



Welcome to
Tampere!



Site visit: Tampere

Automation Business Line

June 10, 2019

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Business Line President, Automation

Automation business line

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2 Offering / industries

3 Recent development

4 Summary



Automation business line overview

Extensive range of automation and information management solutions to move our customers' business performance forward

Global network of expertise close to our Customers

Strong R&D investments across the automation offering

Global market leader with #1-3 market position in pulp and paper

Industry-leading product portfolio

Comprehensive global services

Portfolio extended to converting and corrugated board

Integrated automation system – no interfaces with systems

Niche leader in Bio and Waste-to-Energy power automation

Key figures in 2018¹

Orders received

386

EUR million

Net sales

357

EUR million

Employees

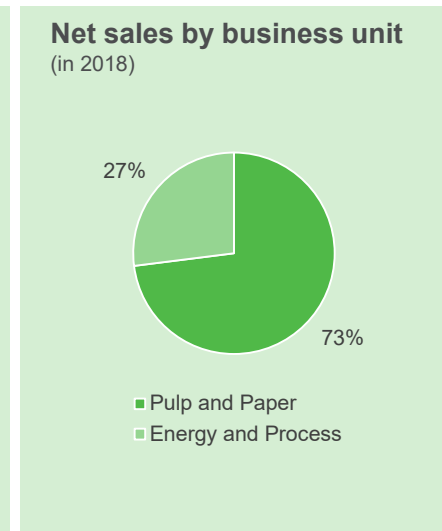
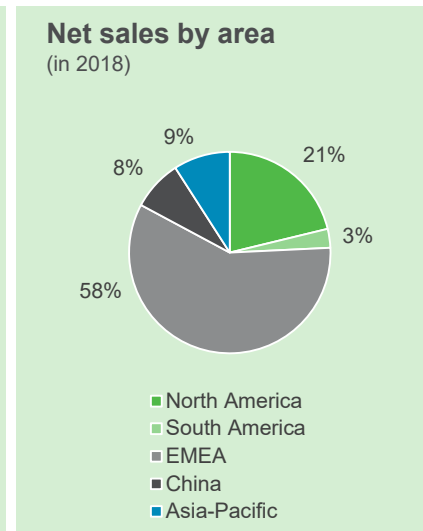
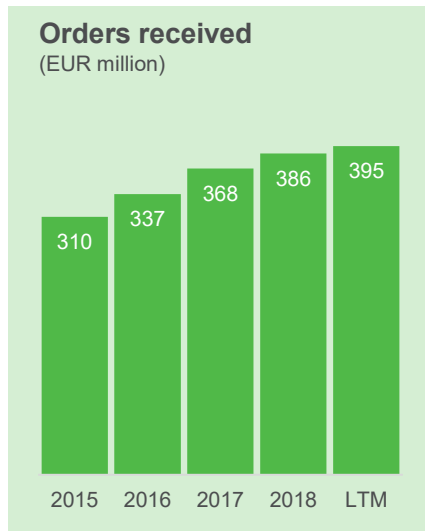
1,802

at the end of 2018



1) Including internal net sales and orders received.

Automation key figures at a glance



Market drivers

- Ageing machines and installed automation systems
- Investments in new pulp and paper machines and power plants
- Demand for raw material savings, process efficiencies and sustainability
- Demand for Industrial Internet based solutions

Pulp and Paper	Market position	Market share	Estimated market size	Long-term market growth
	#1-2	~20%	EUR 1.0 bn	~1%
Energy and Process	Market position	Market share	Estimated market size	Long-term market growth
	#2-4	~10%	EUR 1.0 bn	~1%

2017 financials have been restated following the adoption of IFRS 15. LTM = Last 12 months, refers to the period April 1, 2018 – March 31, 2019.

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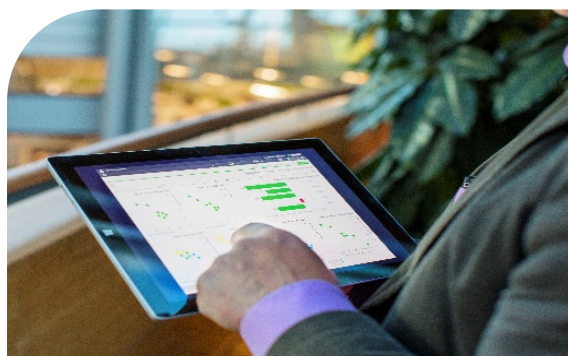
Valmet has a unique customer offering with process technology, automation and services

- Full automation offering
- Leading process solution provider for paper, board and tissue technologies
- Integrating both automation and process equipment know-how creates the best solution
- Strong after-sales services guarantee long time commitment



Automation business line offering

Technology, automation and services taking your performance forward



Distributed Control Systems (DCS)

- DCS for process and plant controls
- Condition monitoring
- Information management
- APC (advanced process control)
- Industrial Internet applications



Quality Management Systems (QMS)

- QCS (quality control systems)
- Profilers
- Web inspection and web break analysis systems

