Thomas Schulz, Group CEO

Growth through productivity
- Markets are entering **cyclical recovery**
- **Productivity is the driver** for the next cycle(s)
- FLSmidth has managed the cycle and is prepared for sustainable profitable growth
- We are **Productivity Provider #1** – a core competence rooted in our business model
- **Key productivity-based growth levers** are
  - Digitalisation
  - Innovation
  - Life cycle management
  - Key products
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.30-11.00</td>
<td>Arrival</td>
<td></td>
</tr>
<tr>
<td>11.00-11.30</td>
<td>Key note from CEO – Growth through productivity</td>
<td>Thomas Schulz</td>
</tr>
<tr>
<td>11.30-11.50</td>
<td>Key note from CFO – Internal productivity</td>
<td>Lars Vestergaard</td>
</tr>
<tr>
<td>11.50-12.00</td>
<td>Short break</td>
<td></td>
</tr>
<tr>
<td>12.00-12.20</td>
<td>Growth through digitalisation</td>
<td>Per Meijnert Kristensen</td>
</tr>
<tr>
<td>12.20-13.00</td>
<td>Growth through innovation</td>
<td>Manfred Schaffer</td>
</tr>
<tr>
<td>13.00-14.00</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>14.00-14.30</td>
<td>Growth through life cycle management</td>
<td>Brian Day</td>
</tr>
<tr>
<td>14.30-15.10</td>
<td>Growth through key products</td>
<td>Pat Turner</td>
</tr>
<tr>
<td></td>
<td>▪ Cyclones and pumps</td>
<td>Francesco Ferrandico</td>
</tr>
<tr>
<td></td>
<td>▪ Cement packaging</td>
<td></td>
</tr>
<tr>
<td>15.10-16.00</td>
<td>Closing remarks + Q&amp;A session</td>
<td></td>
</tr>
<tr>
<td>16.00-17.00</td>
<td>Informal time with management</td>
<td></td>
</tr>
</tbody>
</table>
Danish Company founded in 1882

We are ~12,000 employees

We operate in +100 countries

OUR VISION
We drive success through sustainable productivity enhancement
Our “license to operate” is built on our continued focus on safety

GROUP LTIFR

Winning teams of FLSmidth’s President’s Safety Award
Our business stands on a robust strategic foundation

Cement and mining are attractive markets to be in

- Favorable long-term demand drivers
- Increasing complexity to operate
- Process-intensive, high wear & tear and demand for premium equipment

We leverage the advantages of targeting both industries

- Scale benefits
- Shared services
- Shared know-how
- Reduced cyclicality

Our unique business model positions us for growth

Our values

Our people
We are
Productivity
Provider #1

A unique combination of projects, products and services

FLSmidth key competencies

- Process and product knowledge to optimise operations
- Guaranteed equipment uptime and performance
- Proactive and predictive maintenance
- Minimising environmental impact
- Local service and support presence

Customer benefits
- Increasing output and quality
- Reducing total cost of ownership
- Increasing productivity

21 June 2017 Capital Market Day 2017
Our offering to the cement and mining industries

Cement

- Crushing
- Material Handling
- Grinding
- Pyro processing
- Clinker cooling
- Cement handling and packing

Mining

- Exploration
- Development
- Extraction
- Minerals material handling
- Comminution
- Beneficiation & Recovery
- Refining & Smelting

FLSmidth

ThyssenKrupp

KHD

Sinoma

Metso

Outotec

ThyssenKrupp
The next industry cycle(s) will be productivity-driven

<table>
<thead>
<tr>
<th>Capacity cycle</th>
<th>Products</th>
<th>Projects</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase production capacity</td>
<td>Customer requests</td>
<td>Optimize production and reduce cost of existing assets</td>
<td></td>
</tr>
<tr>
<td>Mostly greenfield</td>
<td>Project types</td>
<td>Mostly brownfield</td>
<td></td>
</tr>
<tr>
<td>Fast delivery of proven technology</td>
<td>Required capabilities</td>
<td>Holistic view on customer’s operation – productivity improvements through innovation, digitalisation and high-tech service models</td>
<td></td>
</tr>
</tbody>
</table>

21 June 2017 Capital Market Day 2017
We have positioned ourselves to capture growth through productivity

Managing the cycle – both in downturn and upturn

Preparation for the upturn
- Group strategy launched
- Group strategy "health check" Efficiency Program
- Reorganization Division strategies
- Portfolio Management
- Divestment of Cembrit Exit of bulk material handling business
- New long-term vision
- Corrective actions

Growth through Productivity
- Strategy and structure revised
- Balance sheet strengthened
- Cost base adjusted
- Competencies developed and maintained
- Position established as “Productivity Provider #1”
Our long-term financial targets reflect cyclicality in our markets

Structural market growth

Cement
3-4%

Mining
4-5%

Growth rates in our industries per annum over the cycle

Group long-term financial targets

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual revenue growth</td>
<td>Above market average</td>
</tr>
<tr>
<td>EBITA margin</td>
<td>10-13%</td>
</tr>
<tr>
<td>ROCE*</td>
<td>&gt;20%</td>
</tr>
<tr>
<td>Equity ratio</td>
<td>&gt;30%</td>
</tr>
<tr>
<td>Financial gearing (NIBD/EBITDA)</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Pay-out ratio</td>
<td>30-50%</td>
</tr>
</tbody>
</table>

*) ROCE: Return on capital employed calculated on a before tax basis as EBITA divided by average Capital Employed incl. goodwill
Key growth levers strengthen our position as Productivity Provider #1

Cyclical recovery

Cement investments are already moving out of the trough with a cautiously optimistic outlook.

Mining investments are at the trough and are expected to return to growth in 2018.

Key productivity-based growth levers

- **Digitalization** as the foundation for productivity
- **Innovation** to address complexity of operations
- Increased coverage of the **product life cycle**
- **Globalizing** market-leading products

Combination of organic and M&A
Thank you
Lars Vestergaard, Group EVP and CFO

Internal productivity
CFO Key note

Agenda

- Internal productivity
  - How we manage the company and drive internal productivity

- The CFO Agenda
  - How we invest and allocate capital
  - How we measure success and use financial KPIs
How we manage the company

How we work to improve internal productivity

- Operating model
- Governance structure
- Synergies
- Procurement

Strategic priorities historically

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Priorities</th>
</tr>
</thead>
</table>
| 2002 | - Expansion into minerals and service  
- Intensive M&A activity  
- Investments in global service footprint  
- Off-shoring to India and China |

Increasing footprint and scale

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Priorities</th>
</tr>
</thead>
</table>
| 2012 | - Business right-sizing  
- Efficiency improvements  
- New divisional structure  
- New cost and country structure |

Reducing scale and complexity

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Priorities</th>
</tr>
</thead>
</table>
| 2016 | - Procurement benefits  
- Synergies across divisions  
- Tight cost control |

Growth with less complexity

<table>
<thead>
<tr>
<th>Year</th>
<th>Key Priorities</th>
</tr>
</thead>
</table>
| 2017 | - Completing our offering in mineral processing  
- Integration and efficiency improvements  
- Operational leverage and growth through productivity |
Optimised global organisation and footprint
Global centres of excellence and service centres close to customers

