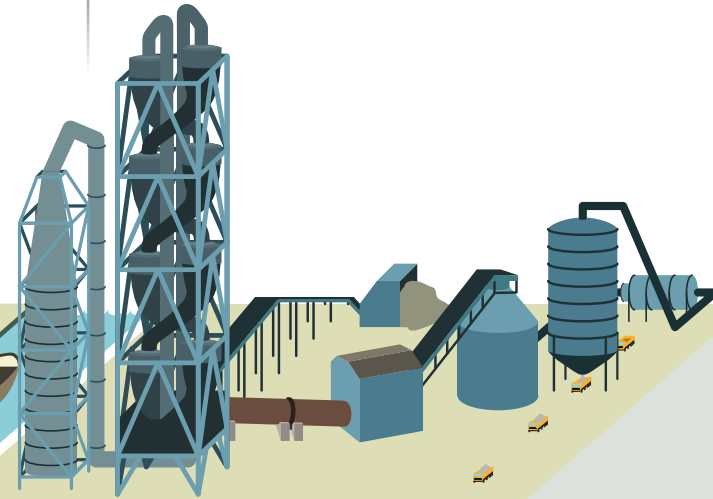
MINERALS

Our Minerals division covers minerals processing and materials handling technologies. The target for the Minerals division is to become the strongest project and systems provider in the minerals industries.



CEMENT

Our Cement division consists of our capital cement activities and large upgrade projects. The target for Cement division is to continuously grow its business by delivering complete plants and systems.



Who we are

FLSmidth is a leading supplier of equipment and services to the global cement and minerals industries. We operate in more than 50 countries and have major project and technology centres in Denmark, USA, Germany and India. We are headquartered in Valby, Denmark and employ 14,765 people around the world.

What we do

To our global customers in the minerals and cement industries, FLSmidth supplies everything from core equipment, process know-how, complete processing plants, maintenance, support

services and operation of processing facilities. Our core strengths are reflected in 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 more than a century of innovation and experience, FLSmidth has developed a vast global pool of specialised engineering resources. We focus on copper, gold, coal, iron ore, fertilizer minerals and cement, and are a one source supplier of products, solutions and services to these industries.

How we are organised

In 2014, FLSmidth was divided into four divisions: Customer Services, Material Handling, Mineral Processing and Cement.

Looking forward, in continuation of the 2013 strategy health-check, it was decided to change FLSmidth's organisational structure, and as of 1 January 2015, FLSmidth will be organised in two project divisions, a product division and a service division. The Material Handling and Mineral Processing divisions will be merged into a Minerals division. Cement and Customer Services will be maintained as separate divisions. A new

Product Companies division will be created to foster globalisation and growth of FLSmidth's unique product brands.

Vision

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

Company values

Over the past 133 years, FLSmidth has developed a business culture based on three fundamental values, which are firmly rooted in our Danish heritage: competence, cooperation and responsibility.

FLSmidth in numbers

133 years
of history and
experience

14,765
employees
worldwide

Presence in
more than
50 countries

Revenue of
EUR 2,834 million
in 2014

1.5% of revenue
invested in research and
development in 2014

Lost Time Injury
Frequency Rate
(LTIFR) 2.7

Long-term focus on positive impact

CSR Strategy

FLSmidth's Corporate Social Responsibility (CSR) strategy supports our business strategies by adding a long-term focus on responsibility. Our CSR efforts aim at creating shared value e.g. by continuously improving our Health, Safety and Environment (HSE) competences, delivering sustainable technology, respecting people and developing our employees. The underlying rationale behind all our CSR activities is to create value for our main stakeholders; i.e. customers, shareholders, employees, suppliers and the community. The purpose is to become a more valuable partner to our customers and all our stakeholders.

At FLSmidth, we aim to align CSR with business operations as part of our global business strategy. Having signed the UN Global Compact in November 2008, FLSmidth committed itself to supporting the United Nations ten principles regarding human rights, labour, environment and anti-corruption, as well as reporting on progress made.

The FLSmidth CSR Policy

Based on FLSmidth's 133 year history and our corporate values – competence, responsibility and co-operation – the company has formed a culture around respecting individuals and helping to protect societies and the environment. Our history and commitment to being a responsible company provided the framework for FLSmidth's CSR policy, published in 2008.

Wherever we operate, we strive to adhere to a set of policies. Our CSR policy lays the foundation for how we operate around the globe and is centered on our three company values. Through our Human Rights Policy we commit to respecting human rights and our Human Resources Policy states that we offer equal opportunities for all employees, which is further elaborated in our Diversity Policy. Our commitment to mitigating risk related to climate change is anchored in our Health, Safety and Environment Policy, which states that "an essential element of [...] excellence involves assessing the environmental impact of our operations and business activities to protect the environment". Our expectations towards our suppliers are expressed in our Code of Supplier Conduct, which among other things focus on human rights, labour rights, safe and healthy working conditions, environmental protection and business ethics.

Materiality

The objective of FLSmidth's CSR activities is to support our business and improve our long-term performance by adding an increased focus on responsibility. Therefore, it is essential that a given CSR activity is aligned with our business strategy. Through ongoing dialogue with our business partners and major stakeholders, we constantly verify that our CSR areas focus on those issues which are most relevant to our business.

Safe working conditions for all employees, customers and contractors is high on the agenda in FLSmidth. We continuously strive to improve our Health and Safety competencies and lower all safety risks and hazards.

Being a global company means we are present in emerging markets and some countries where corruption is perceived to be a significant issue. We put special emphasis on ensuring that FLSmidth employees and business partners do business in a legal manner. For FLSmidth, a high level of integrity and compliance is a prerequisite for doing business.

Employees are our most valuable asset and are critical to the success of our organisation. With 14,765 people employed globally, it is material that our employees have fair working conditions, equal opportunities, development plans and that all human rights and labour rights are respected.

With around 8,000 equipment suppliers globally, minimising supply chain-related risks is important, both in relation to HSE, human rights, and ethical business conduct standards, and also in relation to improving the quality of supply.

Stakeholder dialogue

Engaging with our stakeholders helps us make sustainable decisions and solutions. At FLSmidth, we define our stakeholders based on whether they are affected in some way by our activities and operations, be it as customer, employee, investor, business partner or society in general.

FLSmidth pursues a strategy of continuous and open dialogue with our stakeholders in order to enhance transparency and trust, while maintaining a high standard of sustainable approaches to operations and partnerships. For more information and examples of stakeholder dialogue, see www.flsmidth.com.

The FLSmidth CSR Board

The CSR Board was established in 2010 and has regular discussions about our strategy and development opportunities. The members of the CSR Board are:

- **Thomas Schulz**, Group CEO
- **Virve Elisabeth Meesak**, Group Executive Vice President, Group Human Resources
- **Olli Haavisto**, Senior Vice President, Group Supply Chain & Quality
- **Ole Bak**, Senior Vice President, O&M
- **Pernille Friis Andersen**, Senior Vice President, Corporate Communications, Investor Relations, CSR & Group Marketing
- **Jeppe Kromann Haarsted**, Global Compliance Manager
- **Ann-Katrine Havris Lundgaard**, Group CSR Manager

CSR ambitions in value chain



Supplier >>>

- > Sustainable long-term relationships



FLSmidth >>>

- > Health and Safety
- > Compliance
- > People Development
- > Responsible Sourcing
- > Environmental Footprint