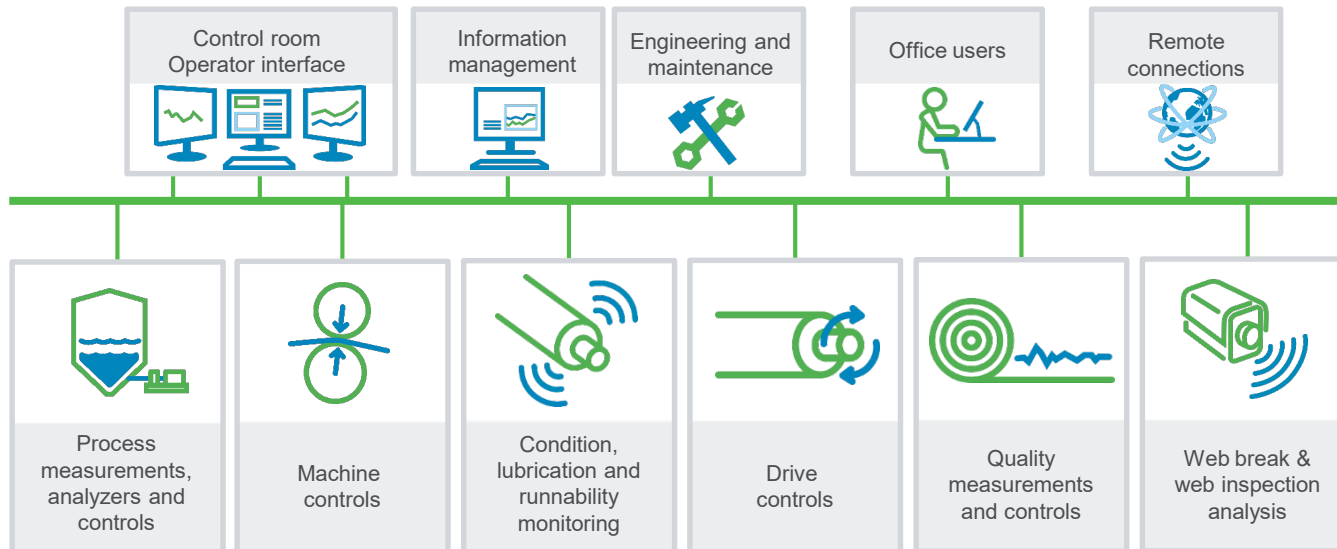


Analyzers and measurements

- Paper analyzers
- Pulp analyzers
- Pulp consistency measurements
- Conductivity measurements
- Power analyzers
- Boiler Diagnostics

Automation projects and services: Board and Tissue machines

Automation delivery content and service scope

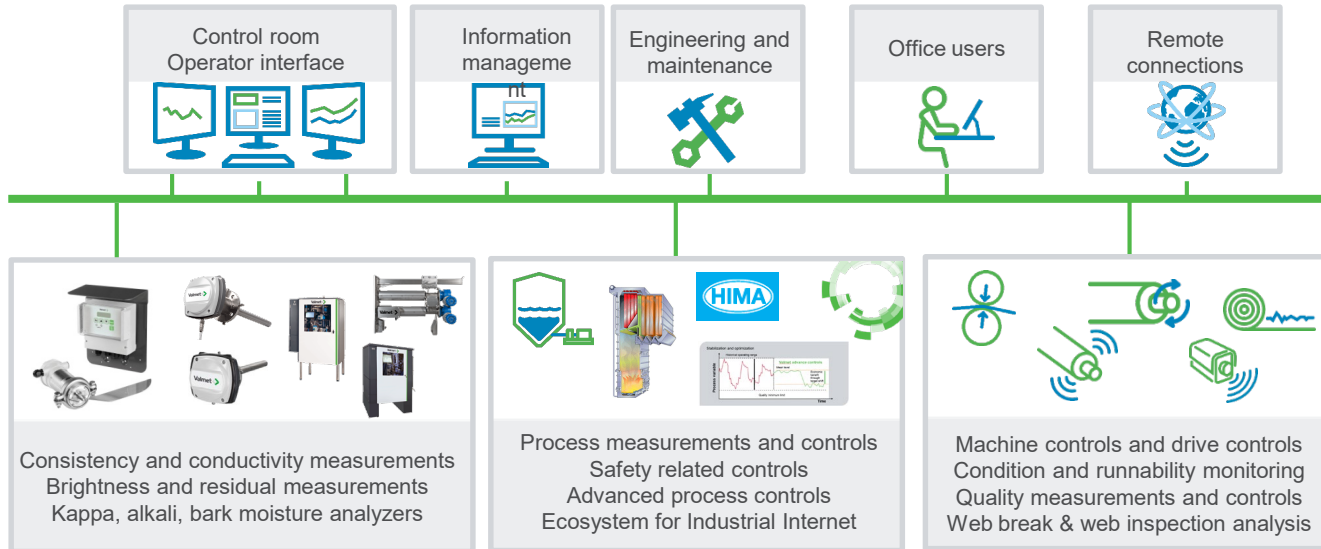


- Total control solution
- Industrial Internet embedded
- Single supplier – efficient project management
- Faster start-up of assets



Common automation platform for Pulp mill

Valmet DNA is scalable from MCS to QCS to DCS and beyond



- Common operator interface
- Common data collection
- One common engineering tool
- Help pages for interlocks
- No links needed between systems
- Valmet Industrial Internet solutions

Proven performance

Valmet has delivered more than
4,500 automation systems

40,000 analyzers and measurements

Over **1,000** power plants worldwide utilize Valmet's process automation

Valmet is

#1 in QCS, analyzers and measurements

#1 in pulp performance optimization using advanced controls

#2 in pulp & paper control systems

Niche leader in Bio and Waste-to-Energy power plant automation and significant partner for process industries as steel, oil & gas in Nordics



Not just Pulp & Paper – Energy and Process growing

Energy industry

- We have consistently developed the energy automation system business for many years
- We have niche position in bio and waste-to-energy and in selected countries
- We have created strong partnerships based on our technology
 - Entered the Indian fossil fuel power generation with Bharat Heavy Electricals Limited (BHEL) – with over 70% market share in Indian Distributed Control System (DCS) market in power
 - Entered the Chinese fossil fuel energy market with SAC joint venture, partly owned by China Huadian Corp, one of China's 5 biggest power producing companies

Process Industries

- Growth in Marine continues
- Processes automated from dairy to metals



Automation market:

USD 14 billion

Addressable market:

USD 5 billion

Market growth rate: **2-3%**

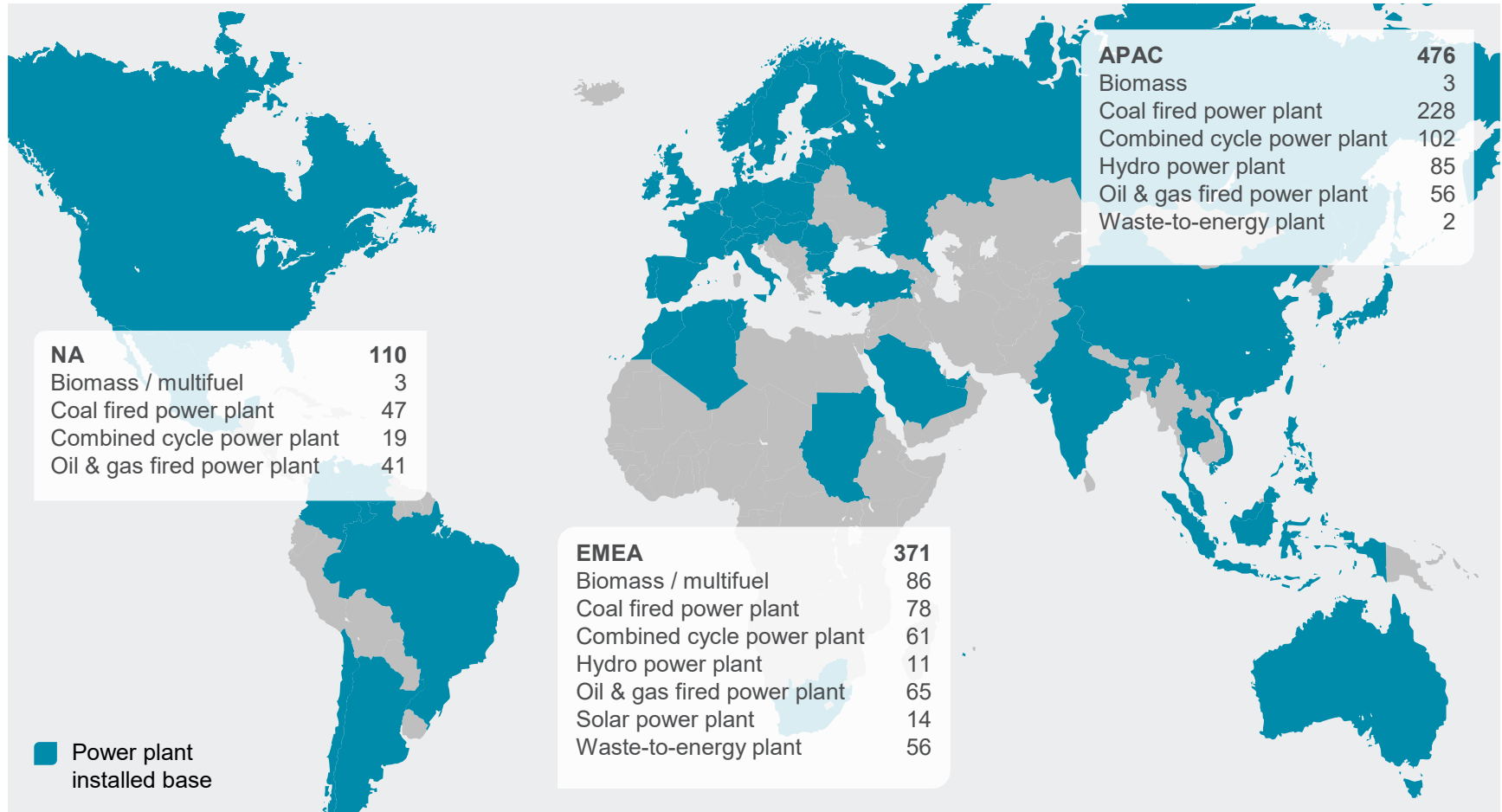
Valmet's market position:

Established niche position

Main competitors:

ABB, Siemens, Emerson

Over 1,200 power plants worldwide utilize Valmet's process automation



Includes Valmet's systems delivered by partners

Unique and market leading automation offering for pulp and paper

	Scope/product		Market position in pulp and paper	Main competitors
Distributed Control Systems (DCS)	<ul style="list-style-type: none"> • DCS for process and machines controls • Condition monitoring • Information management 		#2	<ul style="list-style-type: none"> • ABB • Honeywell • Emerson • Siemens • Yokogawa
Quality Management Systems	<ul style="list-style-type: none"> • QCS (Quality Control Systems) • Profilers • Web inspection and web break analysis systems 		#1-2	<ul style="list-style-type: none"> • ABB • Honeywell • Yokogawa • Voith • Paperchine • Procemex • Cognex • Isra
Analyzers and measurements	<ul style="list-style-type: none"> • Paper analyzers • Pulp analyzers • Pulp consistency measurements • Conductivity measurements • Power analyzers • APC (Advanced Process Controls) 		#1	<ul style="list-style-type: none"> • ABB • BTG • PulpEye

Energy and Process, market status

	Scope/product		Market position	Main competitors
Power industry	<ul style="list-style-type: none"> DCS for process controls Safety systems Information management APC (Advanced Process Controls) and turbine controls 		<ul style="list-style-type: none"> Market leader in Finland #1 Market leader in WtE in Europe #1 Weak in NA, SA and Asia 	<ul style="list-style-type: none"> ABB Siemens Emerson Yokogawa Schneider Honeywell
Process industry	<ul style="list-style-type: none"> DCS for process controls Safety systems Information management Valmet DNA Integrated Operations 		<ul style="list-style-type: none"> Strong position in Finland and presence in NL and Russia Forerunner in LNG and Biogas 	<ul style="list-style-type: none"> Yokogawa Siemens Emerson ABB Honeywell
Marine	<ul style="list-style-type: none"> DCS for process controls Safety systems Emission monitoring Scrubber Automation Turbine controls (retrofits) 		<ul style="list-style-type: none"> ~20% market share in cruise vessels 	<ul style="list-style-type: none"> Wärtsilä ABB Kongsberg

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Recent development

Recent development		New products and applications
Customer	<ul style="list-style-type: none"> Valmet package sales all-time high Progress in new business areas: marine, converting and LNG Continuous installed base growth 	<ul style="list-style-type: none"> QCS product family to converting New analyzers launched Integrated operations-application launched and delivered for LNG terminals and distribution management Industrial internet: Performance Center, Customer Portal, Performance applications Acquisition of Enertechnics – Boiler diagnostics
Technology	<ul style="list-style-type: none"> Good progress in R&D and product renewal – 55% of sales from products commercialized within five years Strong development funnel to strengthen our technology leadership in core segments 	
Process	<ul style="list-style-type: none"> Solid operations performance in response to business growth Continued profitable growth 	
People	<ul style="list-style-type: none"> Further strengthened our service capability in new regions Investment into sales & operations development through global training programs 	