- Global Headquarters & Group Functions, Denmark
- Shared Service Center, India
- Global Project & Technology Centres (Denmark, India, USA)
- Local sales and service offices
- Service Super Centres in mining clusters
- In-house workshops (70-80% outsourced)
- Formal country organization (appointed country CEO)
Synergies extracted across the global organisation
A continuous optimisation process

- Industry specific critical competencies
  - Product specialists
  - Process experts
  - Sales people

- Shared sources of competitive advantage:
  - Scale benefits
    - Shared global infrastructure
    - Shared global supply chain
  - Know-how
    - Project execution
    - Engineering capabilities
    - Strategic procurement
    - Aftermarket services
    - Operation & Maintenance
    - Automation & Control
    - Brand name/Track-record
    - Technology
  - Shared services
    - Engineering
    - Procurement
    - IT
    - Finance
    - HR
New cost and governance structure
SG&A managed tightly throughout the organisation

Business Results
(managed by Business Units /Divisions)
- Order intake and Revenue
- Direct business unit costs

Shared Costs
- Shared R&D costs
- Local infrastructure costs
  (managed by Country CFOs)
- Group costs
  (managed by Group CFO)
- Shared depreciations

Breakdown of the Group by segments for 2016

<table>
<thead>
<tr>
<th>Segment</th>
<th>Customer Services</th>
<th>Product Companies</th>
<th>Minerals</th>
<th>Cement</th>
<th>Shared costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>External revenue</td>
<td>6,616</td>
<td>4,281</td>
<td>3,172</td>
<td>4,278</td>
<td>4,286</td>
</tr>
<tr>
<td>Internal revenue</td>
<td>94</td>
<td>714</td>
<td>12</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Total revenue</td>
<td>6,555</td>
<td>5,015</td>
<td>3,185</td>
<td>4,286</td>
<td>(228)</td>
</tr>
<tr>
<td>Production costs</td>
<td>(4,485)</td>
<td>5,015</td>
<td>(2,655)</td>
<td>(3,696)</td>
<td></td>
</tr>
<tr>
<td>Gross profit</td>
<td>2,070</td>
<td>1,608</td>
<td>530</td>
<td>590</td>
<td>(228)</td>
</tr>
<tr>
<td>SG&amp;A costs</td>
<td>(591)</td>
<td>506</td>
<td>(311)</td>
<td>(288)</td>
<td></td>
</tr>
<tr>
<td>EBITDA</td>
<td>1,479</td>
<td>1,102</td>
<td>219</td>
<td>302</td>
<td>(1,532)</td>
</tr>
<tr>
<td>Special non-recurring items</td>
<td>(12)</td>
<td>7</td>
<td>(8)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Depreciations</td>
<td>(89)</td>
<td>(68)</td>
<td>(16)</td>
<td>(6)</td>
<td>(87)</td>
</tr>
<tr>
<td>EBITA before allocation of shared costs</td>
<td>1,275</td>
<td>1,037</td>
<td>195</td>
<td>295</td>
<td>(1,541)</td>
</tr>
<tr>
<td>Allocation of shared costs</td>
<td>(590)</td>
<td>(467)</td>
<td>(330)</td>
<td>(270)</td>
<td>1,619</td>
</tr>
<tr>
<td>EBITA</td>
<td>816</td>
<td>560</td>
<td>(135)</td>
<td>28</td>
<td>0</td>
</tr>
</tbody>
</table>
Procurement benefits
From local to global procurement – leveraging local competencies

Global alignment
- Production costs ~75% of revenue of which 70-80% is outsourced
- Procurement strategy is key to mitigating headwind from pricing pressure and business mix (when equipment sales accelerates)

Category management
- Consolidated global spend
- Focus on long term strategic partnerships with preferred global suppliers
- Network of global specialists to support the local organisations

Value engineering
- Early involvement in R&D and Sales through value engineering and standardization
- Simplify and align product specification
- Same functionality at lower cost

Efficiency
- Transfer of transactional work to India
- Regional and global footprint optimization (10% headcount reduction through corrective actions)
- Consolidation of supplier base: From 15,000 to 7,500 suppliers – currently 11,000
How we measure success

Important Financial KPIs

A balancing act
ROCE

Cash is king
FCF

Strong balance sheet
At any point in time

Operational leverage
In the upturn
A strong balance sheet ensures maximum flexibility
Gradual improvement since efficiency programme in 2013
How we allocate capital

We maximise room to invest in growth and shareholder return

Investments and capital allocation

Priorities

- To be well-capitalised (NIBD < 2x EBITDA)
- To pay stable dividends (30-50% pay-out ratio)
- Invest in organic growth
- Mergers and acquisitions
- Share buy-back or special dividends
Return on Capital Employed (ROCE)
We target a gradual and continuous increase towards 20%

- **ROCE end Q1 2017**
  - 9.4%

- **EBITA LTM**
  - DKK 1,415m

- **Capital employed**
  - DKK 14,993m

- **Cement ROCE >> 20%**
- **Cement EBITA 5.7%**
- **Minerals ROCE < 20%**
- **Minerals EBITA 10.2%**

Growth and operating leverage to drive increase in ROCE

*) ROCE: Return on capital employed calculated on a **before tax** basis, including goodwill and based on last 12 months’ EBITA and average capital employed

Ensure strong operating leverage as growth returns
Run business to optimise free cash flow generation
Tightly managed fixed cost base to generate operational leverage

What if we are able to increase revenue by DKK 1bn without adding more fixed costs? (assuming a Gross Margin ≈25%)

<table>
<thead>
<tr>
<th></th>
<th>Δ DKK</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>+1bn</td>
<td>+6%</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>+250m</td>
<td>+6%</td>
</tr>
<tr>
<td>EBITA</td>
<td>+250m</td>
<td>+17%</td>
</tr>
</tbody>
</table>

**Fixed Costs as % of Revenue**

- Sales costs LTM
- Administrative costs LTM
- Depreciations LTM
- Amortisations and writedowns LTM
- Fixed Costs as % of Revenue
High cash conversion and FCF to drive shareholder return

CFFO trends
- Net working capital to trend downwards (target <10% of revenue)
- Taxes rate trending downwards due to optimised global tax structure

CFFI trends
- We are already well-invested due to significant investments in the past
In pursuit of superior shareholder return

Internal productivity
- Optimised global organisation
- Optimised cost and governance structure
- Global procurement benefits

CFO agenda
- Maximum flexibility to invest in growth
- Managing costs to ensure operating leverage
- Well-invested => high cash conversion
Per Mejnert Kristensen, Group EVP, Cement Division

Growth through digitalisation
Digitalisation is one of the key levers in FLSmidth for driving growth through productivity

Unique business model…

...combined with many levers for enhancing productivity

- Process and product knowledge to optimise operations
- Guaranteed equipment uptime and performance
- Minimised environmental impact
- Local service presence
- Operational excellence through expert competencies supported by Digitalisation
FLSmidth has been on the digitalisation journey for decades

FLSmidth possesses the key competencies needed to deliver on digitalisation

- **Plant/operations optimisation**
  - **Machine optimisation**
  - **Process optimisation**

- **FLSmidth** is the **subject matter expert** in both machine control, process optimization and plant optimization.