Customer >>>

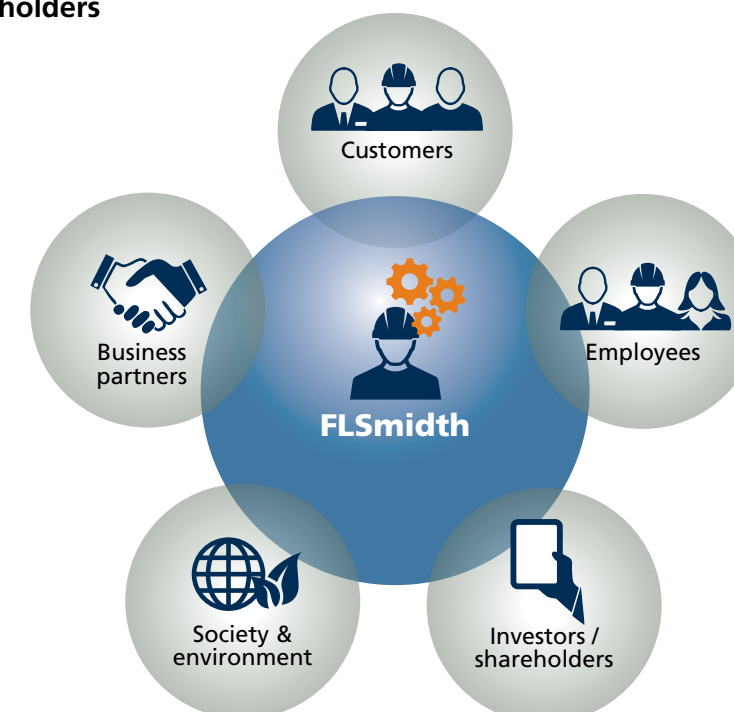
- > Quality products
- > Safe Products
- > Sustainable Products
- > Business Ethics



Host Countries

- > Economic Development
- > Job Creation
- > Environment
- > Compliance
- > People Development

Main stakeholders



Managing impact

Cement is vital for a developing economy and producing cement has a socioeconomic impact on the local society. Therefore, FLSmidth set out to determine the social, environmental, economic and customer impact of our strongest offering to the global cement industry, Engineering, Procurement & Construction followed up by Operation & Maintenance (EPC/O&M), by conducting an impact assessment.

We initiated the impact assessment study in order to understand how we create value to our customer. The impact assessment took a holistic approach by looking at social, environmental, customer and economic impacts and the case we used was Ramliya in Egypt, a cement factory with a clinker capacity of 4.2 tpa, where FLSmidth has an EPC/O&M contract with the owner, Arabian Cement Company (ACC).

The main finding of the Ramliya impact assessment showed that, due to the way we operate, we offer an extended value proposition to our customer. Compared to the Egyptian cement industry average, we deliver a 10 percentage point higher utilisation rate at Ramliya, while also using 14% less energy and having three times fewer dust emissions per ton of cement than the industry average. The impact assessment showed that our impacts are interrelated, and therefore, that our positive customer impact is closely linked with our social and environmental impact. The key to our success comes from our company values:

Competence

As operator of the plant, FLSmidth can draw upon competencies of a unique pool of cement specialists, based in our major technology centres or travelling around the world. If we have a challenge with a machine, we can even call upon the specialists who have designed and installed it.

At Ramliya, our human resource competencies have enabled us to keep employee turnover to a minimum and retain valuable competencies through developing our people. We have built a strong local organisation and have development plans for all employees, increasing their employability and building their individual skills and job competencies over time. This has enabled us to have the right skill set and knowhow to maintain optimal production on site.

Cooperation

The cooperation between FLSmidth and ACC Ramliya is essentially a partnership. What benefits one part also benefits the other, and vice versa. ACC is a determined front runner in the Egyptian cement industry. They drive processes forward that lead to positive socioeconomic impacts and together we create shared value. As operator of the plant, FLSmidth acts on behalf our customer which is customer intimacy at its best.

Responsibility

At Ramliya, we take responsibility and ensure that our employees have a safe working environment. We constantly strive to lower our energy usage and environmental footprint. We also take responsibility for the education of future generations of engineers through our partnership with Helwan University by supplying the knowledge and means for teaching about cement.

Conclusion

The conclusion of the impact assessment is that EPC/O&M is an extended value proposition, where we deliver more value than just the man and machine. In the case of ACC Ramliya, their partnership with FLSmidth resulted in a 10 percentage point higher utilisation rate than the average of the Egyptian cement industry, which demonstrates how we add quantifiably more value while keeping socioeconomic costs at a minimum.

The optimum point

At Ramliya, Production Manager Mahmoud Abdel Ghanry explains his production philosophy. "The challenge is to find the optimum point of production where everything is in balance and the machines can keep on running. At this point, we have the lowest energy usage, lowest heat consumption, optimal production and lowest cost. That is the art of production and it is a question of finding the right balance to avoid breakdown."

Mr. Ghanry further explains how people are central to keeping a stable production, "Equipment is equipment, but the people operating the equipment are the key to finding the optimum point. That is why we have development plans for all our employees and why we put tremendous effort into training them. At the end of the day, it is the people operating the machine that will determine how it will run, and that takes the right knowledge and experience."



Negative impacts

Restrictions and an inconsistent gas supply have forced Ramliya to switch to coal, leading to an increase of 12% in CO₂ emissions. However, if they hadn't switched to coal, Ramliya would have to import clinker, leading to even higher CO₂ emissions due to transport. From a socioeconomic perspective, coal is the least harmful solution.



Positive impacts

Ramliya has a 10 percentage point higher utilisation rate than the industry average, with an estimated increase in revenue of EGP 493m in 2012-2013. Ramliya has very low SO₂ and CO₂ emissions. In addition, Ramliya accounts for 6% of the total cement production in Egypt, but is only responsible for 2% of dust emissions, a result that is completely unrivalled in the industry.



Negative impacts

In 2012-2013, NO_x emissions were relatively higher than in 2014, when the legal limits were introduced. The emissions were due to the use of gas that gives high flame temperature and therefore also high NO_x emissions. Since tighter NO_x restrictions of 600 mg/m³ were implemented in 2014, Ramliya has produced with an average of 423 mg/m³.