Today, customers are extensively utilizing our Industrial Internet capabilities



800

Valmet-supplied lines with Valmet DCS Roadmap approach

420
81,000

420 Condition Monitoring (CM) references with over 81,000 I/O tags

350

Advanced process control installations

540

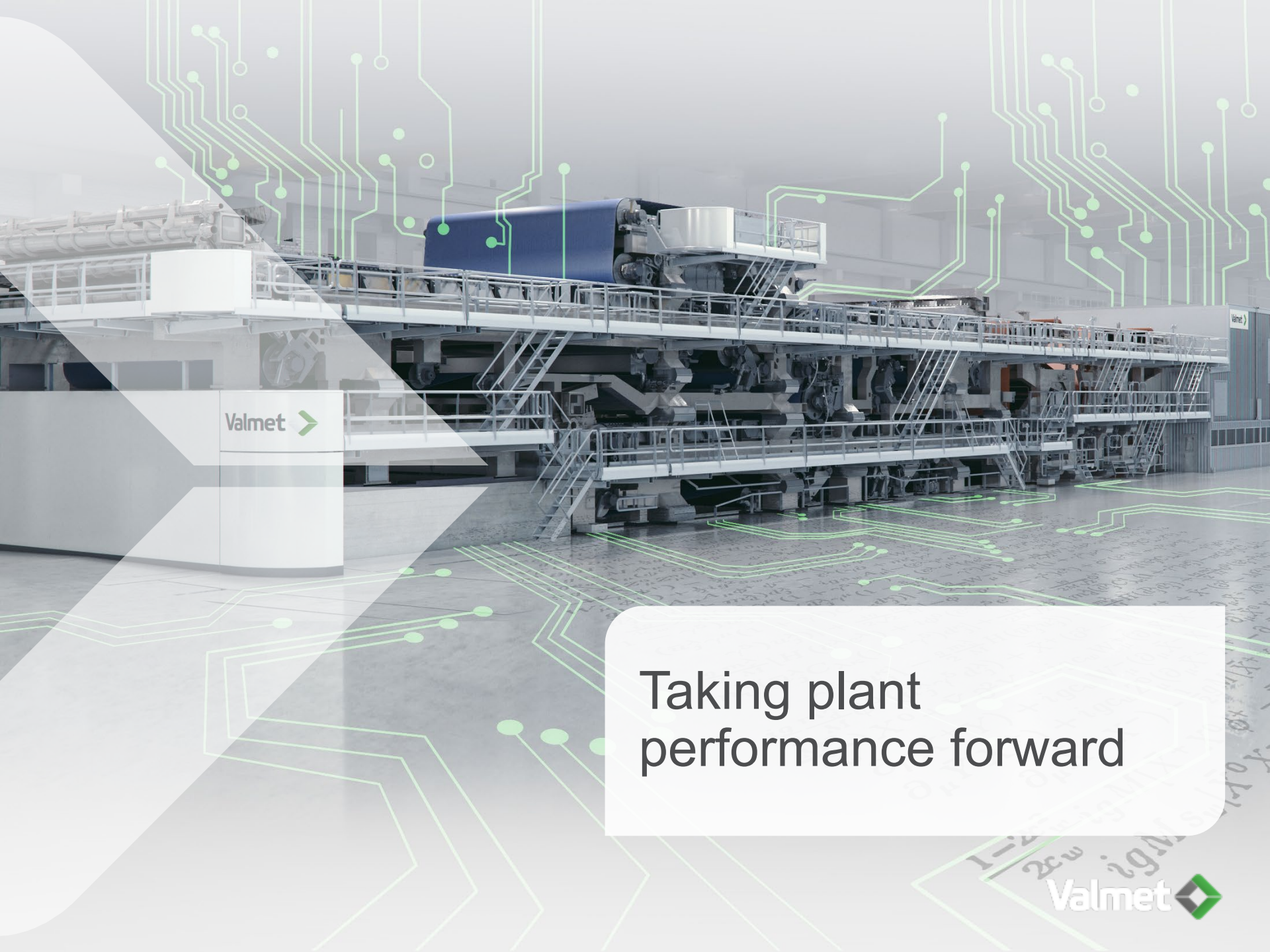
Online connections with customers

90

Performance agreements with remote connections

Ongoing

Co-creation of advanced analytics with customers



Valmet 

Taking plant
performance forward

Valmet 



Leading development in digitalization & applications



Corrugated board specifications are changing

Corrugated industry trends

1. Using of lightweight papers

- High performance papers

2. Packaging end use performance

- Shelf Ready Packaging
- High printing quality

3. Order size is decreasing

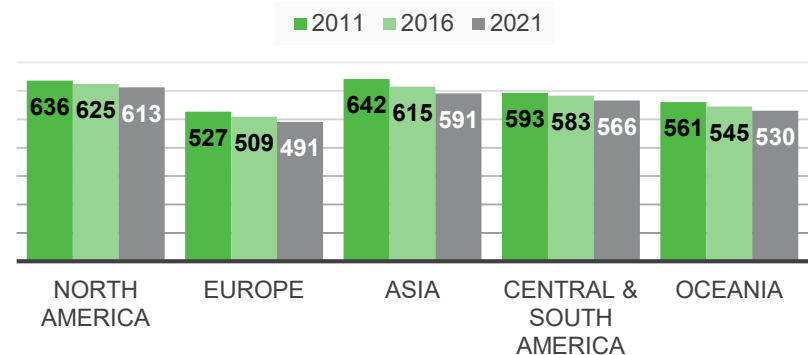
- More grade & paper changes

→ Traditionally all the controls have been done manually

→ **The need for sophisticated automation is growing rapidly**

Average Substance weights of used papers

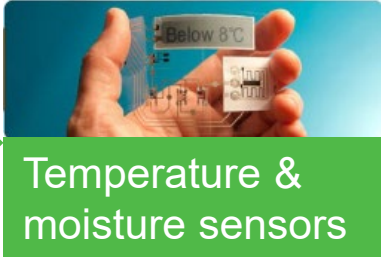
Source: International Corrugated Case association



Traceability – Grow the business through entire supply chain



Paper machine online & laboratory data
Moisture, TSI, TSO, strength, porosity, surface properties etc..