- **For several decades**, FLSmidth has sold numerous systems enabling automated operation.

- **Increased focus** on digitalisation as a **critical enabler of productivity** in the future.
What Digitalisation means in FLSmidth

Cement example

On site

- Machine Control
- Plant Control
- Process optimization systems
- Other plant IT systems (e.g. ERP, CMMS, maintenance mgmt.)

Remotely

- Digitalisation Platform
- Services
- Condition monitoring
- Predictive maintenance
- Power & Fuel optimisation
- Spare parts mgmt.
- Examples

Feedback
Already offering key technologies at the foundation of digitalisation

Example: Advanced Process Control systems

- FLSmidth’s advanced process control solution used to stabilize and optimize key cement processes
  - Production increase of 3-5% in kiln applications and 3-6% in mill applications
  - Fuel savings of 2-4% in kiln applications and 3-6% in mill applications
  - Up to 30% reduction of process and quality variability

- Addressing key business challenges of our customers e.g. rising energy costs, fluctuating demand, scarcity of personnel
Enhanced productivity through automated material flow control

Example: FLSmidth BlendExpert Automation technology

- Applications supporting production optimization from quarry to cement
- Steady quality, lower fuel consumption and eliminated need for manual sampling/analysis
- Latest generation software based on experience from 700+ installations of quality control systems
FLSmidth’s Operation & Maintenance (O&M) offering is a strong vehicle for Digitalisation

- FLSmidth has ongoing O&M operations in 10 production lines across 5 countries
- We enjoy the possibility to develop our Digitalisation offering in plants with O&M contracts
- Data-driven productivity improvements are already part of our O&M offering
Data-driven productivity improvements are already part of FLSmidth’s offering

Able to pull the right data from any business application…

- FLSmidth-based business applications
- Other (external business applications)

…FLSmidth’s platforms can deliver easy access to key operational data and enable automated or remote action

Business Intelligence Platform

- Data consolidation and reporting
  - Preparation
  - Analysis
  - Visualisation / Dashboards
  - Insight

Performance Management Platform

- Preventive and Corrective actions
  - Online support
  - Improved performance
FLSmidth Performance Management Platform enables automated and remote action

<table>
<thead>
<tr>
<th>01</th>
<th>Preventive and Corrective actions from all plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge sharing</td>
<td></td>
</tr>
<tr>
<td>Down time</td>
<td></td>
</tr>
<tr>
<td>Production &amp; Quality</td>
<td></td>
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<tr>
<td>Predictive maintenance</td>
<td></td>
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<td>HSE</td>
<td></td>
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<tr>
<td>Financials</td>
<td></td>
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<table>
<thead>
<tr>
<th>02</th>
<th>Integrated process between sites, specialists, systems</th>
</tr>
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<tbody>
<tr>
<td>Collaboration</td>
<td></td>
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<tr>
<td>Task lists</td>
<td></td>
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<tr>
<td>Document centralization</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>03</th>
<th>Full management overview</th>
</tr>
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<tbody>
<tr>
<td>Track progress on cases</td>
<td></td>
</tr>
</tbody>
</table>
FLSmidth is working on numerous potential technology applications for the future plant

- **HoloLens**
  - Providing technicians with live video based support
  - Augmented reality to support e.g. asset maintenance

- **Drones**
  - Automated stock pile measurement
  - Site inspections
  - Transportation of tools

- **Artificial Intelligence, AI**
  - Predictive maintenance without manual supervision
  - Improved process control through machine learning

- **Mobile field service**
  - Create work orders on the fly via mobile devices

- **RFID/GPS tags**
  - Track location of employees in case of emergency
  - Measure productivity on moving equipment e.g. trucks

- **IoT**
  - Online equipment monitoring
Summary

- Digitalisation is a key enabler of productivity enhancement, which will grow FLSmidth’s business

- FLSmidth is fully engaged on the digitalisation journey for a long time and possesses the necessary competencies to deliver it

- We are already offering key automation technologies that form the foundation of digitalisation and using our O&M offering as a vehicle to further develop it
FLSmidth Online Support Centre

Click to play the video
Thank you
Manfred Schaffer, Group EVP, Minerals Division

Growth through innovation

Capital Market Day 2017
"We believe that even a small discovery can lead to a great deal more."

Innovation
- Key element of productivity enhancements

Rapid Oxidative Leaching
- Game-changer for copper and precious metal processing

Dry Stack Tailings
- Future minerals processing with no tailings ponds/dams and recycled water

Summary & take-away
The need to improve productivity in mining and minerals processing

- With the mining industry’s focus on maximising volume during the boom phase of the cycle, inefficiencies became embedded in operations.
- When the cycle turned, the industry shifted its focus to cost-cutting and operational excellence.
- The efforts of miners to cut costs in recent years have produced limited sustainable improvements as the majority of cost reductions are due to foreign exchange and the fall in energy prices.
- Utilisation of mining equipment is still low compared to other industries.
- With short-term gains already realised, the industry has to ask itself, where to go from here?
- Hurdle: When it comes to true innovation, everybody wants to be first to be second – could this change with productivity back on the agenda?
Innovation in FLSmidth

**IN-HOUSE INNOVATION**
- FLSmidth global technology centers
- Local product development
- Sophisticated laboratories and testing facilities in the USA, India and Denmark
- Fast commercialisation of new products and services
- Innovation in transformational technologies

**INNOVATION THROUGH PARTNERSHIP**
- In-house focus on core business and partnering up if non-core technologies are needed
- Partnering in feasibility studies or pilot plant directly on site
- Strategic Partnerships:
  - Universities (DTU)
  - Technology Leaders: Haldor Topsøe, BASF, GE
Innovation – where to play

- FLSmidth is constantly pursuing innovation in the existing products, processes and markets.
- But FLSmidth also looks for ways how our innovations can unleash the next wave of productivity.
- We are now at a tipping point of making innovations in some areas that can deliver real, sustainable bottom-line value.
- We are introducing transformative innovations that have the potential to significantly move the cost curve.

