Keep your plant competitive

Products & services to improve your performance
Agenda

- Valmet in brief
- Facts & numbers
- Your challenges
- How can we help you?
- Products & solutions
  - Including product portfolio
- Success stories
A unique combination of technology and services in growing markets

**Vision:**
Become the global champion in serving customers

**Technology**
- Established market leader
- ~1,700 protected innovations

**Mission:**
Convert renewable resources into sustainable results

**Services**
- >EUR 1bn business
- >2,000 customer plants worldwide
- >70 service centres

Global and diversified customer base

Growing end-markets

Enables services

Feeds new technology

We are committed to moving our customers’ performance forward
Services to improve your profitability and sustainability

We offer sustainable services for

- Energy production
- Fibre processing
- Paper, board and tissue production lines

We are committed to

- Sustainability
- Our customers’ profitability
- Optimised production and maintenance
- Long-term partnerships
- Innovative solutions

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Leading services and technology company

Key figures 2013

- Global market leader with #1-2 market positions in all markets served
- Large installed base to be serviced
- Growth opportunities in increased outsourcing

Net sales: EUR 2,600m
EBITA¹: EUR 54m
Employees: 10,500

Position
#1-2 Service
#1-2 Pulp
#1-2 Energy
#1-2 Paper, board, tissue

Global business

- Services business: 26%
- Technology business: 35%
- EBITA: 39%
- Net sales: 42%
- EMEA: 16%
- Asia Pacific: 16%
- South America: 15%
- China: 11%
- North America: 11%

¹ EBITA before non-recurring items
Facts & numbers

Energy & Environmental Services

• Energy plants consisting of recovery and power boilers, evaporation plants, gasifiers, Lignoboost and environmental systems
• P&P customers globally
• Power generation customers mainly in EMEA and North America
• We also have local sales and expert centres close to you at other locations
• Large product portfolio focused on two major lines:
  • Maintenance Services
  • Performance Services

Valmet has over 200 years of industrial history

1797 Tamfelt
1841 Göta Verken
1856 Tampella
1858 Beloit
1890 KMW
1888 Sunds

1942 Rauma-Raahen
1951 Valmet

1968-1996 Several M&As i.e.
1978 Svenska Maskinverken
1980s Keeler
1980s Generator
1986 KMW
1987 Wärtsilä paper finishing machinery
1992 Tampella Papetech

1999 Metso created through merger of Valmet and Rauma

Key acquisitions
2000 Beloit Technology
2006 Kvaerner Pulping
2009 Tamfelt

End of 2013 Demerger to Valmet and Metso
Energy & Environmental business locations

350 ENE professionals

Service centres
Sales/services offices
Agents/reps

Global service network of 5,500 employees
Ensuring the profitability of plant investment & risk management

- Ensuring availability and productivity
- Continuous development
- Utilising new technology

Strong pressure for savings
- Less own plant personnel on site
- Flexible cost structure as a target
- Managing maintenance and investment costs

Ensuring the profitability of plant investment & risk management
- Ensuring availability and productivity
- Continuous development
- Utilising new technology

Focusing on core business
- Business challenges, production optimisation, energy efficiency, fuel purchasing and market prices, investment projects, etc.

Increased productivity
Predict maintenance costs
Long-term profitability
Optimise value of fuel
Reduce upstart costs
Increase capacity
Shorter outage time
Improve energy efficiency
Reduce safety risks at plants
Optimise production
Improve safety
Increase availability
Reduce emissions
Safer working environment
Environmental compliance
Improve competence

Improve energy efficiency
Reduce upstart costs
Increase capacity
Optimise production
Safer working environment
Environmental compliance
Improve competence

Challenges?
Experts to help you with your challenges

Our solutions to make you succeed

Our mission is to support you throughout the life of your plant, improve your everyday performance and increase your profitability in the long run.

Our service offering includes:

• Comprehensive upgrades to boost your production resources and fulfil changing environmental specifications
• Inspections, troubleshooting
• Maintenance
• Spare parts
• Capacity-increasing process studies
• Research & Development

Always committed to moving our customers’ performance forward
Product portfolio
Energy & Environmental Services
We help you meet these demands with both technology and services. Our services portfolio includes:

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<th>Competence Development</th>
<th>Boiler &amp; Plant Upgrade</th>
<th>Field Services</th>
<th>Components, Parts and Enhancement &amp; Safety Technologies</th>
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<td>Recovery Boiler Upgrade</td>
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<td>Spare Parts</td>
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<td>Training</td>
<td>Power Boiler Upgrade</td>
<td>Shut-Down Services</td>
<td>Pressure Parts &amp; Components - TubShields, Tubing etc</td>
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<td>Availability Management</td>
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<td>Liquor to Liquor Concept</td>
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<td>Environmental Equipment Services</td>
<td>Safety Roof</td>
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<td>Studies</td>
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<td>Support Equipment Services</td>
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<td>Advanced Process Control</td>
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<td>Inspections</td>
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</table>

End-users require high uptimes, efficient day-to-day operations and applications that are easy to change.
Other operational costs (e.g. ash, water)

