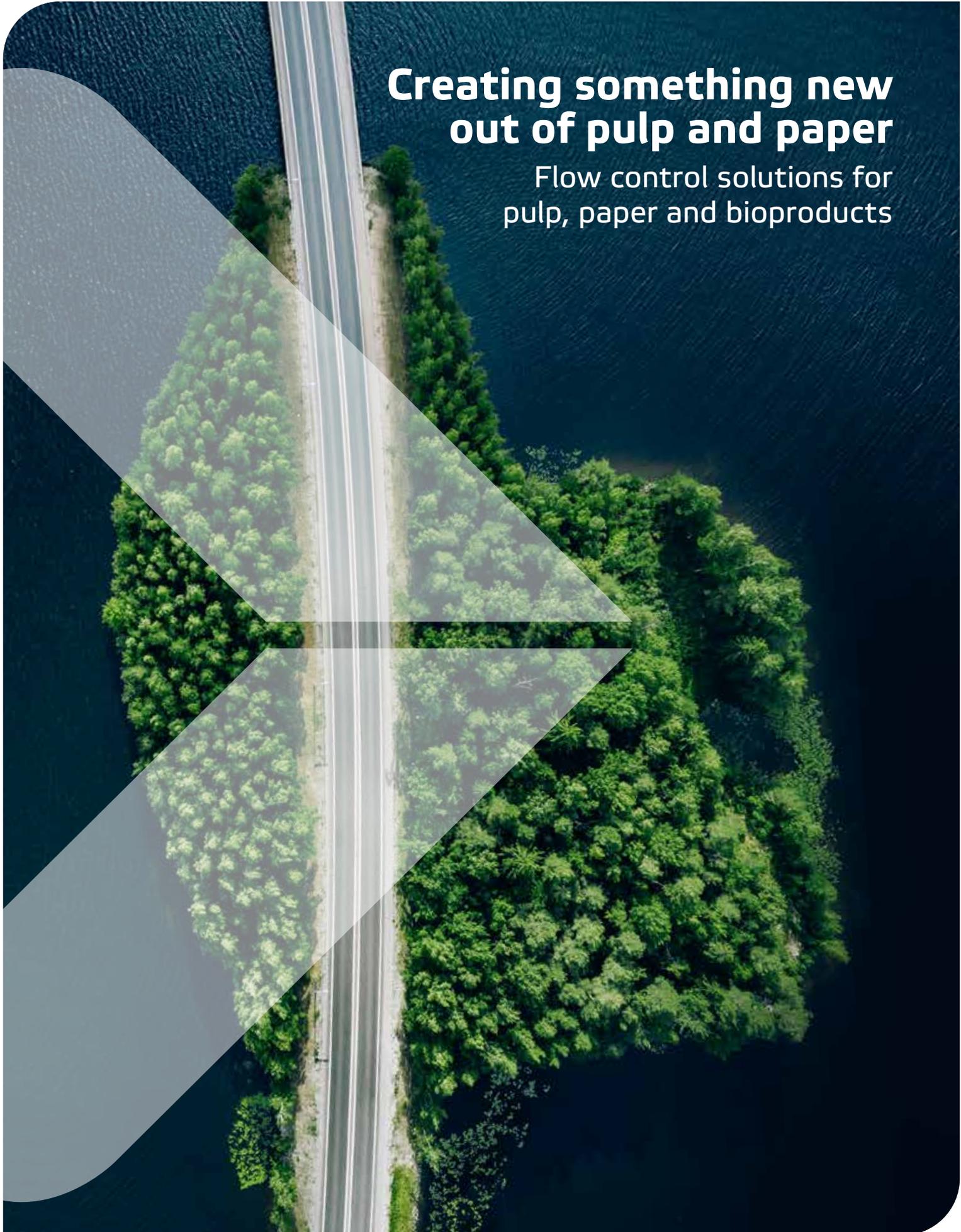