Innovation ambition levels

<table>
<thead>
<tr>
<th>Source: Harvard Business Review</th>
</tr>
</thead>
</table>

Where to play (Markets + customers)

- **EXISTING**
  - Optimising existing products for existing customers

- **ADJACENT**
  - Expanding from existing business into "new to the company" business

- **NEW**
  - Developing breakthroughs and inventing things for markets that don’t exist yet

How to win (products + assets)

- **EXISTING**
- **INCREMENTAL**
- **NEW**

21 June 2017  Capital Market Day 2017
A glimpse at recent product developments

Optimising existing core products for higher efficiency, quality and performance

- World’s largest / most efficient cement mill
- The SmartCyclone®
- Superior dip tube material for preheater
- millMAX-e™ high efficiency slurry pump
- The FerroCer® Impact wear liner
- FLSmidth® JETFLEX® burner
Transformational innovations

Dry Stack Tailings
- An end to tailings dams
- A step change in water management

Rapid Oxidative Leaching (ROL)
- A transformational solution to overcome the challenges of declining grades and impurities in ore bodies
- Winner in the global top 100 R&D awards
Dry stack Tailings

Saving costs and improving safety
Tailings facilities Risks and shortfalls

- On average 20 failures per decade over the last 30 years – no improvement
- 21 “very serious” failures of tailings ponds/dams in the past three decades
- Better technology will mitigate the risks, but not completely eliminate
- Large portion "force majeure" – type of events

Source: Waste CEO Technics, Tailings Dam Failures: A Review of the Last One Hundred Years
Tailings accidents

Tailings accidents are primarily caused by:

- Unusual weather (climate change)
- Management
- Foundation
- Slope instability
- Overtopping
- Seepage
- Etc…

Tailings incidents (1900-2016)

No. of mines

- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 51 - 336

Type of tailing incident

- Groundwater
- Active
- Inactive
Water scarcity, access rights and costs

As water scarcity deepens, political instability grows (The Guardian-March 2017): In Bolivia, Peru and Ecuador disputes over water shortages are part of a wider fight for equal access and shared responsibility.

Average size concentrator with a capacity 100,000 tpd and a Water Ratio of 0.5-0.7 (Cyclone – High Rate Thickener) requires 50-70,000 m$^3$ (50–70 million liter) of water per day.
Many drivers toward filtered tailings

Land: Minimizing tailings management facility footprint – saving money
- Footprint is < 50% of a conventional TMF

Water reclamation => reduce dependency on external water supply and saving money
- Water can cost > USD 5/m³ (seawater desalination)

Reduction in closure costs at end of mine life – reduce liabilities (seepage)
- Progressive closure possible

Providing a “social license” to the mine
- Minimum environmental impact => quicker permitting possible

Reduced tailings risk – improving safety
- Avoid / remove water pool and dam prior to failure
Typical flotation tailings flow sheet

TAILINGS (120,000 tpd)
30% solids
36,000 tpd solids
84,000 tpd water

Thickener

Filtration

Conveyor

Water back to mill
30,000 tpd

Water back to mill
33,600 tpd

Water back to mill
1,200 tpd

<table>
<thead>
<tr>
<th>Size, tpd</th>
<th>Tailings dewatering description</th>
<th>Water ratio*</th>
<th>Makeup water (tpd)</th>
<th>Water cost per year ($/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120,000</td>
<td>Cyclone sand dam</td>
<td>0.70</td>
<td>84,000</td>
<td>USD 107m</td>
</tr>
<tr>
<td>120,000</td>
<td>Filtered</td>
<td>0.17</td>
<td>20,400</td>
<td>USD 26m</td>
</tr>
</tbody>
</table>

Potential savings in water costs: USD 81m / year
Over 15 years mine life ~ USD 1.2 billion

*) Water ratio: required make-up water in m3 per ton of tailings
FLSmidth’s filtered tailings solution will significantly reduce the CAPEX costs for the filter plant (size and filter media) and the transportation costs (mingling with overburden) and is cost competitive with conventional solutions.

**CAPEX**
Assuming 1/3 of large tailings facilities (100,000 tpd class) converting to filtered solutions, the market potential is over 20 large scale filters (10-15% of total tailings market) with a CAPEX in excess of USD 1 billion over the next decade.

**OPEX**
The consumables from these filters have a market value of over USD 100m per year.
FLSmidth is the one source for tailings solutions

Only OEM with complete equipment offering

- Thickeners - conventional to paste
- Filters - vacuum to high pressure filters
- Pumps, Hydro-cyclones
- Material handling - discharge and mobile stacking conveyors
- Flowsheet / processing competence
- R&D Strength & Partnering Culture
Dry Stack Tailings
Synchronizing market demand and solution development

<table>
<thead>
<tr>
<th>Market interest for large scale DST</th>
<th>Early adaptors acceptance for large scale DST concepts</th>
<th>Market acceptance for large scale DST technology</th>
<th>Market demand for large scale DST solutions</th>
</tr>
</thead>
</table>

- DST flowsheet studies
- Colossal filter plant development
-Prototype built
- Colossal™ trial operational
- R&D projects completed and commercialised
- Smaller traditional sized projects ready to start
- First Colossal™ large scale DST commercial operation
- Demonstration of new R&D projects / improvements in costs
- Continuous demand for large scale integrated DST project

2016–2017 Testing pilot plant and optimization

2018-2020 1st full-scale pilot & demo plant

2020- Commercialisation and market penetration

2014–2015 Development of large filter solutions

2016–2017 Testing pilot plant and optimization

2018-2020 1st full-scale pilot & demo plant

2020- Commercialisation and market penetration
FLSmidth Colossal™ automatic filter press demonstration plant

In final stages of process commissioning and trial operation

**FLSmidth’s goals**

- Prove technology at scale
  - Prove large scale reliability
  - Obtain operational and performance data
  - Understand any material handling and stacking issues associated with large scale tailings filtration

**Clients goals:**

- Reduce risk
  - Complete a full-scale test program
  - Complete a cost/benefit analysis to compare the filtered tailings plant with alternatives
Partnership with Goldcorp for EcoTails solutions

The EcoTails concept developed in a partnership between Goldcorp and FLSmidth provides a fully integrated tailing solution by co-mingling waste rock and dry tailings.
Dry Stack Tailings
Addresses main stakeholder concerns

- Recirculation of >90% of the process water
- Elimination of the risks of catastrophic tailings flow when a dam (TSF) fails
- Safe stacking of tailings cakes even in areas of high seismic activity
- Retention of risk of groundwater contamination through seepage
- Reduction of storage footprint by 50% and enabling fast rehabilitation when approaching mine closure
Rapid Oxidative Leaching – a game-changer for copper and precious metal processing
Customer challenge
Declining ore grades

- Existing ore bodies trending with lower grades
- more complex ores to process
- higher costs are diluting miners' revenue and the economic value of reserves
- Customers have to process lower grades/more complex/dirty ores => increasing OPEX over time
Customer challenge
Increasing impurities in concentrates

- Arsenic level in concentrates sent to smelters have increased from <0.15% to >0.22% As
- Smelters’ ability to take in materials with high arsenic levels is nearly at maximum
- Increasingly difficult to find new high quality ore bodies => new projects with higher grade ore bodies often contain arsenic
- License to operate will be challenged

Source: EcoMeteles/ICSG
Customer challenge
Economic stress in the transition from oxide to sulfide ore

- Grade of oxide ore bodies dropping, with existing stockpiles depleted from years of operation
- Declining utilisation of fixed assets (Sx-EW) in transition period from oxide to sulfide ore (loss of production)
- Cash generation in transition period is critical to raise funding for concentrator to process sulfide ores

**SX-EW PRODUCTION - CHILE AND PERU**

Existing (competing) hydromet technologies

**Autoclaves**
- Works at high temperatures and high pressures
- Heavy, complicated process machine due to extreme process conditions - High CAPEX and high OPEX