Insurance

Investment reservation

Lifecycle costs of typical solid-fuelled power plant

By optimising O&M & management costs
- Competence Development
- Availability Management
- Plant Life and Value Management

By optimising refurbishment costs
- Plant Life and Value Management
- Fuel and Combustion Management

By fuel & emissions cost savings through optimum fuel efficiency
- Fuel and Combustion Management
- Energy Efficiency Optimisation
- Environmental Impact Management

By minimising unavailability costs
- Competence Development
- Availability Management
- Fuel & Combustion Management

By optimising energy efficiency
- Competence Development
- Energy Efficiency Optimisation

Own Electricity Consumption

Maintenance Costs

Operation Consumables

Operation & Maintenance Management

PG example

Creating added value with Performance Services

Improve your productivity & profitability

© Valmet 2014 | Energy & Environmental Services
Improve your productivity & profitability

Creating added value with Performance Services

By improving safety
- Troubleshooting & Optimisation
- Studies

By environmental compliance
- Performance Agreements
- Troubleshooting & Optimisation
- Studies
- Advanced Process Control

By improving energy efficiency
- Performance Agreements
- Troubleshooting & Optimisation
- Studies
- Advanced Process Control

By reducing operating costs
- Performance Agreements
- Troubleshooting & Optimisation
- Studies
- Advanced Process Control

By improving availability
- Performance Agreements
- Troubleshooting & Optimisation
- Studies
- Advanced Process Control
Upgrades to increase capacity & protect the environment

We help you to optimize and meet enhanced demands in:

- Capacity
- Emission performance
- Lifetime extension
- Availability
- Efficiency
- Water circulation
- Fuel quality

We have all the necessary know-how, based on experience and resources, to manage complete projects and provide you with expert assistance, within the shortest possible time frame.

Increase the service life by 10 to 15 years at costs far below those of new construction

Experience

- Conversion of more than 60 power boilers
- Upgrading of more than 200 chemical recovery boilers
Keep your productivity at an optimum level with our Field Services

Field & Maintenance Services include:

• All types of field services for pressure parts
• Environmental equipment services
• Shutdown services
• Support equipment services

Valmet takes full responsibility for shutdowns, including:

• Planning and coordination of all activities
• Use of inspectors and other specialists
• Carrying out the replacement and overhaul of equipment

Products & solutions

• Liquor-to-Liquor Concept
• Smelt-X
• Steam-to-Steam Concept
• Corrosion and Erosion Protection
• Inspections
• 24/7 Maintenance

Our Field Services cover everything from fast, on-call troubleshooting to planned, practical and strategic undertakings carried out on a continuous basis.
Fast, Flexible Components & Parts

**Daily spare parts**
- Original parts for equipment delivered by Valmet
- Spares for several other acquired brands
- Engineered components designed by Valmet
- Approved replacement parts that meet quality and performance requirements
- Upgraded substitute parts

**Spare part packages**
- Spare and wear parts for Valmet’s new installations and rebuilds
- Spare part recommendations prepared by Valmet specialists
- Spare parts required on-site are identified together with the customer

**Results**
- Improved process performance
- Successful start-up and reliable operation
- Easy acquisition from one source
- Lower lifecycle costs
- Easy access to local service and support

**Facts**
- The right spare parts, at the right time, based on OEM manufacturer know-how
- On competitive terms

**Facts**
- Special tools for spare part qualification
- Experienced global and local specialists
Boiler Enhancement & Safety Technologies

- Products to support and enhance the functionality of your boiler

  - **Improves:**
    - Safety
    - Operations
    - Capacity

- Stable and reliable operation – load and start-up burners
- Safe maintenance with Safety Roof
- Reduced emissions SNCR for NOx reduction
- Optimum fuel feed with Feedingmaster
- Our Roddingmaster effectively shaves off smelt deposits
- Liquor sprayer station For safe liquor distribution
- Smelt Spout to minimise hazardous risks
- Safe smelt cleaning with Spout Robot
- Smelt-X Extract smelt safely and effectively
Solutions based on experience
Success stories around the globe

Competence Development
WebAcademy & Dynamic Training Simulator

Plant Life & Value Management
Performance Agreement

Fuel & Combustion Management
FuelDiet™ KCl Corrosion Solution

Field Services
Case: Fast and reliable services at Stora Enso Skoghall Mill
WebAcademy & Dynamic Training Simulator

Competence Development
WebAcademy
Building competence through knowledge transfer

What we deliver

- Online training portal with:
  - Individual training programmes
  - Generic online courses and tests
  - Customised site/company materials
  - Efficient tools for systematic training planning and coordination
  - Potential customers: heat & power plants, pulp mills, paper mills

Customer value

- Better productivity due to skilled operating personnel
- Systematic planning and follow-up of employee training
- Self-paced online courses
## Systematic Competence Development