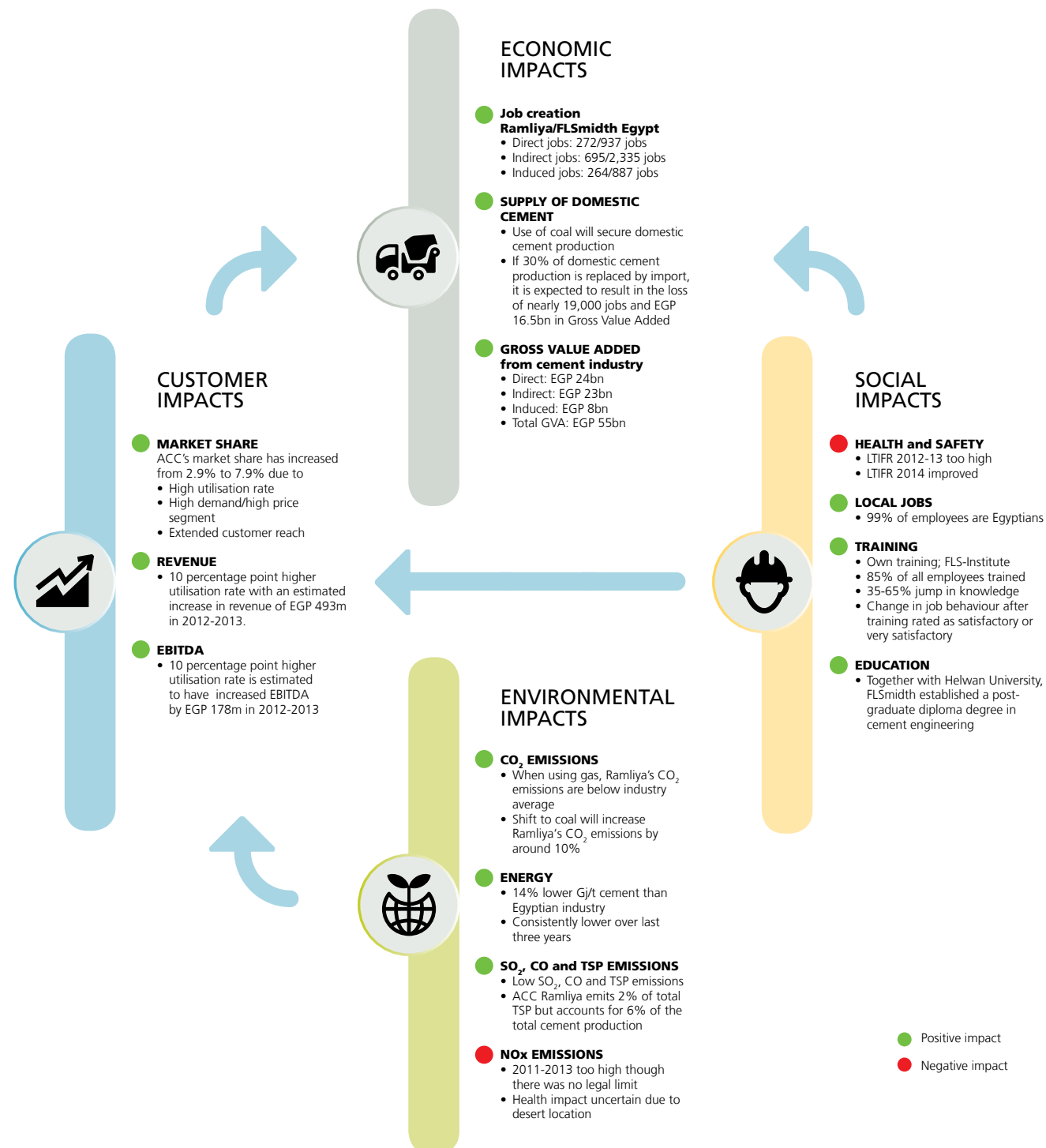


Positive impacts

Only 1% of the extensively trained local staff are expats. The site has an employee turnover of only 1.5%.

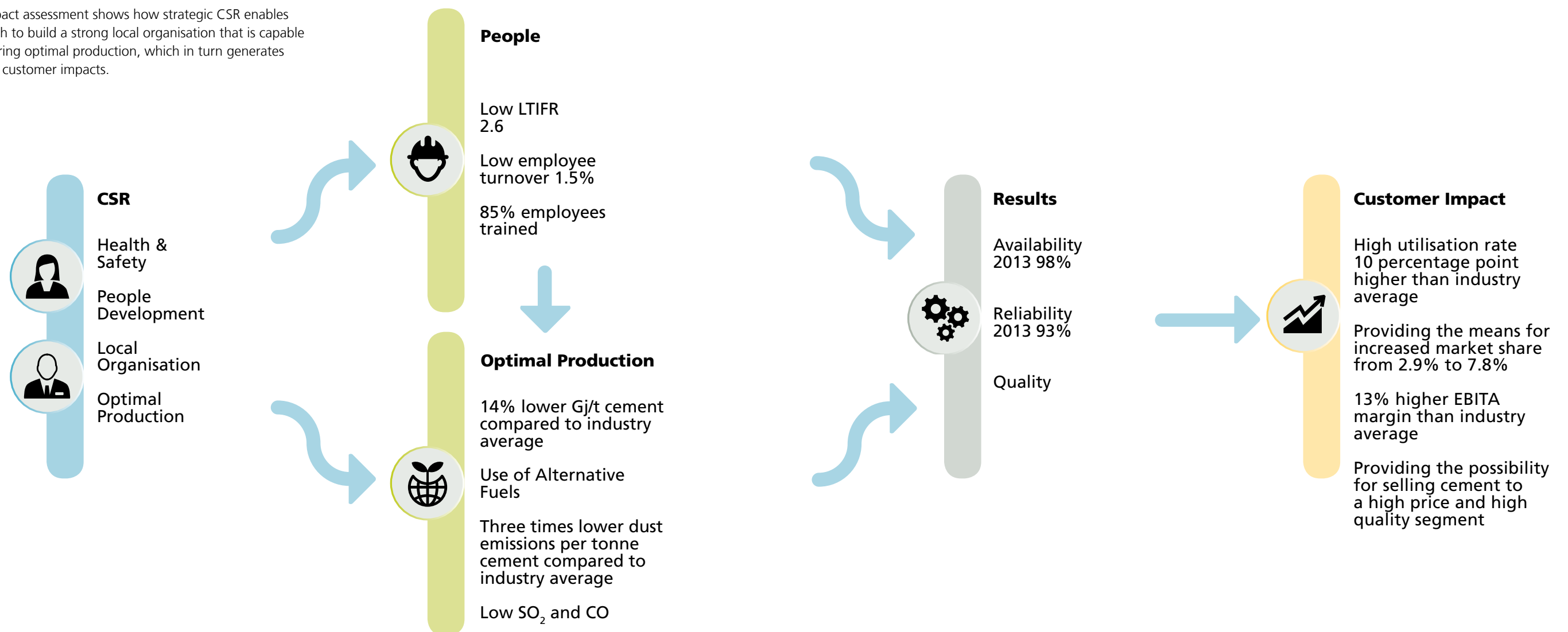
The site's Health and Safety performance was considered unsatisfactory by FLSmidth standards in 2012 and 2013, but through a dedicated effort significant improvements have been achieved in 2014.

Socioeconomic impact of a responsible business model



CSR creating value for our customer

The impact assessment shows how strategic CSR enables FLSmidth to build a strong local organisation that is capable of ensuring optimal production, which in turn generates positive customer impacts.



A safe working environment

At FLSmidth, we believe that a safe working environment is imperative to our long-term success. If employees are not safe, they are neither able to do their job, nor should they.

Our safety mind-set requires a constant effort and is fundamental for long-term success. To ensure that we are continuously building a safe working culture and environment, we have a Health, Safety and Environment (HSE) policy in place that describes our ambitions and the direction of our endeavours, with safety as our top priority. In 2014, we have further simplified our health and safety organisation, by ensuring that every country has a Health and Safety Representative.

At FLSmidth, the fact that our culture prioritises Health and Safety ties directly to the high quality of our products, services and processes. We believe that one of the benefits of having a safety culture is that it encourages questioning structures and procedures and improving them when there is a need. At our research and development facilities, we are constantly finding new ways to improve our products with increased safety and value to our customers. One of our objectives is to reduce safety hazards through good design.

Safety Chairman and the Safety Walk

Each year at FLSmidth, we appoint a new "Chairman of Safety" from our Group Executive Management. The person assuming the role is responsible for raising the safety bar across the entire FLSmidth Group. Reinforced focus on safety will be introduced every year when a new member of the Group Executive Management takes up this responsibility.

As FLSmidth's 2014 Safety Chairman, Bjarne Molkte Hansen launched a new safety initiative, the Top 100 Managers' Safety Walk. Every time a Top 100 Manager visits an FLSmidth location or a project, the manager now performs a safety walk, inspecting and initiating a dialogue around safety with the management on-site. The idea is that fresh eyes offer a fresh perspective, especially for routines and processes that are often taken for granted in everyday life. Engaging in a productive and open dialogue about safety ensures that it stays on top of employees' minds and that safe behaviours are prioritised.