**Ultra-fine grinding**
- High energy input to pre-treat (<10 microns) prior to leach – and yet leach time remains long due to passivation

**Catalytic leach systems**
- Expensive catalysts (silver, activated carbon, etc), result in high OPEX, with complicated catalyst recovery
- Not yet commercialised (feasibility ?)
# FLSmidth Rapid Oxidative Leaching (ROL) technology

A Mechano-chemical approach mitigating passivation making it feasible to produce cathode copper on site:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Can process low grade concentrates</strong> without problems (7-20% copper content)</td>
</tr>
<tr>
<td>2</td>
<td><strong>Leaches</strong> 97-99% copper in <strong>6-8 hours</strong></td>
</tr>
<tr>
<td>3</td>
<td>No need for ultrafine grinding =&gt; <strong>low OPEX</strong></td>
</tr>
<tr>
<td>4</td>
<td>Operates at atmospheric pressure and autogenously heated to 80°C =&gt; <strong>low CAPEX/OPEX</strong> compared to autoclaves.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Scalable</strong> from 5,000-100,000 tpa cathode copper</td>
</tr>
<tr>
<td>6</td>
<td>Integrates with existing SX-EW</td>
</tr>
<tr>
<td>7</td>
<td><strong>Treats arsenic</strong> in Hydromet system – no need for roasting or smelting</td>
</tr>
<tr>
<td>8</td>
<td><strong>Lower environmental impact</strong></td>
</tr>
</tbody>
</table>
The uniqueness of ROL process

The challenge: During oxidative leach of chalcopyrite, a passivation layer is formed, which obstructs chemical reactions at the particle surface, inhibiting leach.

The requirements: Overcome surface passivation reactions during oxidative dissolution - with low energy input.

The key to success: Use of mechanical strain and mechanical energy to promote the chemical kinetics of the leach.

The two key steps:

- Step 1: A preconditioning activation step where the chalcopyrite concentrate is ‘doped’ with a small amount of copper in solution to destabilise the complex but stable structure, imparting chemically induced mechanical strain into the lattice structure.

- Step 2: A gentle (low-energy) mechanical abrasion of the particle surfaces to remove the colloid films and allow unimpeded access of the oxidant to the mineral surfaces that are reacting.

"Technology family“ patented and additional patents pending.

1 Preconditioning activation of the chalcopyrite structure

2 Mechano-chemical abrasion of the particle surface
ROL focuses on chalcopryrite concentrates which make up ~75% of the world copper supply.

1.5 million tpa copper from oxide to sulfide ore transition over next 10 years (*) corresponding to 7% of world copper production.

Many ore bodies with high arsenic not able to be processed today, can be processed economically with ROL.

Mines containing arsenic make up 4.5 million tpa copper (*).

With world copper mine production (in 2016) of 20.2 million tpa (ICSG), the addressable market (CAPEX and OPEX) for ROL technology is > USD 20 billion.

*) Source: ICSG and Wood Mackenzie
Staged market penetration of ROL technology

ROL touches many processes of the copper production

- **ROL Plant**
- **Smelter**
- **Leach & SX-EW Plant**
- **Concentrator (Flotation)**
- **Arsenic Stabilization**

**Existing SX-EW plants (oxide)**
- Retrofit ROL leach process to better utilise SX-EW assets at dropping ore grades

**Mines moving to more complex sulfide ores, continue SX-EW**
- Retrofit ROL leach process to improve recovery and cleaner concentrates at dropping ore grades / increasing arsenic

**Mines retrofitting concentrator operation to enable handling increase of low grade / complex ores**
- Retrofit ROL in addition to existing concentrator process to better utilise assets at dropping ore grades

**New mine development (two process streams)**
- Install new ROL process for separate process stream handling lower grade and complex ores
Next steps in ROL commercialisation in copper

<table>
<thead>
<tr>
<th>- 2015</th>
<th>2016</th>
<th>2017</th>
<th>2018-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>Lab testing</td>
<td>Pilot plant</td>
<td>Demo plant</td>
</tr>
<tr>
<td>Breaking the code</td>
<td>Pilot testing of ROL on various copper ore types with success BASF Partnership</td>
<td>First big hurdle in commercialisation was moving from lab scale batch testing to continuous process operation with the pilot plant in Salt Lake City 99.9% pure copper cathode produced on a continuous basis, with full recycle process streams Testing arsenic Cu</td>
<td>FLSmidth is currently working with several clients to move to a demonstration plant on site</td>
</tr>
<tr>
<td>Full-scale brownfield project</td>
<td>Full-scale greenfield project</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short term target: work with customers in transition from oxide to sulfide and customers with ores containing arsenic Longer-term target: support new projects in feasibility phases</td>
<td>Proven results and feasibilities from brownfield installations suffice customers to invest in new greenfield ROL plants</td>
</tr>
</tbody>
</table>
Opportunity: Refractory gold

- ROL can represent a new low temperature, low pressure approach for the pretreatment of refractory gold ores and concentrates.
- Potential to replace existing pre-treatment technologies (i.e. roasters, autoclaves, bioleaching).
- In early testing, the mechano-chemical pre-treatment approach shows great potential for processing refractory gold concentrates or whole ores.
Rapid Oxidative Leaching
The take-away

“Game-changer for copper and precious metal processing”

For illustrative purpose only
Summary and take-aways

- Environmentally and commercially attractive innovations
- Addresses declining economics of many mines
- Contribute to our vision of sustainable productivity enhancement

Market Potential

Dry Stack Tailings
- Estimated addressable market of USD 200-300m per year (USD 100-200m CAPEX + USD 100m OPEX)

Rapid Oxidative Leaching (ROL)
- Addressable market is 20% of global copper market (CAPEX and OPEX USD 15-20bn per year) with estimated long-term potential for ROL in excess of USD 1bn per year
Thank you
Backup slides
## Translating the ROL technology highlights into customer benefits

<table>
<thead>
<tr>
<th></th>
<th>Ability to process arsenic bearing concentrates on site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>- Many new ore deposits have high arsenic levels</td>
</tr>
<tr>
<td></td>
<td>- Most smelters will not accept concentrates with &gt;0.5% arsenic (ability for high AS is nearly at maximum)</td>
</tr>
<tr>
<td></td>
<td>- Options of blending good concentrates with high arsenic concentrates will be limited</td>
</tr>
<tr>
<td></td>
<td>- Smelter treatment costs and refining costs for concentrates with elevated AS is reducing profitability</td>
</tr>
<tr>
<td>2</td>
<td>Increase return on SX-EW assets</td>
</tr>
<tr>
<td></td>
<td>- SX-EW production is failing due to depletion of grade in existing heap leach operations</td>
</tr>
<tr>
<td></td>
<td>- Many mines are in transition from oxide to sulfide and transition can last several years</td>
</tr>
<tr>
<td></td>
<td>- Miners need to find a way to compensate for loss of production and utilise existing assets</td>
</tr>
<tr>
<td></td>
<td>- A brownfield retrofit solution will minimise disruption in operations</td>
</tr>
<tr>
<td>3</td>
<td>Process lower grade concentrates + recover other metals</td>
</tr>
<tr>
<td></td>
<td>- <strong>ROL to maximise copper (or gold/silver) economic value of reserves</strong> (ability to process lower grades)</td>
</tr>
<tr>
<td></td>
<td>- Obtaining 6-10% additional recovery by avoiding extra steps of flotation</td>
</tr>
<tr>
<td></td>
<td>- Recovery of other metals (zinc, lead etc.) that may be penalized by smelter can turn to revenue</td>
</tr>
<tr>
<td></td>
<td>- Ore reserves that were uneconomic to treat may be treated with ROL =&gt; increasing reserves</td>
</tr>
</tbody>
</table>
Existing Heal Leach with declining grade:
Maintaining Cathode production in existing Sx-Ew operations