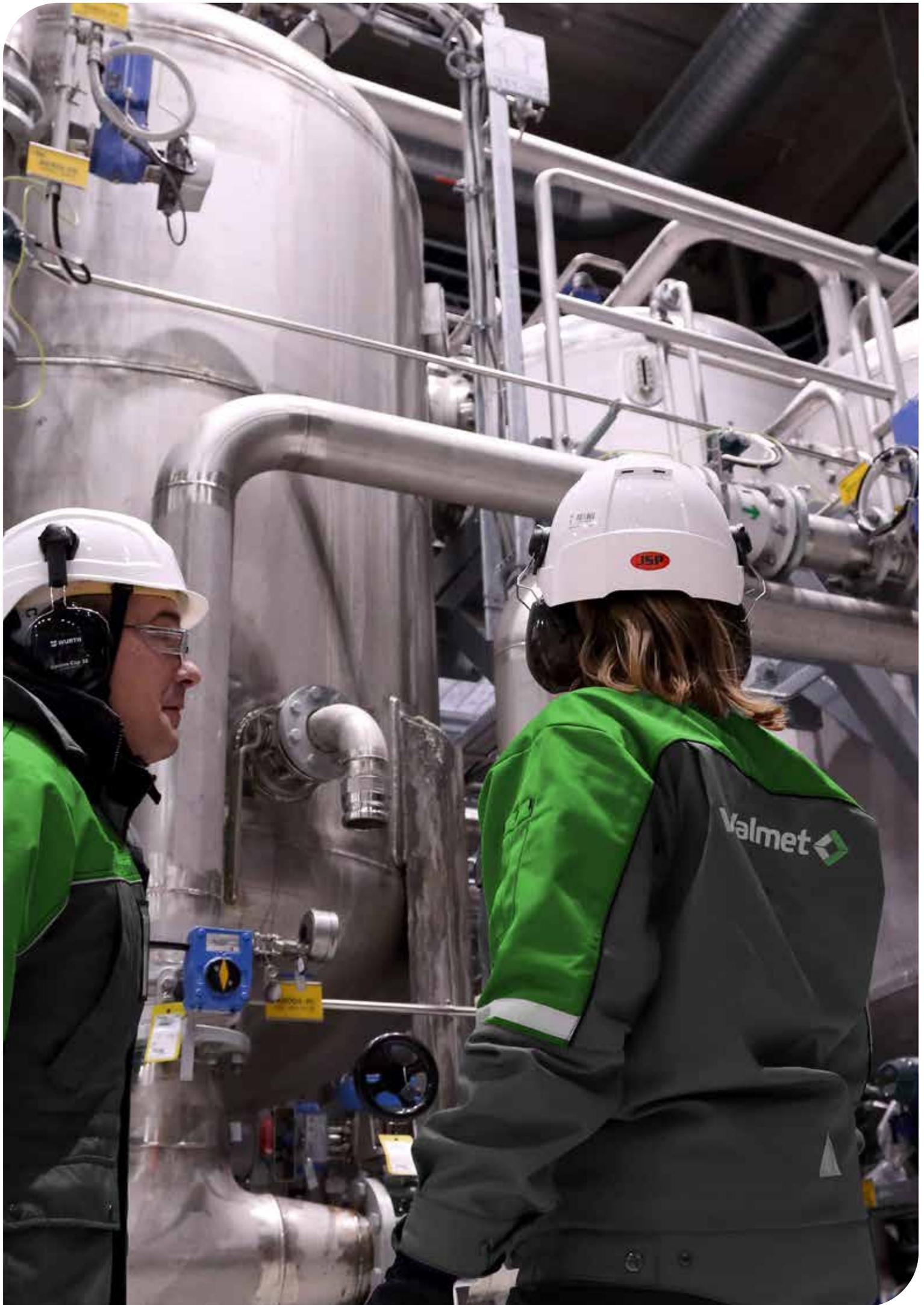