FLSmidth



Customer



Host Countries



FACTS

Reduction in the rate of lost time injuries from 129 in 2013 to 92 in 2014

22,060 safety training hours during safety week

147,400 hours spent on safety training, equivalent of 10 hours per employee

Case: FLSmidth supports our customers with safety

Upon request from Mongolyn Alt (MAK) Group, Sergey Avramenko, HSE Coordinator at Customer Service, FLSmidth visited the construction site. Sergey states, "During my inspection, I found some lapses in safety in work completed by the construction contractor. I summarised my findings and improvements to be completed by the contractor. These findings were then handed over to my Health and Safety counterpart at MAK and to the contractor."

Along with project managers from MAK and the contractor, Sergey completed a safety tour around the entire site. Together, they inspected and discussed the concerns. "We also discussed corrective measures during the safety walk and prepared a corrective action plan" said Sergey.

"I had a follow up meeting with our customer and the plan was approved the same day," FLSmidth Project Manager Lars R. Olsen remarked. He has since then visited the site and noted that safety has improved remarkably.

He adds, "We have had frequent safety meetings with MAK and the contractor in order to make a joint effort to ensure implementation. The construction work on the site has now been in progress for more than two years without any major accidents".

Case: New Site Safety Handbook

A new Site Safety Handbook for safety performance on our customers' sites was published in 2014. The goal of the Handbook is to establish a global standard for what FLSmidth regards as good safety on-site. Worldwide, this common standard creates a shared Health and Safety framework for our many technical specialists and supervisors working in numerous countries and on varied projects. The Rules set expectations on safety in a clear way and are applicable to all FLSmidth employees and contractors while they are working for FLSmidth, even when working at customers' sites.

The FLSmidth Site Safety Rules:

1. Say "STOP" to unsafe acts and conditions
2. Only undertake work for which you are trained and competent
3. Report all injuries, near miss incidents and hazards immediately
4. Always assess the risks before initiating any task
5. Use required and maintained personal protective equipment
6. Only work at heights with correct fall protection
7. Keep workplace tidy and maintain good housekeeping
8. Only operate tools or equipment with correct guards installed
9. Obtain work permit when required
10. Only work on equipment with correct energy isolation



At FLSmidth, we value nothing higher than the health and safety of our employees. We believe that all work-related incidents, injuries and occupational illnesses can be prevented, and we recognise that achieving this depends first and foremost on our competencies, mind-set and culture.

FLSmidth HSE policy

Case: 87% reduction of injuries at Qingdao

The Qingdao factory in China, one of FLSmidth's largest in-house production facilities, employs 400 people and is specialised in assembly and production of key components. Since 2010, the amount of injuries have dropped 87% due to investments in Health, Safety and Environment (HSE) at Qingdao, both in technical solutions but also HSE management, safety training and safety awareness training.

We have installed a new paint booth, blasting booth, a new ventilation system and other improvements to provide a better working environment. The new highly advanced ventilation system ensures that exhaust fumes, e.g. those from flame cutters, plasma cutters and welding are removed from the workshop air, thereby protecting the workers from harm.

When visiting the factory, the results are visible to the eye today. The workshop floor has become a more structured working space after the increased focus on HSE. HSE Advisor Peter Lindtorp says, "When you know what to look for, it is obvious what the change has been. While prior conditions were not harming workers, it is clear that the air on the workshop floor is much cleaner than before".

Case: 'Lock-out tag-out'

Sometimes safety is about simple but effective measures. When FLSmidth is maintaining equipment for our customers, such as a belt conveyer, procedures such as 'the lock-out tag-out' procedure must be in place to ensure safety. It is a bulletproof method, making it impossible to start up the conveyor while someone is maintaining it.

The rule is simple; all specialists have a personal padlock and before the work on the conveyor is started, the padlock is attached to the power supply when the power is disconnected. Only one person has the key and therefore it is impossible for anyone else to remove the padlock and start the conveyor, even by accident. The power can only be re-connected after removal of all padlocks. It is a simple rule which is standard in FLSmidth, globally.



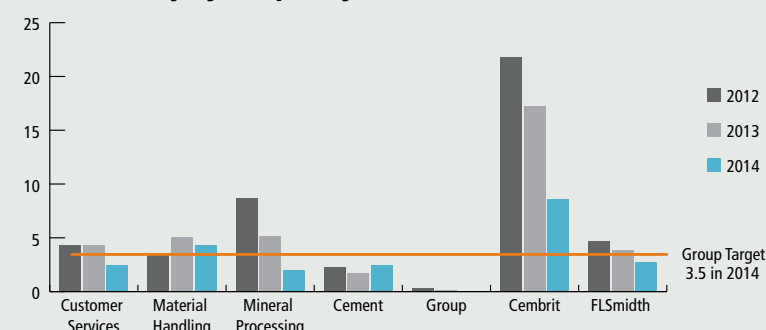
FACTS

49 locations had 0 lost time injuries and 25 had 0 injuries out of a total of 90 reporting locations in 2014

During the Safety Week 2014 in India, courses included topics such as fire-fighting, safe driving, stress management, safe defensive techniques for women and other safety-related subjects

During the safety week in 2014, 5,600 manhours in India alone were spent on safety training

Lost Time Injury Frequency Rate (LTIFR)



Achievement 2014

Reduction in total number of reported injuries and an LTIFR at 2.7 reaching the target for 2014. Targets for major business units were established to support the line management in evaluating performance

Achievement 2014

Two O&M sites in Chile HSE certified in January 2015 (OHSAS 18001 + ISO 14001). That brings O&M up to six certified units covering around 2000 employees plus an additional number of contractors

Achievement 2014

Safety & Quality week conducted in 2014 with activities in all FLSmidth countries. 22,060 safety training hours conducted during the week

Achievement 2014

28 Group HSE audits conducted in different countries worldwide

Achievement 2014

A personal safety target will be included in FLSmidth's Global Cash Incentive Plan for all participants

Target 2015

LTIFR = 2.6 for 2015. Continue strong focus on safety awareness through internal reporting

Target 2015

FLSmidth will start working towards general HSE certification from 2015

Target 2015

Global IT system will be implemented for reporting, internal learning and follow up on injuries

Target 2015

15% increase in reported Near Miss and Hazards measured per country and / or Business Unit compared with 2014

Target 2015

Extra focus on implementing best practice on site operations based on the new Site Safety Handbook

Target 2015

Group HSE audits continues – 25 audits in 2015 planned

Fit for purpose

People development is critical to the success of our organisation. At FLSmidth we respect human rights and we are committed to diversity and equal rights. We must maintain a culture of high performance, and we must invest in our people. Therefore, we review the level of our competencies on an ongoing basis. This can be when we set assignments, when we review and give feedback on performance and when we define our strategy. When there is a gap, we invest in development activities as appropriate. Closing the gap ensures that we are, and that we remain, 'fit for purpose'.

Over the last year, we have increased the level of transparency of our human resources in order to better understand any identified gaps and more accurately select and prioritise which development activities to invest in. Generally speaking, this has involved moving to a more uniform set of definitions and performance measures across our global business.

Transparency in HR

We have developed one set of role profiles and assigned a role profile to every employee. Role profiles are generic descriptions of a job, applicable across functions, and define what competencies are required in the job. This helps us to better understand what competencies we have across our organisation – rather than just specific to one part of the organisation.

We have implemented a standardised way to rate and record performance and competency levels by rolling-out the Performance and Development Review (PDR) to all locations.

Understanding the level of our competencies in the same way also enables us to do effective succession planning, resulting in a more rewarding working environment. It involves calibrating ratings of performance and potential across departments, locations, functions, business units, divisions and the FLSmidth Group.