- ROM Oxide Ore
  - FLSmidth® Rapid Oxidative Leach
  - Precious Metals Recovery
  - Residue Disposal

- Oxide Heap Leach
- SX
- EW
- Residue Disposal
- Copper Cathodes

Low to Mid Grade Copper Concentrate

Brownsfield expansion
Transition from oxide to Sulfide Ore
Continue Sx-Ew Operation
Existing Concentrator Lower Grade or Complex Ores
Concentrator operation for maximum revenue
New Project – Lower Grade or Complex Ores
Concentrator operation for maximum revenue

ROM
Sulfide Ore

High-Grade “clean” Copper Concentrate
Low to Mid-Grade “dirty” Copper Concentrate

Sulfide concentrator → Tailings Disposal

FLSmidth® Rapid Oxidative Leach

Precious Metals Recovery → Residue Disposal

SX → EW

Copper Cathodes

Smelter

High-Grade “clean” Copper Concentrate
Low to Mid-Grade “dirty” Copper Concentrate

Copper Cathodes

ROM Sulfide Ore

21 June 2017
Capital Market Day 2017
Growth through life cycle management
Life cycle management
Delivering the lowest total cost of ownership (TCO)

CAPEX
• Flow sheet optimisation
• Building and construction
• Key products

~25%

OPEX
• Maintenance/ouages
• Parts and services
• Retrofits and upgrades

~75%

Total cost of ownership
Our product line management setup ensures full product life cycle perspective across divisions/BUs

Product Line Management
- Strong technical support and training
- New product development
- Targeted growth and support opportunities
- Services
- Value Engineering

Procurement
- Supply chain development
- Strategic supplier mapping
- Targeted cost savings
- Quality and Delivery in Full On Time

Research & Development
- New product innovations
- Rebuilds and retrofits opportunities
- Wear parts and consumables
- Automation/Big Data/Digitization/IoT

Strongest offering to customers
Growth through life cycle management
Strategic ambition

Productivity provider #1
- Best in class in maximizing customers’ return on assets
- Strongest business partner for life cycle services
  - Support installed base
  - Product line management
  - Value adding spare & wear parts
  - Upgrades and retrofits
  - Maintenance contracts
  - Grow wear parts to >10% of Customer Services
- Leading edge in advanced technologies
  - Digitalisation
  - Smart parts
## OPEX (aftermarket) related business opportunities in the cement and mining industries

<table>
<thead>
<tr>
<th>Spare parts</th>
<th>Wear parts</th>
<th>Maintenance</th>
<th>Services</th>
<th>Upgrades/Rebuilds</th>
</tr>
</thead>
<tbody>
<tr>
<td>~55%</td>
<td>~5%</td>
<td>~10%</td>
<td>~20%</td>
<td>~10%</td>
</tr>
</tbody>
</table>

### Share of total service activities today

### Examples of products/services
- Mill shells
- Thickener drives
- Girth gears
- Mill liners
- Screen media
- Filter media
- Support to plant operations
- Predictive maintenance
- Scheduled outages
- Mechanical check-out
- Commissioning
- Plant audits
- Trouble-shooting
- Improved design / performance
- R&D projects in cooperation with customers

### Other peers:
~50%
Grow wear parts to >10% of Customer Services

2014
- Strategic initiatives launched and ambition announced.
- Wear parts <1% of total CS

2015
- PLM for wear parts
- KPIs define
- Business plan developed

2016
- 3 metallurgists hired
- 7 R&D projects

2017
- Wear parts >5% of total CS
- New customers and geographies
- 3 multiple year install and liner contracts
- Sensors and monitoring (smart parts, wear detection, 3D scanning)

2018
- Wear parts >8% of total CS
- 3 multiple year install and liner contracts
- Sensors and monitoring (smart parts, wear detection, 3D scanning)

2019
- #1 in Productivity
- Wear parts >10% of total CS
Wear parts and consumable products

Available market
(based on installed base only)

> USD 5bn

Crushing
Primary and secondary liners

Grinding
Mill liners, trommel frames, screen media, tables and roller segments

Flotation
Rotors, stators and hood sectors

Centrifugation
Wedge wire baskets, wet end wear part

Screening
Screen panels, feed box liners

Filtration
Filter media, plates & sectors

Gold Processing
Wedge wire intertank screens, carbon retention, cones

Coolers
Grates
Crushing and Milling
Enhancing productivity through customised offering

- Bundled offering
- Process optimization
  - Upstream and downstream
- Supply chain flexibility
- Increased throughput
- Customised liner geometry
- Composites
  - Reduced weight, transportation costs and increased safety
- Predictive maintenance
  - Monitoring and sensors
Wear parts potential in milling

- **Lifetime opex** 75%
- **Spare parts**
- **Capex**

- **Wear parts**
  - 70% of aftermarket (growth opportunity)
- **Historic FLSmidth focus**

- **Lifetime spend on Ball Mills for a typical copper concentrator**
  - > DKK 300m
Different types of wear and applicable technologies

<table>
<thead>
<tr>
<th>Products impacted (examples)</th>
<th>Abrasive wear</th>
<th>Erosive wear</th>
<th>High pressure wear</th>
<th>Impact wear</th>
<th>Sliding wear</th>
<th>High temperature wear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mills</td>
<td>Pumps</td>
<td>Crushers</td>
<td>Crushers/mills</td>
<td>Chutes/screens</td>
<td>Coolers/kilns</td>
<td></td>
</tr>
<tr>
<td>Hard-facing</td>
<td>Hard-facing</td>
<td>Manganese &amp; Cr-Moly steel</td>
<td>Manganese &amp; Cr-Moly steel</td>
<td>Polymers</td>
<td>Spec. casting</td>
<td></td>
</tr>
<tr>
<td>Sinter-cast</td>
<td>Ceramics</td>
<td>Tungsten carbides</td>
<td>Composite alloys</td>
<td>Tempered steel</td>
<td>Mortars</td>
<td></td>
</tr>
<tr>
<td>Hi-Cr casting</td>
<td>PTA welding</td>
<td>Smart sensors</td>
<td>Polymers</td>
<td>Hard-facing</td>
<td>Hard-facing</td>
<td></td>
</tr>
<tr>
<td>Studded surface</td>
<td>Hybrid alloys</td>
<td>Composite alloys</td>
<td>PTA welding</td>
<td>Tempered steel</td>
<td>Cobalt PTA welding</td>
<td></td>
</tr>
<tr>
<td>Spin-casting</td>
<td>Hybrid alloys</td>
<td>Hard-facing</td>
<td>FerroCer</td>
<td></td>
<td>FerroCer</td>
<td></td>
</tr>
</tbody>
</table>