Training for Övik Energi, BFB boiler, Sweden

### WebAcademy & Dynamic Training Simulator

<table>
<thead>
<tr>
<th>Prior to start-up</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>• Boiler &amp; combustion knowledge</td>
<td>• Combustion</td>
<td>• Corrosion</td>
</tr>
<tr>
<td>• Cold start-up</td>
<td>• Scenario training</td>
<td>• Sintering</td>
</tr>
<tr>
<td>• Normal operation</td>
<td>- Cold start-up</td>
<td>• Scenario training</td>
</tr>
<tr>
<td>• Shut-down</td>
<td>- Boiler trips</td>
<td>- Cold start-up</td>
</tr>
<tr>
<td></td>
<td>- Fuel disturbances</td>
<td>- Emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Bed temperatures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Tube leaks</td>
</tr>
</tbody>
</table>

Valmet WebAcademy

The target is to avoid operational disturbances and handle unexpected situations

Simulator

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Performance Agreements

Predictable lifecycle costs and optimised process performance

What we deliver

• Long-term service agreements tailored to different levels of customer needs, based on pre-defined service modules

• Partnership model based on assigned development team, utilising shared resources locally and specialist resources globally

• Potential customers: biomass and waste plants and pulp mills globally

Customer value

• Predictable lifecycle costs and optimised process performance, to provide the best return on the customer’s investment

• Risk management via access to Valmet specialists and technology know-how

Long-term commitment

Strong technology know-how

Aligned incentives and risk-sharing
Customer-tailored performance agreements
Based on service level

**MONITOR**
Keep your plant running and functioning
+ Flexible solutions to support your organisation

**ASSIST**
Assist you in maximizing your production and availability
+ Operations and Availability assistance & capping costs

**MANAGE**
Minimize your lost production through close cooperation
+ Operation and Availability management, performance optimization & capping costs

**OUTSOURCED**
Operations/Maintenance
We take full responsibility of your everyday process and/or maintenance operations and ensure your successful business performance
+ Asset Performance Partnership; with risk sharing and incentives
Six-year performance agreement - power boiler
Gainesville Renewable Energy Center (GREC)/Gainesville, Florida, USA

- **Performance Services**
  - Dedicated Reliability Engineer
  - Performance Reporting
  - Training (simulator, OJT, sampling)
  - Operational/BMS Audits and Tuning
  - Boiler Optimisation
  - Equipment Inspection
  - Catalyst Life Assessment

- **Maintenance/Field Services**
  - Maintenance Procedure Development
  - Outage Planning and NDE Mapping
  - Execution of all Outage Planned Maintenance on a cost-plus basis
  - Troubleshooting and RCA of any unplanned maintenance
  - Valve Maintenance

- **Spare Parts**
FuelDiet KCl Corrosion
Fuel & Combustion Management
FuelDiet™ KCl Corrosion Solution
Use low-priced fuels without increasing the risk of superheater corrosion

What we deliver
- FuelDiet™ Solution: software platform for data analyses and decision making, sensors to gather information, and measures and remedies to control hazardous phenomena
- Combustion study

Customer value
- Savings on fuel purchasing costs
- Extended lifetime of superheaters
- Potential to avoid unexpected shutdowns
Customer value in figures

- **Potential saving on yearly fuel purchasing cost**: EUR 1-3m of EUR 9m per year
- **Extended lifetime of superheater** from 3 to 10 years. Potential saving of EUR 600K per year
- **Real-time estimate of the remaining lifetime** of the superheaters
- **Potential to avoid unexpected shutdown** and save on the costs of fuel switching to HFO or natural gas of EUR 180K

**Case: 80 MWth CHP power plant**

- **Steam**: 28 kg/s, 80 bar, 500°C
- **Fuels**: SRF and biomass, 670 GWh per year
- **8,000 operation hours/year**
- **Scope**: FuelDiet™ software, Corroded sensor, CorroStop additive injection system
- **Investment**: EUR 700,000
- **Annual chemical costs and system maintenance cost**: EUR 250,000

**Payback of investment in 6 months**
Fast action by committed service crew
Stora Enso Skoghall Mill
Committed to providing fast & reliable services
Stora Enso Skoghall Mill in Sweden, 2014

Background

• On 21 January 2014, there was an explosion in recovery boiler number 5 at the Stora Enso Skoghall Mill in Sweden.

Deliverables

• Valmet’s service experts were quickly on-site to help and the boiler could start up 18 days after the explosion.

• Intensive work already began during the evening and night of 21 January to get our teams organised, identify the root cause and start planning the work to get the recovery boiler back online.

“This would not have been possible without your help and support. I would like to direct my sincere thanks to you and your company for the way you have supported us and worked day and night, on weekdays as well as holidays. I would also like to state that the work has been carried out in a safe way, despite the time pressure and the many different disciplines working in a limited space, and at several levels at the same time. Without your help we would never have been able to start up at the planned time, 18 days after the explosion. Excellent! Once again, my sincere gratitude for your efforts.”

Carl-Johan Albinsson, Mill Director, Stora Enso, Skoghall Mill
Summary
Solutions based on experience

• We utilise our global network of knowledge and experience to develop local solutions close to you, to ensure your success.
• Our mission is to improve your productivity and profitability - every day.