Understanding what competencies we have across our organization, the level of those competencies and how sustainable they are is essential when deciding how we will invest in development activities.

In order to support decision-making at a divisional-level, we have designed and begun to implement a framework for divisional management teams to more systematically reflect on the amount and level of competencies in the context of their strategies. This is called the Organisation and People Review (OPR) and it is conducted every six-months as part of the business review. The OPR also considers other factors critical to our success regarding motivation and opportunities.



FLSmidth



Customer



FACTS

Leadership Transition Training is an investment we have made at Group level

Supply Chain Learning Journey is an example of an investment made at functional level

Mentoring programmes are examples of investments made at local levels



Leading Leaders is a fantastic leadership course. The combination of easy-to-use tools and hands-on exercises, gave me the ability to implement my learnings immediately after completion. Besides the personal gains from the training, I think that FLSmidth will benefit significantly from this common leadership approach, improving our ability to recruit and retain top talent.

Søren Holm
Managing Director, Head of Helios Deployment, Denmark



Case: OPR in India

"First of all", Mr. Hari, Vice President and Business Head of Cement Project Division (CPD) remarks, "the FLSmidth CDP in India is a very mature organisation, meaning that we have a very high attrition rate and many employees have risen through the ranks from trainees to department managers. But we still have to ensure that our division remains fit for its purpose".

Therefore, Mr. Hari uses the Organisation and People Review (OPR), a tool developed from the global People and Development department. "The OPR makes us look inwards and assess whether our vision for the next five years matches our resources and with a survey part we also get input from the employees on what they feel they need in order to fulfil the strategy".

The CDP in India found five key areas of improvement, one of them being people development. On the job training is an essential part of the training in CDP India, sometimes including the use of mentors, "You cannot learn in school how to build a cement

factory. You have to acquire experience while working. I sometimes use the metaphor that we have to throw the guy into the water in order to teach him how to swim," says Mr. Hari. Besides functional competencies, CDP India also focus on developing the behavioural competencies of their employees.

Case: Performance and development review

Mr. Mohan, a mechanical engineer for CDP India has been with FLSmidth since 2008. He explains that ever since he joined the company, he has had a very steep learning curve with on the job training. Recently he has attended training in negotiation skills. There was a learning need defined as a consequence of the OPR, therefore his whole department attended this class. Mr. Mohan remarks, "The main takeaway I got from the class was learning to relate to different types of people. We are all different and we prefer to get information served in a way that suits us. I can really use this training in my interaction with our customers. The course has made it easier for me to relate to all kinds of people."



Performance and Development Review (PDR) rolled-out to all locations

PDR leads to better understanding our competency level and development needs

Understanding competency level and development needs enable us to do successful succession planning

Systematic reflection on competencies in the context of the strategy

Known as the Organisation and People Review (OPR)

Conducted by divisional management teams every six months

Essential for deciding how we invest in strategic development activities



By participating in the 2014 Mentoring Program, I have been given an expanded view of other FLSmidth products and Group practices. More importantly, I now have a great relationship with an experienced colleague that I can leverage in the future, along with a sense that I work for a company that is motivated to invest in my growth.

David Udy
Designer, USA





Case: Flying the Flag

Flying the Flag is a new global leadership development program focused on strategy and leadership, and is based on our company values: Competence, Co-operation and Responsibility.

Pernille Friis Andersen, Senior Vice President of Corporate Communications, Investor Relations, CSR & Group Marketing, a participant of a recent cohort at Flying the Flag explains, "Throughout the week, we discussed how our values are important to us as individuals and to the company. It is remarkable how important it is to have the right value set and how corporate values can really shape the company."

Each day, the topic focused participants' attention on how to make a positive difference in FLSmidth and how to apply the learnings. Participant Darrell White, Vice President of Global Material Handling Proposals & Sales Coordination, explains, "As part of the workshop, we were each assigned to a team to work together on a specific project of strategic importance to the FLSmidth Group." He elaborates, "Appreciating who our colleagues are and what makes them think the way they do facilitates our ability to leverage individual skills while moving as a team towards shared objectives. This collaborative mind-set ties directly to our values, and will continue to transform FLSmidth into an even greater company."

Case: FLSmidth reaches diversity goal in 2014

In FLSmidth, we regard a diverse workforce as strength as we serve a global market. While FLSmidth hires the best and the brightest, regardless of gender, it is true that in our industry, diversity ambitions with regard to gender are often made more challenging by the fact that historically, careers in mining, cement and engineering have attracted more male candidates. In order to demonstrate that female employees are provided opportunities to grow and succeed in FLSmidth, we set a goal in 2013 to increase the percentage of our managers who are female from 7.2% to 10% by 2014.

As of the end of 2014, the percentage of women managers was 10.3% which means that the goal has now been reached and exceeded.

A number of initiatives have also been initiated, among them the publication of a Diversity Policy and a Female Mentoring Program at our offices in Denmark. Additionally, in 2013 FLSmidth set the goal of having 25% female representation on our Board of Directors by 2016, up from our current level of 16.6%.



I found the procurement training exciting and informative. It addressed issues that we come across on a daily basis. I learnt where the products we procure fits in and this enabled me to work with suppliers to secure the right product, on the due date, at the right price.

Desiree Grobelny,
Junior Buyer, South Africa

North America

Jobfunction

Technicians: **1,104**

Non Technicians: **1,443**

Gender

Men: **2,047**

Women: **500**

Employees

Total: **2,547**

Europe

Jobfunction

Technicians: **1,804**

Non Technicians: **2,010**

Gender

Men: **3,040**

Women: **775**

Employees

Total: **3,815**

Asia

Jobfunction

Technicians: **2,000**

Non Technicians: **1,846**

Gender

Men: **3,521**

Women: **325**

Employees

Total: **3,846**

South America

Jobfunction

Technicians: **1,093**

Non Technicians: **354**

Gender

Men: **1,301**

Women: **148**

Employees

Total: **1,447**

Africa / Middle East

Jobfunction

Technicians: **1,277**

Non Technicians: **1,220**

Gender

Men: **2,322**

Women: **175**

Employees

Total: **2,496**

Australia

Jobfunction

Technicians: **44**

Non Technicians: **568**

Gender

Men: **524**

Women: **88**

Employees

Total: **612**

Achievement 2014

Strengthening leadership competencies at the Group level through Leadership Transition Training with 24 deliveries involving 520 managers

Achievement 2014

Strengthening the strategic competencies and competencies in values-driven leadership for the top 300 specialists and managers, through the Flying the Flag program

Achievement 2014

Strengthening competencies in strategy execution of entire management teams through the LEAP programme with 7 deliveries

Achievement 2014

The Supply Chain Learning Journey that strengthens competencies around sourcing with 8 deliveries

Achievement 2014

The mentoring programmes are examples of investments made at a local level for various purposes. In the US, for example, there were 2 deliveries involving 50 employees

Target 2015

Training is delivered as required in each location as well as across functions, business units, divisions and the Group. Notably, a review by the project management function

Target 2015

At the Group level, 22 deliveries of Leadership Transition Training involving 440 managers, three of Flying the Flag involving 90 specialists and managers and 6 of LEAP

Target 2015

There is follow-up with each manager who attended Leadership Transition Training in 2014 to learn what has been applied, revisit other learnings and support further application

Target 2015

In terms of training delivered across locations, an example is the 42 trainings scheduled for EMEA – such as situational leadership, project management, cross-functional training for specialists

Target 2015

Management teams calibrate ratings of performance and potential to strengthen the quality of succession planning, associated development and increase sustainability



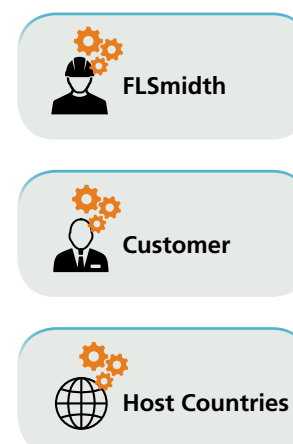
Operating globally and ethically

For FLSmidth, a high level of integrity and compliance is a prerequisite for doing business. FLSmidth is a global company and much of our growth takes place in emerging markets or developing countries driven by GDP growth. It means, to do business in countries where corruption is perceived to be an issue. Our compliance standards are high and we put special emphasis on ensuring that FLSmidth employees and business partners do business in a legal manner.