Temperature & moisture sensors



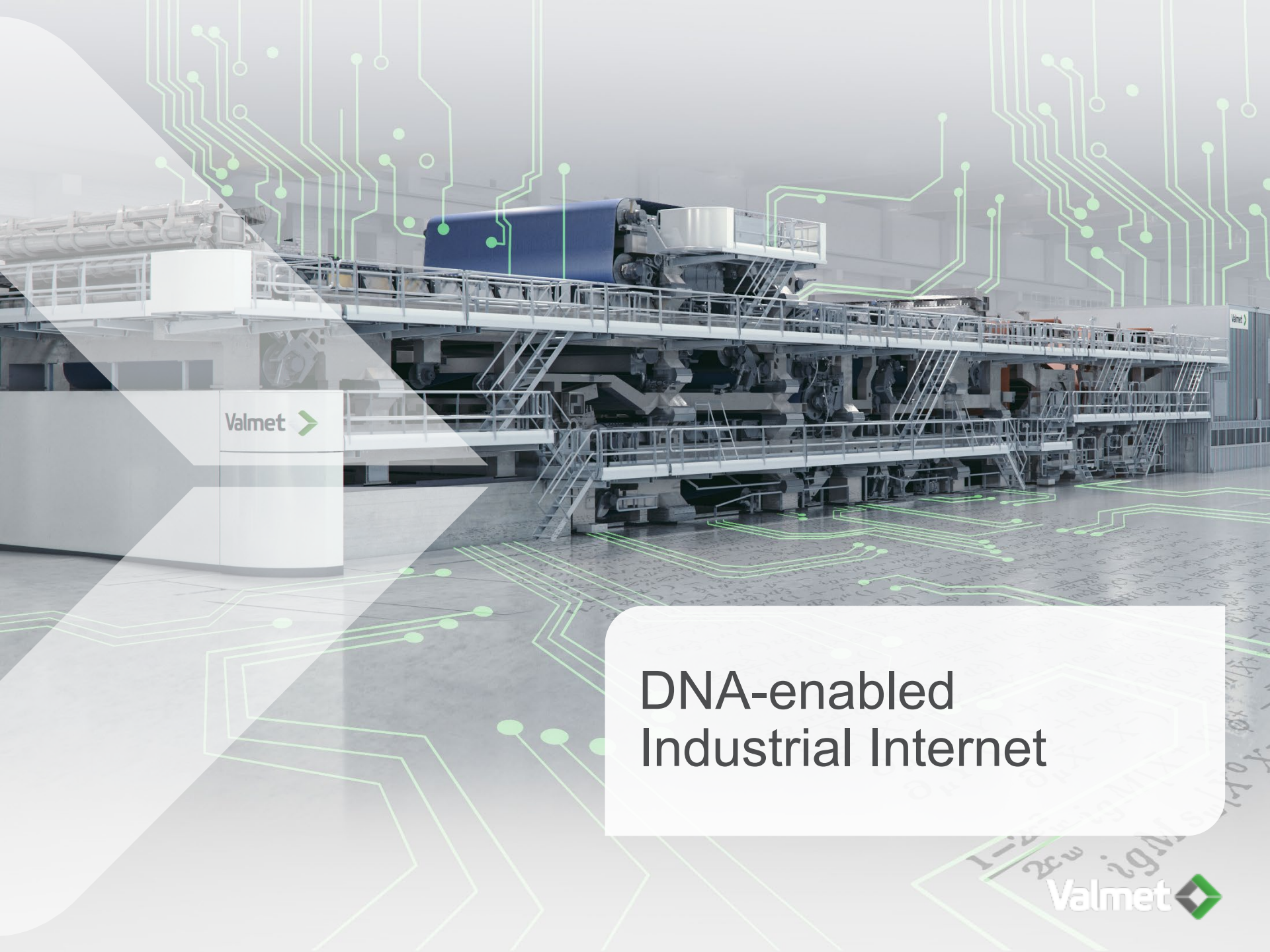
Transporting & storage



Corrugator QCS & PM data utilization



Perfect board and box



Valmet 

DNA-enabled Industrial Internet

Valmet 

Industrial Internet boost our performance agreement business and provides new growth opportunities along moving up toward mill wide optimization



New frontiers for potential value capture

Invest into vertical and selected horizontal use cases via own development and ecosystem initiatives

Capture additional value by connecting data from different plant level and process automation systems

By combining **current offering**, **new digital solutions** and **ecosystem partnering** we can deliver new value adding solutions to our customers **as a service**:

- **Mill / plant wide optimization** – *reduce operating cost, increase output on plant level*
- **Asset Reliability Optimization** – *reduce downtime, optimize maintenance, plan shutdown*
- **Process Performance Optimization** – *reduce operating cost, increase output on process level*

Results – empower our customers to move toward autonomous mill / plant

› Resource efficient

› Flexible in operations

› Clean & safe

› Less dependent on operating location



Key elements of Valmet Industrial Internet



Intelligent, autonomous machines

- Connect Valmet machinery, systems and fleets with advanced sensors, controls and software applications.
- Leverage the embedded intelligence in machinery and critical components for more predictable and more autonomous operations.
- Utilize simulators and digital twins for training and dynamic process simulation to provide information on optimal operation and disturbances.