Available technologies (examples)

- Hard-facing
- Sinter-cast
- Hi-Cr casting
- Studded surface
- Spin-casting
- Hard-facing
- Ceramics
- PTA welding
- Hybrid alloys
- Manganese & Cr-Moly steel
- Tungsten carbides
- Smart sensors
- Composite alloys
- Polymers
- Tempered steel
- Hard-facing
- PTA welding
- FerroCer

- Spec. casting
- Mortars
- Hard-facing
- Cobalt PTA welding
- HVAF thermal spray
Wear part product development: FerroCer® impact panels
Delivering enhanced predictable productivity

Previous liner wear life: 2-3 weeks
FerroCer® wear life: >10 times longer
Life cycle management

Partnering with customers as a trusted advisor

Improved productivity
- Higher availability and throughput
- Predictive maintenance and planning
- Better parts and resource forecasting
- Lower total costs of ownership

Enhanced sustainability
- Safety
- Water
- Energy
- Emissions

Wear parts
- A missing link in customer relation
- An untapped growth potential

Asset Mapping
Parts
Financial Modeling
Maintenance
Growth through key products
Market-leading products with unique growth potential

Growth levers:
- Geographical expansion
- Adjacent industries
- Extended service offerings

FLSmidth Sizers
FLSmidth Air pollution control
FLSmidth Automation
FLSmidth Pneumatic transport and feeding
FLSmidth Dosing
FLSmidth Packaging
FLSmidth Pumps and cyclones
FLSmidth Gears
Products in focus today
Two strong business areas with interesting growth opportunities

REVENUE BY APPLICATION
Varying in size and profitability
Strong market position in niches (most are #1 or #2)

Cyclones & Pumps
Air Pollution Control
Process Control & Sampling
Sizing & Feeding
Packaging
Dosing & Feeding
Gears
Thank you
Pat Turner, President FLSmidth Krebs

Pumps and Cyclones

Capital Market Day 2017
Pumps and Cyclones in a nutshell

- World leader in cyclones, strong player in slurry pumps
- Critical equipment for productivity in minerals and other industrial processes
- A large and profitable market, driven by service and aftermarket parts business
- Growth opportunities in
  - adjacent markets with cyclones
  - growing market share in pumps through improving productivity and geographical coverage
Pumps and Cyclones are critical equipment for mineral processing, coal, fertilizer, and other industry flowsheets.

Cyclones classify solids by size.
Pumps transport slurry to the cyclones and other processes.
Pumps move high volumes of dense slurries with coarse solids – the “heart(s)” of a plant

- Pumps range in suction diameter (= pipe diameter) from 50 to 850 mm
- A pump costs between DKK 35,000 and 2.5m
- Our largest pump will fill a 50-meter Olympic swimming pool in 15 minutes, a garden hose would take 2-3 months
- Abrasive slurries create high wear in the pump interior – common for yearly parts costs to equal 50% of original capital cost
- Pump design to increase wear life of parts while maintaining pumping efficiency
Cyclones classify solids and help determine overall process efficiency and recovery

- Directly affects recovery rates in mineral processing plants by keeping coarse solids out of flotation/leach recovery step
- Cyclone sizes range from 12 to 2,200 mm and are bundled in manifolds with 4 to 20 cyclones typically in one manifold.
- Optimizes mill power, performance highly dependent upon patented gMAX geometry
- Yearly spare parts can reach 25% of original capital cost in primary applications
- Long even wear life important to our customers
Pumps and Cyclones are a large, profitable, and growing market segment

- Lower grades and dropping commodity prices has driven a focus on improving productivity
- Pumps and Cyclones are purchased as part of each capital project but are easily replaced in existing operations
- A typical site will have
  - 15 – 50 pumps
  - 25 – 100 cyclones
- **High wear** – production levels drive aftermarket business
- Pump and Cyclone replacement business is driven by productivity enhancements
5 super centers, 35 service centers

Main competitors:

- Weir Minerals
- GIW
- Metso

TOTAL REVENUE BY REGION

- North America
- Southern Africa
- APAC
- South America
- EMENA

TOTAL REVENUE BY INDUSTRY

- Copper
- Energy Minerals
- Fertilizer
- Gold
- Iron Ore
- Other

Market leader in Cyclones

Strong contender in Pumps
Growth through Productivity: SmartCyclone™

- Leader in wireless smart condition monitoring
- Proprietary SmartCyclone sensors measure acoustics to indicate proper cyclone operation and provide real time wear indication
- Combined with FLSmidth automation software, SmartCyclone facilitates corrective action
- Increases mineral recovery and uptime and process optimization
- One upset event can cost millions of DKK in potential downtime and maintenance
Further growth opportunities for Cyclones exist in adjacent markets

Strong capital opportunities
- Chemical Refineries
- Upstream Oil & Gas
- Power plants – FGD Process
- Pulp & Paper
- Automotive
- Water treatment
- Soil remediation
- Plastic recycling
Growth through Productivity: constant pump innovation

Self Purging Bearings
easy maintenance & eliminates bearing failures due to over greasing

Wide Clearance between impeller and suction side eliminates mechanical grinding of solids

Safe & Easy suction side clearance adjustment while pump is in operation

Proprietary Wear Ring – designed to eliminate suction side recirculation

FLSmidth provides:

- **Long predictable wear life**
  Predictable life means matching the pumps to the mill maintenance cycle and then extending the mill cycle

- **Energy efficiency**
  Higher pumping efficiency reduces power consumption and/or allows pumping greater volumes with the same motor size

- **Safety**
  Easy pump adjustments and maintenance

- **Quick reliable spare parts availability**
  Provided through FLSmidth CS Super Centers and Service Centers
FLSmidth is well positioned to grow pump market share

Biggest opportunities in high tonnage plants

- Copper
  - Leverage near-term market growth in Copper and Gold
- Gold
  - Increase market coverage together with FLSmidth organization
- Iron Ore
- Coal

Opportunities where pumps are a major part of the process:

- Oil Sands
- Alumina
- Phosphates
- Industry Minerals
Pumps and Cyclones in a nutshell

- World leader in cyclones, strong player in slurry pumps
- Critical equipment for productivity in minerals and other industrial processes
- A large and profitable market, driven by service and aftermarket parts business
- Growth opportunities in
  - adjacent markets with cyclones
  - growing market share in pumps through improving productivity and geographical coverage
- Additional 5-6% growth above market reachable
Thank you
Francesco Ferrandico, President FLSmidth Ventomatic

Cement packaging

Capital Market Day 2017
FLSmidth Ventomatic in a nutshell

- **World leader in Cement packaging** – strong reputation in fully automatic packing and dispatching lines
- **Innovative product range** composed of equipment developed in the last 5 years