FLSmidth operates under a number of international rules in order to ensure compliance, and it is not without challenges for employees to understand them fully. In 2014, we have therefore focused extensively on communication and correct interpretation of the rules.

We have appointed and trained regional compliance representatives around the world who can help employees interpret national and international rules, and also conduct due diligence and internal investigations when needed.

We know that for compliance to succeed, we must make sure that our rules can be followed by our employees who may sometimes find themselves in high-risk countries and in difficult situation operate in accordance with the law. We have, therefore, involved our top management closely in the interpretation of specific rules for employees to know that they have management's guidance and backing to handle difficult situations.



A global standard for internal investigations

Whistle blower reports submitted by employees increased in 2014. The allegations concerned a range of compliance issues and came from all parts of the world. We believe that it is positive that our employees are stepping forward with their concerns.

This also means that we have conducted an increasing number of internal investigations. We believe it is vital that a serious and detailed investigation is conducted – both in order for FLSmidth to understand and face our challenges – and to make sure that we can stop rumours against employees in case of false accusations. In 2014, we published a detailed internal investigation manual, trained key personnel and invested in new tools to ensure a more professional and uniform global approach to internal investigations.

Case: Handbook

In 2014, we developed and published a handbook on the Code of Business Conduct. The handbook describes the rules in plain language and includes extensive guidance on how to react in concrete risk situations described by FLSmidth employees. It is available in nine languages and almost all 14,765 employees in FLSmidth have received a printed copy. The top management of FLSmidth was involved in the development of the book. Specifically, the entire Group Executive Management team gave input to the interpretation of our rules during an extensive training session where they were presented with and discussed some of the real-life dilemmas faced by FLSmidth employees.



Case: Russian sanction – The unforeseen challenge

The European Union and United States, along with other countries, have imposed sanctions against Russia in response to Russia's annexation of Crimea and the crisis in eastern Ukraine. The imposed sanctions cover amongst other things:

- Approximately 300 persons have been blacklisted and have had their assets frozen
- The sanctions target certain key sectors, e.g. some oil industry technologies and products
- Five Russian state banks are excluded from raising long-term loans
- Export of dual-use equipment for military use in Russia has been banned

In response to the sanctions, we have implemented an extended export control procedure. The procedure means that our global export control programme is continuously updated, a new "Russia Check List" has been designed and implemented and all orders were temporarily stopped and re-evaluated in the light of the new export sanctions.

One of the major tasks has been to provide updated training to our specially educated "Export Control Classifiers", who need to fully understand the specific sector regulatory requirements. The re-evaluation of the current projects also resulted in new export license requirements for components within FLSmidth's target industries to Russia.

Case: Third party due diligence

As a global company, FLSmidth works with an extensive network of business partners around the world, including the occasional use of third parties to facilitate or implement our projects. For some time, we have conducted due diligence background searches and in 2014, we initiated a programme to strengthen and formalise procedures. In 2015, we will be conducting a global risk assessment of third parties and inquire about their own compliance standards. We will be conducting third party due diligence background checks more broadly and more in-depth, and will strengthen our due diligence process in both pre-contract and post-contract phases.



FACTS

The Compliance Department received 18 internal whistle blower reports in 2014, all of which were investigated

17 of these cases were admissible i.e. submitted in good faith

12 cases which were submitted to the whistle blower hotline were substantiated

The European Union has over a six-month period (March-September 2014) imposed 19 Council Regulations against Russia

In 2014, we conducted face-to-face training sessions in the Code of Business Conduct for employees around the world

In 2014, we distributed more than 14,000 copies of our handbook on the Code of Business Conduct to 90 locations in nine languages

In 2014, we appointed and trained 12 regional compliance representatives around the world

Export and compliance reviews conducted at 7 entities



The handbook serves as a guide in a very complex global business environment with numerous laws and regulations. It is based on real-life experience with the challenges our people face, and it assists our employees in navigating their decisions and actions in doing business, so that we ensure we operate in full compliance.

Jeppe Kromann Haarsted
Global Compliance Manager

Achievement 2014

More than 110 sessions of in-person training in Code of Business Conduct and export control and published in a handbook in 16,000 copies and nine languages, explaining the Code of Business Conduct in plain language

Achievement 2014

Appointment and training of 12 regionally responsible compliance representatives and compliance and export control reviews of three FLSmidth entities

Achievement 2014

We significantly strengthened and professionalised our guidelines for internal investigations, and trained a number of people in applying them

Achievement 2014

Establishment of a whistle blower hotline and a procedure for internal investigations, available to all employees, globally

Achievement 2014

Rollout of screening software and screening of our supplier and customer master data at all our main entities

Achievement 2014

Managing new Russia / Ukraine sanctions and implemented new export control risk management process

Target 2015

Conduct in-person training of 95% of all white-collar employees in FLSmidth worldwide in Code of Business Conduct. Complete company-wide global survey of current compliance practices and challenges

Target 2015

Establish tools for knowledge sharing and ongoing training for the regional compliance representatives and compliance and export control reviews of three FLSmidth entities

Target 2015

Strengthen internal controls and internal investigations procedures in FLSmidth

Target 2015

Screening software integration into the global order handling system (Helios ERP). Conduct training of nominated export control employees and general training in export control awareness for a broader range of employees

Target 2015

Roll-out third-party due diligence procedure, including risk assessment and screening

Community development

Case: BBBEE South Africa

FLSmidth has been represented in South Africa since 1906. Today, we support some of the biggest mining projects and employ approximately 1,000 people in South Africa, many of whom work at one of three manufacturing centres. We recently built the Delmas Service Supercenter, the first on the continent and only the seventh globally, transforming it into a comprehensive after-market service and repair hub.

In 2014, FLSmidth announced a new equity structure in South Africa that will result in Broad Based Black Economic Empowerment (BBBEE) ownership status for our South African operations, in accordance with the requirements for multinational suppliers to the mining industry as stipulated in the South African Mining Charter.

Going forward, Phetogo Bontle Community Equity will hold 25.1% shares in FLSmidth South Africa, and the broad based "Phetogo Trust" will have a 100% stake in Phetogo Bontle Community Equity. The Trust will fund various Corporate Social Investment initiatives and support the integration of minority groups into the economy.

FLSmidth took the first step towards empowerment status back in 2010 when establishing FLSmidth Roymec, which delivers an impressive portfolio of engineering and material handling projects to international customers.

"With the change in the landscape in South Africa, there is a fundamental need for us to empower all of our businesses here – not just part of it. By doing so, we give our customers access to the sort of empowerment measures they require in their own procurement as well as signalling our commitment as a major multinational in responding to the changing dynamics of the country", says Alistair Calver, General Manager.



FLSmidth, as a Danish company, remains committed to social development wherever we operate. We trust that this will further improve our relationship with all of our customers and suppliers.

Peter Lohrmann
Managing Director, FLSmidth South Africa.