Advanced applications and mill wide optimization

- Combine physics-based analytics, predictive algorithms, automation and deep domain expertise
- Connect data from different mill or plant systems and create new advanced, data-driven applications
- Incorporate AI to enable assisted decision making
- Empower our customers to move towards more autonomous mills through mill-wide optimization and horizontal value chain collaboration



Valmet Performance Center

- Connect people at work or on the move, any time to support more intelligent design, operations, maintenance and higher service quality and safety.
- Global Performance Center network as Valmet remote service concept to serve our customers faster and more efficiently
- Autonomous Performance Center monitors Valmet's installed base, gets alerts on upcoming disturbances and provides data driven insight to to customers and our own R&D



Valmet Customer Portal

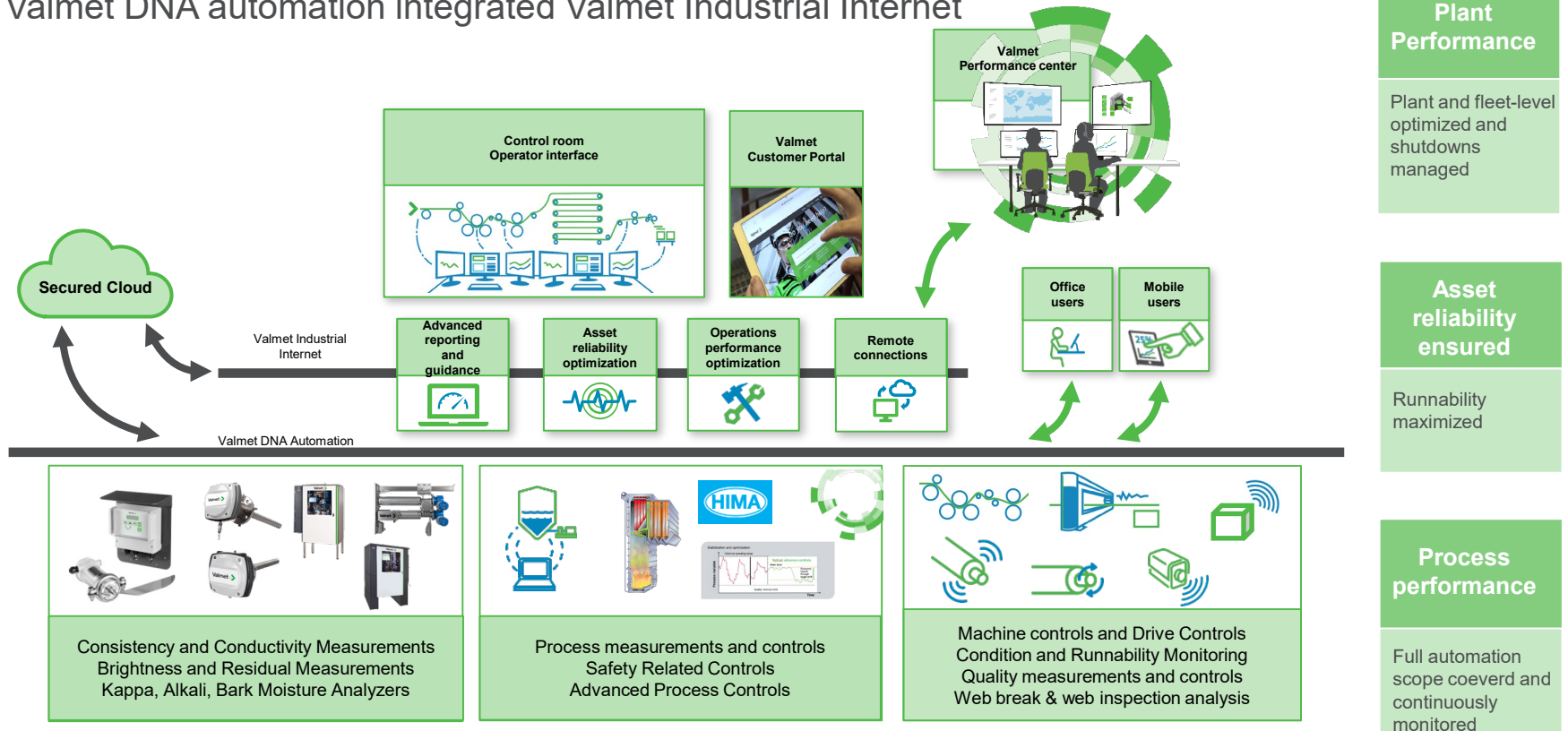
- Realize full benefits of digitalization in customer interaction by engaging customers in continuous dialogue with Valmet through a leading, personalized digital collaboration space
- Follow-up and record customer activity to better understand their needs and to provide a customized service experience.



We empower our customers to move towards autonomous plants through data driven solutions and by collaborating across the value chain