Growth opportunities through

- **Increasing productivity in our core market** – more automation, upgrades of existing facilities, and innovative service models
- **Entering adjacent growth markets** based on our strengths, e.g. building materials, fertilizer and petrochemicals
Cement bags are a common way of distribution in the industry

- Bags are a common way of distribution in developing countries, where up to 45% of cement (up to 60% in India) is shipped in bags.
- **Packing plants** are part of full cement production lines, but also grinding stations or cement terminals.
- A **cement bag usually weighs 50kg**, a single packing line produces up to **15 million bags per year**.
- The industry trends towards **increasing safety and productivity** trigger need for upgrades.
Cement packing of the past dangerous, hazardous and labor-intense
Packing plants have evolved into complex, fully automated operations

- **Packing plants** consist of 2 – 8 packing lines (depending on level of automation)
- **Packing lines** cost DKK 3m – 11m and produce on average 2,800 50kg bags/hour or >15 million bags p.a.
- Full automation reduces required manpower per shift from 12 to 2 when going from complete manual to automation packing – with the same output
FLSmidth Ventomatic provides the key product types and integrates them for fully automated packing plants

- **Electronic rotary and inline packers**: Equipment for filling bulk cement from silos into bags with high weight accuracy and an output from 60 tons/h up to 250 tons/h
- **Empty bag applicators**: Advanced machine for automatically placing various type of empty bags on packers with speed from 600 bags/h up to 6,000 bags/h
- **Palletizing systems**: Receiving full bags (from 25 kg to 50 kg) from packer and forming bags pallets of different layers. Pallet weight goes from 0.5 tons to 2 tons
- **Loaders for closed trucks/containers**: First full automatic pallet loading system in the market for closed trucks and containers
  - Significant increase of safety level and productivity (no fork lifts and relevant operators)
- **Loaders for open top trucks**: Receiving full bags from packers and loading directly open truck trucks from the top

**FLSmidth Ventomatic’s product range composed of equipment developed in the last 5 years**
FLSmidth

Ventomatic is the leading brand in Cement packing

Significant share of business with Chinese Design Institutes for international projects

Main growth levers
Productivity in Cement
Improve geographical coverage
Adjacent markets

Core markets with strong positioning

SALES BY CUSTOMER GROUP

FLSmidth
Others

Competitor 1
Competitor 2
Others
Ventomatic is well-positioned to grow in the Cement market

- Market trends and productivity requirements
  - Increase output of existing lines
  - Improve health and safety
  - Reduce manpower
  - Reduce power consumption
  - Reduce truck waiting time
  - Reduce inventory (bags on stock)

- High capacity and flexibility
- Full automation
- Innovative logistic solutions
- Service and aftermarket offering
Growth through Productivity: CARICATECHTM automatic truck loader

- Innovative development for loading all type of bags on all kind of trucks
- Bag layers are picked up by a fork with a special roller way (no vacuum system required) while maintaining the traditional loading from the top
- Addresses trend of productivity improvements through automation in developing markets
- CARICATECHTM replaces existing loading equipment without major process changes or rebuilds - targeting upgrades of existing packing lines
We are targeting several adjacent industries with significant growth potential

- **Building Materials**
  - Familiar packing process, different types of powders and mix
  - Cleaning, bag accuracy and automation are key selling points

- **Petrochemical**
  - Different packing process
  - Request for higher capacity and integrated solutions
  - Strong market growth

- **Fertilizers**
  - Different packing process
  - Open for innovative solutions for truck and wagon loadings
  - Focus on logistic: how to deliver bags in a better way
  - Strong market growth

**Market size:**

- 0.3 x Cement
- 1 x Cement
- 1.5 x Cement
We leverage our strengths to succeed in adjacent markets

<table>
<thead>
<tr>
<th></th>
<th>Packing</th>
<th>Bag application</th>
<th>Palletizing</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Building Materials</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Fertilizer</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Petrochemical</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Different process requires development of product range

Palletizing and loading are strongholds of FLSmidth Ventomatic – existing technology can be transferred
FLSmidth Ventomatic in a nutshell

- **World leader in Cement packaging** – strong reputation in fully automatic packing and dispatching lines
- **Innovative product range** composed of equipment developed in the last 5 years
- Growth opportunities through
  - **Increasing productivity in our core market** – more automation, upgrades of existing facilities, and innovative service models
  - **Entering adjacent growth markets** based on our strengths, e.g. building materials, fertilizer and petrochemicals
- **Additional 3-5% growth** above market reachable
Thank you
21 June 2017

Thomas Schulz, Group CEO

Growth through Productivity

Capital Market Day 2017
Growth through Productivity

- Markets are entering **cyclical recovery**
- **Productivity is the driver** for the next cycle(s)
- **FLSmidth** has managed the cycle and is prepared for sustainable profitable growth
- We are **Productivity Provider #1** – a core competence rooted in our business model
- **Key productivity-based growth levers** are
  - Digitalization
  - Innovation
  - Life cycle management
  - Key products
Key productivity-based growth levers
Summary of today’s presentations

An enabler to be Productivity Provider #1

Addressable market for wear parts and consumables > USD 5bn p.a.

Dry stack tailings addressable market of USD 200-300m p.a.

ROL estimated long-term potential >USD 1bn p.a.

Additional 3-6% growth by extending geographical coverage and entering adjacent markets
Growth and EBITA margin levers related to topics presented today

**Structural growth in our industries**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>3-4%</td>
</tr>
<tr>
<td>Mining</td>
<td>4-5%</td>
</tr>
</tbody>
</table>

**Self-initiated growth opportunities through key levers presented today**

- **Cement**
  - +2-3%
  - Digitalization as the foundation for productivity
  - Innovation to address complexity of operations
  - Increased coverage of the product life cycle
- **Mining**
  - +3-4%
  - Globalizing market-leading products

**EBITA margin improvement through operating leverage and procurement savings**

**ROCE >20% requires**

- EBITA > DKK 3bn
- If EBITA margin = 10%, revenue should be > DKK 30bn
- If EBITA margin = 13%, revenue should be > DKK 23bn

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1) Based on Capital Employed of DKK 15bn
Roadmap to long term targets
Revenue and EBITA
Our long-term financial targets are reflecting our growth ambitions

<table>
<thead>
<tr>
<th>Group long-term financial targets</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual revenue growth</td>
<td>Above market average</td>
<td>✔ on track to deliver</td>
</tr>
<tr>
<td>EBITA margin</td>
<td>10-13%</td>
<td>✔ on track to deliver</td>
</tr>
<tr>
<td>ROCE*</td>
<td>&gt;20%</td>
<td>✔ dependant on growth</td>
</tr>
<tr>
<td>Equity ratio</td>
<td>&gt;30%</td>
<td>✔ already there</td>
</tr>
<tr>
<td>Financial gearing (NIBD/EBITDA)</td>
<td>&lt;2</td>
<td>✔ already there</td>
</tr>
<tr>
<td>Pay-out ratio</td>
<td>30-50%</td>
<td>✔ already there</td>
</tr>
</tbody>
</table>

*) ROCE: Return on capital employed calculated on a before tax basis as EBITA divided by average Capital Employed incl. goodwill
Thank you