Case: Improving quality of life for South African school children

30 km northwest of Mokopane in the Limpopo Province in South Africa lies one of Anglo American's platinum mines, supplied with FLSmidth equipment. FLSmidth made a substantial investment in the local community through the installation of an Integrated Biomass and Algal Sanitation System (IBASS) at Mossesane Baloyi Primary School, which serves 340 school age children. In addition to the new sanitation system, we also installed a vegetable garden behind the school as part of our corporate responsibility strategy and commitment to the South African Mining Charter.

"Proper nutrition, water and sanitation are key to children's health," says Terence Osborn, Capital Sales and Marketing Manager, FLSmidth Mineral Processing, South Africa, who continues, "Schools that have sanitation have better learning and retention among school children, particularly girls. UN numbers show that for every 10% increase in female literacy, a country's economy can grow by 0.3 percent and in FLSmidth, we recognise our responsibility for improving the quality of life of the communities in which we are present."

This is the most significant CSR project for us in South Africa to-date" says Terence Osborn, Capital Sales and Marketing Manager, Mineral Processing, South Africa.

Case: FLSmidth Helwan Cement Institute

In 2007, FLSmidth initiated a public-private partnership with the Helwan University in Egypt. The aim of the partnership was to improve the quality and quantity of graduates interested in working in the cement industry.

At the Cement Institute at Helwan University, Professor Engineer Mohamed Samy is demonstrating FLSmidth-sponsored equipment. He explains: "The students are not used to a learning methodology that incorporates active problem solving, but for the cement industry practical problem solving skills are required, so that is how we teach at the Helwan diploma degree".

Cement plant simulators enable the Professor to structure his teaching around a simulated problem which is very similar to the way operators work on-site. The screens of one of the 9 FLSmidth-sponsored simulators show the different areas of the cement production, and just as in the control room of the Ramliya plant, the monitors tell the story of what is going on in the plant. The blinking kiln sign indicates a challenge for the student to solve. "I create a problem for the students to identify. They don't have any idea what it is beforehand. Working this way enables them to solve problems hands on. The students develop themselves through learning by doing in a safe environment", Dr Halim Bassuiny says.

"Of course, this would not be possible without the theoretical knowledge from the classroom. These two things have to go hand in hand. In the beginning of this project we were very engaged in train the trainer activities, which are now paying off because the teaching is done by local Helwan professors," Abeer Morsy, FLSmidth training manager adds.



Mossesane Baloyi Primary School

The main benefits for the school are:

- Rainwater harvesting and storage
- Decent waterborne sanitation
- 14 toilets and 3 urinals (to replace 12 pit latrines)
- IAWPS integrated biogas and algal sanitation system
- Food and agricultural waste biogas digester
- Biogas cookers for school meals in the new kitchen facility
- Algal and biogas bio fertilizer
- 500m² of agro-ecological food gardens



FLSmidth Helwan Cement Institute

27 out of the 33 graduates from first phase have a job

11 have been hired by FLSmidth

11 are working in other industries

5 are still doing military service

6 are currently unemployed



Sustainable supply chain

In 2014, we realigned our internal Supply Chain structure to centralize, standardise and streamline the way we conduct business with our suppliers. Through having a more simplified structure, we are more able to work closely with our suppliers and communicate our requirements, monitor compliance, improve performance, build competencies and partnerships.

In 2014 we have worked on a new FLSmidth Code of Supplier Conduct. The document, which is intended to be initiated in the beginning of 2015 details our expectations from our suppliers, it also includes an expectation that their employees and subcontractors uphold a responsible business conduct. By having a defined

set of expectations, FLSmidth and our suppliers are better able to open and maintain constructive dialogue, share common goals and define improvement areas including follow-up action plans. Our goal is to increase transparency in the Supply Chain and promote sustainable and continuous improvement as a way of doing business for all.

At FLSmidth, our company values; Competence, Co-operation and Responsibility act as a moral compass. Our ethical way of conducting business has significantly influenced our brand, inspiring trust and creating positive influence amongst our customers, our business partners and those who live and work in our local communities.



Health, Safety and Environment goes hand in hand with Quality, which is why we expect our suppliers to have high standards. It brings value to our customers.

Geoff Cotton
FLSmidth Quality Specialist



FLSmidth



Customer



Host Countries



FACTS

In 2012, FLSmidth sent out self-assessment questionnaires to strategic suppliers

In total 520 suppliers

The assessed themselves based on the ten UN Global Compact Principles

Aligned organisation

In 2014, we established a more uniform and aligned financial organisation in FLSmidth, designating Country CFO roles for the individual countries in which we operate. As a result, FLSmidth will have increased visibility into and reporting on country-specific business performance, including environmental impacts of our local operations.

Sale of Cembrit

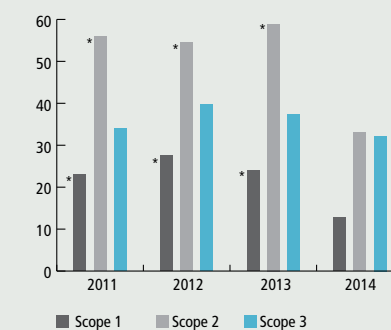
In our 2014 CO₂ accounting, Cembrit is regarded as a discontinued business because it has recently been sold. Unlike the rest of the FLSmidth Group, Cembrit produces building materials based on fibercement, which has a substantial energy usage and therefore, also greater emissions. In future reporting on our CO₂ emissions, the sale will result in an overall lower emissions number and more accurately represent the entire FLSmidth Group.

Reduced emissions

If we look at the numbers for the rest of the FLSmidth Group, there has been a reduction in CO₂ emissions in Scopes 1, 2 and 3.

Discounting Cembrit scope 1 emissions in 2013 amounted to 15,300 tonnes which in 2014 only was 12,700. Scope 2 in 2013 was 37,100 which in 2014 were reduced to 33,100. The reductions in Scopes 1 and 2 come as a direct consequence of the global efficiency programme running throughout 2014 in FLSmidth. As part of the programme, we have consolidated many companies and office buildings, thereby reducing our emissions.

Environmental numbers



*Including emissions from Cembrit



FLSmidth



Customer



Host Countries



FACTS

Scope 1 emissions emanating from sources that are owned or controlled by FLSmidth

Scope 2 emissions emanating from electricity, heating and cooling, or steam purchased by FLSmidth

Scope 3 emissions emanating from aircraft travel



Sustainable technologies

Case: Dust emissions reduced in Thailand by converting Electrostatic precipitator to fabric filter technology

Emissions regulations is becoming even more stringent and in order to meet the limits with existing installations, the Thung Song plant of Siam Cement Company, decided to convert the existing electrostatic precipitator (ESP). The conversion into a FLSmidth RetroClean™ fabric filter was completed by reusing existing parts to the greatest extent possible. The filter footprint was not extended leading to a reduced environmental impact.

Siam Cement Company was looking for equipment that was effective and with low maintenance requirements. The RetroClean filter was a good solution as it uses fewer mechanical parts which reduces the maintenance costs. To guarantee increased operational efficiency and prolonged filter lifetime the solution is equipped with the advanced gas distribution system developed by FLSmidth as well as the Smart Pulse Controller®. All of this ensures constant production securing low dust emissions. With the new RetroClean™ filter the Thung Song plant will be in compliance with emissions regulation now as well as in future when local emissions regulations are expected to become even more strict.

Case: Electrostatic precipitators reduce dust emissions to below 1 mg/Nm³

FLSmidth helped the Swedish pelletizing plant Luossavaara-Kiirunavaara AB (LKAB) reduce dust emissions substantially to ensure compliance with current and future emission regulations.