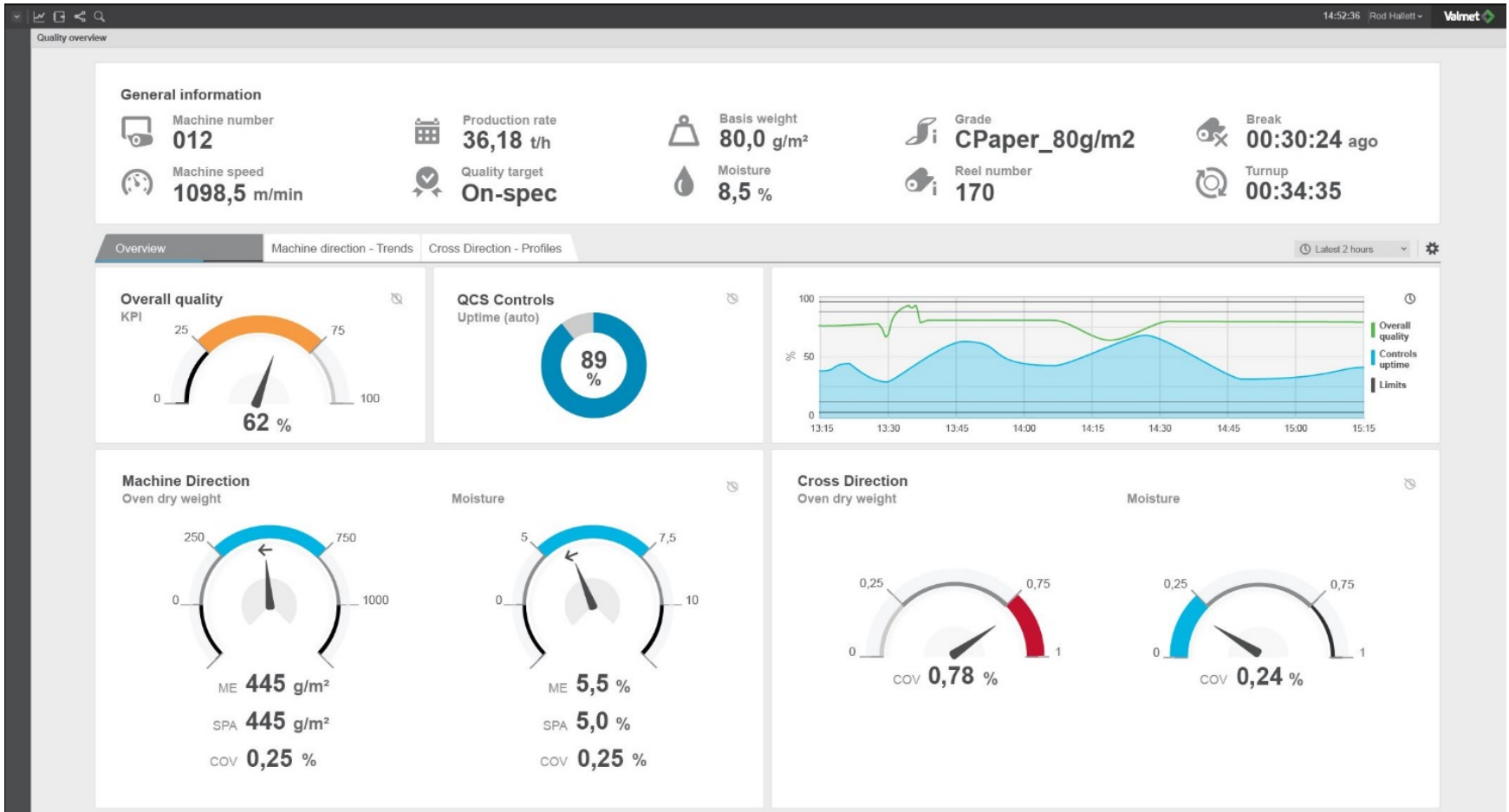
Secured start-up curve and sustainable performance

Valmet DNA automation integrated Valmet Industrial Internet



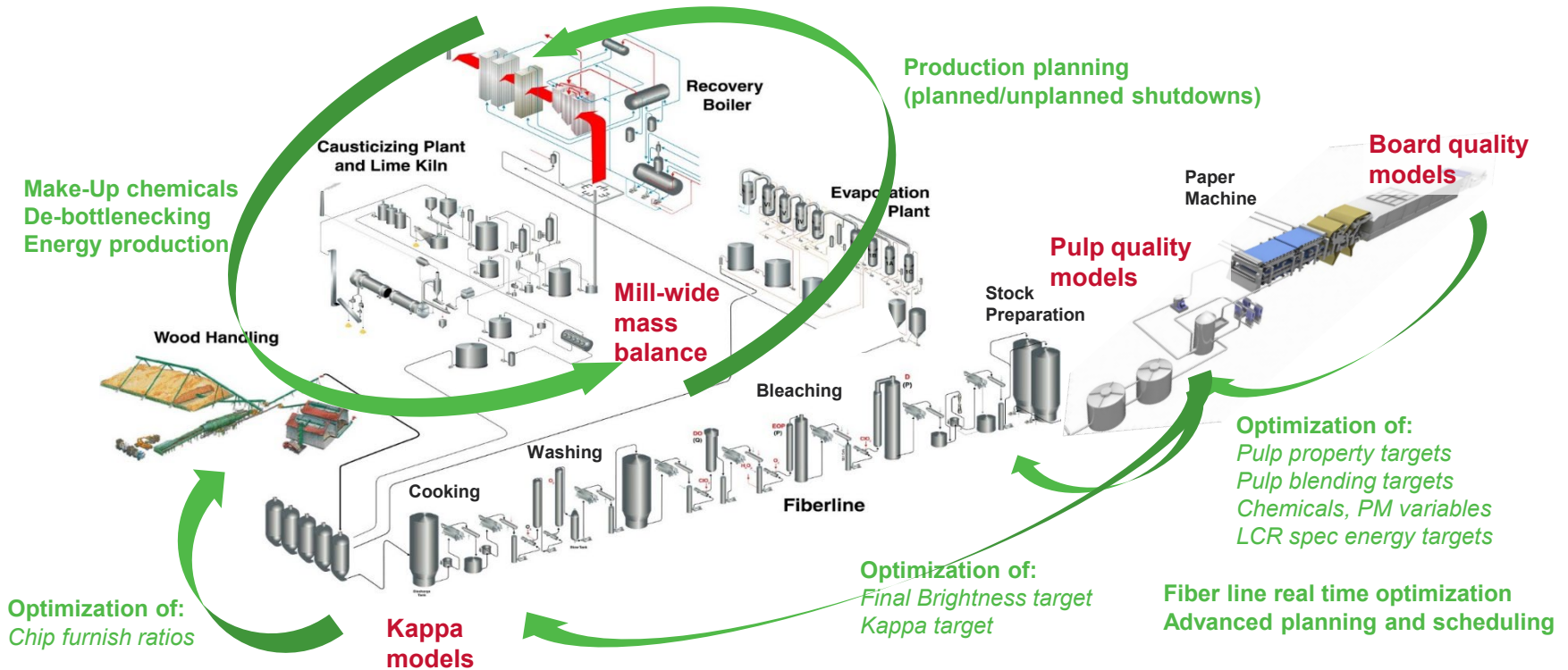
Data Visualization

New view on Quality through new DNA



Mill Wide Optimization

High level process coordination and optimization



Major pulp mill expansion

CMPC Celulose Riograndense, Guaíba II pulp mill, Brazil

- CMPC Guaíba pulp mill second line
 - Annual production capacity 1.3 million tonnes of bleached eucalyptus market pulp
 - Addition to the old fiber line of 0.5 million tonnes
- Valmet delivered technology
 - Cooking plant and fiber line, pulp drying and baling, evaporation, power boiler, recovery boiler, causticizing lime kiln and power boiler
 - Non-condensable gas treatment system
- Valmet delivered mill wide automation system
 - Integrated Valmet DNA automation solution
 - Operator training simulator
 - Analyzers and special measurements
 - Pulp performance solutions
 - Pulp dryers
 - QCS, Profilers, Web Runnability monitoring
 - Baling line quality management



Key technology to bioproduct mill

Metsä Fibre, Äänekoski, Finland

- New bioproduct mill with 1.3 million tonnes pulp production
 - EUR 1.2 billion investment is the largest investment of the forest industry in Finland
- Valmet delivers key technology
 - Recovery boiler, pulp drying line, gasification plant, lime kiln
 - Lime kiln fueled by biogas from gasification plant
 - High power features in recovery boiler
→ mill is able to sell more bioelectricity to the market compared to own consumption
- Valmet delivered mill wide automation system
 - Integrated Valmet DNA automation solution
 - Mill wide Information management system
 - Mill wide condition monitoring
 - Analyzers and special measurements
 - Pulp dryers
 - QCS, Profilers, Web Runnability monitoring



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Summary

Achievements

- Strengthened position as #1 supplier in Pulp and Paper industry
- New products launched successfully to market
- Growth in new customer segments

700

Customer service engineers
globally

NPS = 68

Actions to ensure growth

- Continue focus on R&D
- Expansion to new industries to be further strengthened
- Continue capability development
- Enforce leadership in industrial internet applications



net 

Valmet 

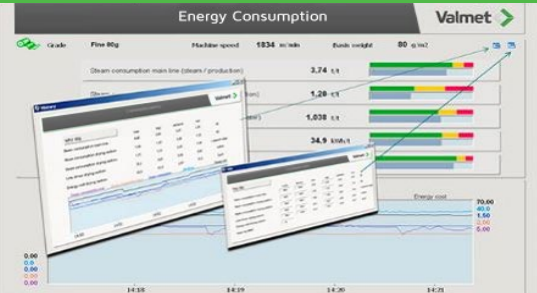
Valmet Industrial Internet

Dialogue with data



Key elements of Valmet Industrial Internet

Industrial Internet applications



From analytical applications for reliability and performance to Advanced Process Controls, information management and process simulators

Valmet Performance Center



Provides remote support, monitoring and data analysis and access to Valmet's expert network

Valmet Customer Portal



A digital, personalized collaboration space between you and Valmet

Intelligent machines and automation



A solid data source for Industrial Internet solutions

Solution ecosystem



Brings leading industry players and innovative start-ups together to co-create new value-adding data driven services

Valmet Industrial Internet solutions



Applications and services

- Advanced reporting and guidance
- Asset reliability optimization
- Operations performance optimization
- Valmet Performance Center

Solution ecosystem

brings leading industry players and innovative start-ups together to co-create new value-adding applications and services.

Valmet Performance Centers serve customers globally



North America
Atlanta

South America
Curitiba

Pulp, Sundsvall, Sweden
Tissue, Karlstad, Sweden

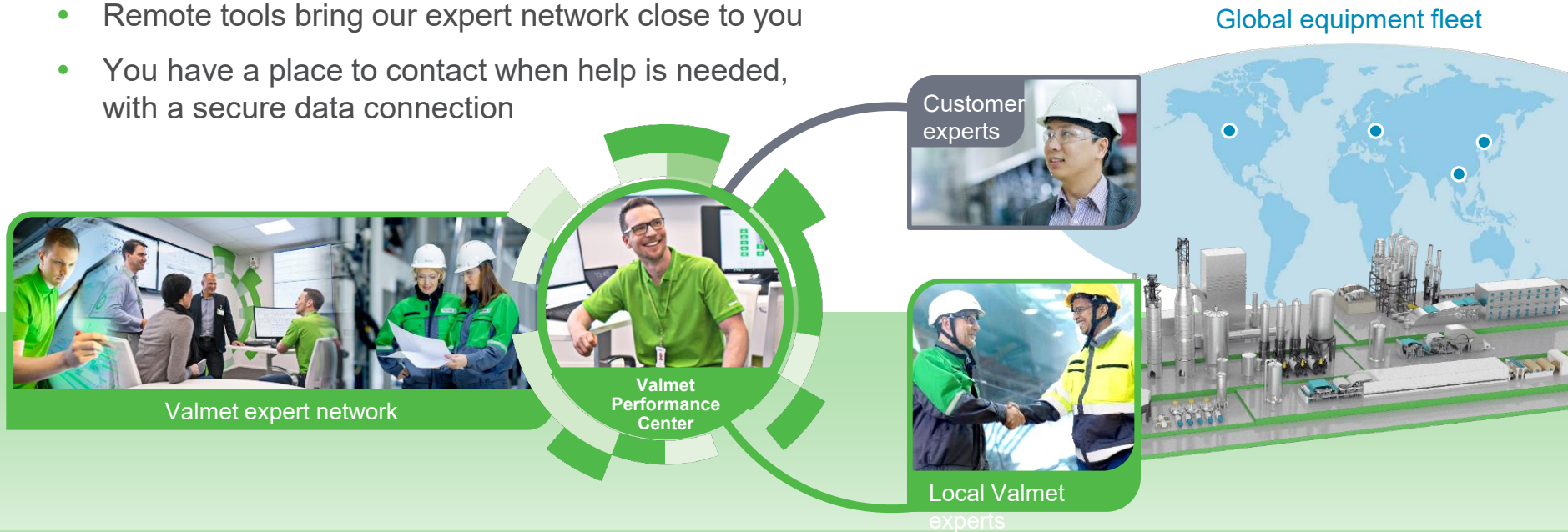
Energy, Tampere, Finland
Automation, Tampere, Finland
Board & Paper, Jyväskylä, Finland

China
Jiading

- 5 industry specific performance centers
- 3 regional performance center hubs

Valmet Performance Center - Easy access to the expertise you need

- Remote tools bring our expert network close to you
- You have a place to contact when help is needed, with a secure data connection



Services from Valmet Performance Center:

Remote monitoring and optimization

On-demand expert support

Analytics as a service

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