For over 25 years, FLSmidth has been helping LKAB (Luossavaara-Kiirunavaara AB), to maintain and improve their air pollution control equipment in Kiruna, Malmberget and Svappavaara, located in the very north of Sweden. For LKAB to increase production, local authorities demanded dust emissions to be reduced significantly. During a planned stop, FLSmidth provided three new electrostatic precipitators (ESPs) including dust transport system, ID fans, and complete duct system designed to provide maximum efficiency and reliable dust emission control.

“We are very satisfied with FLSmidth’s performance during both the design and construction phases. It was very impressive how their team was able to successfully complete installation within the planned 10-day tie-in and how flexible they were in cooperating with our partners and suppliers,” says Joakim Winsa, Planning and Design Manager, LKAB.

The optimized design makes it possible for LKAB to reduce dust emissions to an extremely low level to ensure compliance with emission regulations now and in the future.



Supplier



FLSmidth



Customer



Host Countries



FACTS

LKAB (Luossavaara-Kiirunavaara AB)
Plant emissions measured during performance testing:

UDD Exhaust: 0.3 mg/Nm³
DDD Exhaust: 0.7 mg/Nm³
TPH Exhaust: 0.3 mg/Nm³



It is FLSmidth’s vision to be our customers’ preferred full-service provider of sustainable minerals and cement technologies.

FLSmidth vision



Case: Entering new industry with technologies to remove SO₂ and dust emissions

New air pollution control equipment from FLSmidth will reduce 90% of the SO₂ emissions from the largest supplier of a carbon black worldwide. Carbon black is mainly used as a filler material in tires and other rubber products and Carbon black production plants are widespread all over the world. Thai Carbon Black Public Co Ltd in Angthong, Thailand, has chosen to upgrade their boiler lines 5 and 6 with new air pollution control equipment. The company is part of the Birla Carbon Group.

Based on the results of a technology study, FLSmidth was identified as the preferred supplier and will supply the FLS®-GSA for removal of 90% SO₂, a FabriClean® fabric filter for dust removal to below 20 mg/Nm³ and all necessary plant equipment such as duct system, fans, silos and material handling. The equipment will be a complete add-on environmental upgrade package to the existing plant. By identifying regional supply sources for many of the materials, we have reduced impacts of transportation.

For many years, the FLSmidth owned company AFT (Advanced Filtration Technologies) has supplied AFT™ filter bags for dust removal to the carbon black industry. This new order is the first of its kind for FLSmidth in this industry.

The gas suspension absorber, FLS®-GSA will go on-line at the end of 2015.

Case: New fabric filter type reduces emissions and environmental impact

For two of Lafarge's cement plants, Medgidia, Romania and Rezina, Moldova, FLSmidth supplied the pioneering fabric filter type, DuoClean® DC2. Lafarge appreciated the newly developed DuoClean filter design delivering a dual-flow approach, using long filter bag technology, compact design, and outstanding performance. With an innovative modular design and octagonal shape the DuoClean DC2 filter is a self-reinforcing structure and offer cost-effective manufacturing, transportation and on-site construction. This benefits cement plant customers but also the environment thanks to low weight and easy transportation.

The state-of-the-art filter type is developed by FLSmidth at the largest R&D Centre in the industry.

"FLSmidth is a well-known supplier to the cement industry. When we selected the DuoClean DC2 filter we knew that we could expect high quality, a high performing installation and professional service during the project execution," states Mr. Emmanuel Ollivier, Project Manager, Lafarge Cement Technical Center, Lyon (FR).

For Medgidia and Rezina the DuoClean DC2 filters have proven to be effective. Emissions are reduced to an extremely low level down to 1.2 mg/Nm³ which means that the Lafarge cement plants meet legislation now and far into the future.

Case: Dry tailings stacking

Wet tailings are a waste product of the mining process and often pose severe environmental challenges. In an effort to reduce potential environmental issues, a number of concepts are being evaluated by the industry to dewater existing and new wet tailings. Amongst these is a method using dewatered sludge combined with existing local material, producing a mix that has adequate integral strength to allow for dry stacked tailings.

Currently, one of the primary interests in the Dual Truck Mobile Sizer (DTMS) is for an application where it will be used to stop and reverse the growth in 'wet' tailing dams at oil sands sites, primarily located around Fort McMurray, Canada. Tailings dams are currently the method for disposing of the processed waste (sand and sludge) in the extraction of bitumen. These tailings dams are growing at an alarming rate, already visible from space, with a settling time for the tailings measured in thousands of years.

The DTMS is ideally designed to assist in the process as a front-end mobile dump and blending station. There is no other machine currently available that can interface with the ultra-class 400 ton haul trucks in the same way and with adequate mobility. By using the DTMS as part of the equipment set, negative ecological impacts can be reversed and the area recovered to pristine forest.

Another application of the DTMS is for mixing the specialised soil types required to cap mine pits after environmental reclamation.

Over the past two years, FLSmidth has been working with various mining companies in arid locations, studying the application of dry tailing stacking technologies for their operations. At present, operations using concentrators with a capacity of 100,000 tpd use in the order of 200,000 m³ of water per day and can permanently lose up to 65,000 m³ per day through their processes.

The application of the FLSmidth dry tailing stacking technologies in these applications can save 15-20 Mm³ water per annum. A significant water savings is particularly important if water sources are subject to climate impact or precarious water availability, which is often the case.



Case: Maximizing use of alternative fuels

The introduction of alternative fuels in pyro processes poses significant challenges in keeping a stable process. FLSmidth Global Product Manager Joju Jacob, who works with the ECS/ProcessExpert® system, explains the challenge. He states, "When using fossil fuels, the pyro process has a very steady energy source because the material has a stable burnability. When introducing the use of alternative fuels, the burnability of the material varies a lot. Imagine shredded waste materials from a household, essentially a mix of different products that each burn differently, making the process difficult to control. When the burnability drops, the operator frequently has to supply the process with coal or gas in order to keep the temperature steady. This is a challenge for the operator and where the expert system comes into the picture."

Expert systems have been used in the cement systems since the 1980s, when FLSmidth was pioneering the technology for cement kilns. The expert systems ensures maximum utilisation of alternative fuels, by carefully controlling the pyro process. The main objective of any expert system is similar to the autopilot on a commercial plane; to automate the operation of plant processes to optimise efficiency, maximize throughput and ensure that the plant runs optimally. With very complex algorithms the ECS/ProcessExpert system constantly ensures the optimal fuel mix, making it easier to use alternative fuels.

Case: Quarry management with a significant impact

NLSupervision, part of the FLSmidth Group, has a quarry management contract in Sumbe, Angola as well as contract for operating the cement plant. When the quarry contract was entered in 2013, less than 10% of the excavated raw materials were utilised in the production. After having the contract for a year, NLSupervision, was able to increase the percentage to more than 98%. At handover time, more than 600,000 tons of material was discarded in the disposal area 2 km from the quarry face in the opposite direction from the crusher. About 300,000 tons of material was used for roads and crusher platform and less than 100,000 tons of material was considered suitable for production.

Working in close cooperation with the production team, NLSupervision made the mining plan in order to optimise the utilisation of the raw materials. Through careful quarry planning and management, more than 98% of the raw materials excavated are now considered suitable for cement production. This is a significant reduction in consumption of natural resources.

The small fraction of raw material that is not utilised in the cement production is stockpiled less than 500 m from the quarry face to allow it to be used for landscaping in the rehabilitation work.



Imagine shredded waste materials from a household, essentially a mix of different products that each burn differently, making the process difficult to control.

Joju Jacob
FLSmidth Global Product Manager