Creating something new out of pulp and paper

Flow control solutions for
pulp, paper and bioproducts







Creating something new out of pulp and paper

The rapidly evolving pulp and paper industry is being reinvented to help create profitable and sustainable success. Through progressive thinking, creative design and solid manufacturing expertise, we are helping drive increasingly intelligent processes towards improved efficiency, reliability and environmental performance.

Global megatrends are transforming the pulp and paper industry as we know it. While demand for traditional printing and writing paper may have declined, thanks to steady population growth and the explosion of online shopping and international shipping of packaged commodities, the demand for tissue and board are pushing overall demand up every year.

Concerns over our environment are major drivers for the development of more efficient production processes. They are also one of the reasons behind the emergence of new ecological wood-based bio-products, which in many cases are helping replace materials such as single-use plastics.

For an industry that is concentrated on achieving improved efficiency across the board – process performance, product quality, resource efficiency, energy efficiency, environmental performance – we offer a comprehensive portfolio of valves products accompanied by service expertise and the latest digital tools, all aimed at helping customers make more with less.

Megatrends driving renewal

A resource-efficient and clean world

Climate change, environmental awareness and resource scarcity are driving the need to improve resource efficiency and reduce emissions.

Digitalization and new technologies

Digitalization, automatization and high-impact new technologies are driving efficiency and new business models.

Urban, responsible and global consumers

Urbanization, rising living standards, changing demographics, and globalization are driving changes in consumer behavior and our customers' demand.

Partnership for industry renewal

Valmet is committed to helping manufacturers meet growing and changing demands and grab a hold of the opportunities presented by a wide range of new emerging bioproducts.



- Pulp
- Paper
- Board
- Tissue
- Lignin
- Textile
- Biogas
- Biofuel
- Bioenergy
- Biocomposites
- Biochemicals

Renewal requires new approaches and tools

Digitalization didn't kill the pulp and paper industry. In the hands of an experienced partner, it provides the tools needed to make the most of your process. Traditional pulp and paper processes, just like the many new bioproducts processes, can be improved by intelligent valves and real-time data.

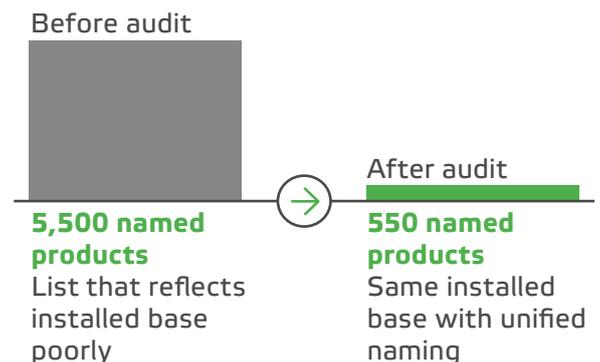
Reducing project time with digital tools

The service and added value we can bring to the table early on in the mill planning phases is based on our expertise and digital tools designed to help collect and utilize accurate data. The right digital tools can help significantly reduce the planning and engineering time required, while ensuring a process running with the best possible valves for the job.



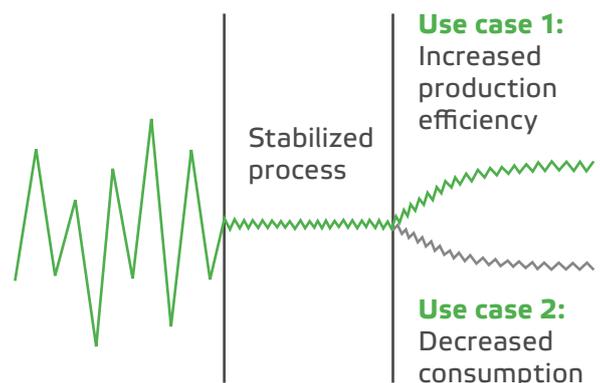
Improving installed assets' data management

Data integrity and streamlined data content for installed assets' data help improve the economical performance of mill maintenance operations. The quality and availability of data translates directly into savings in terms of time and money spent on spare parts and maintenance. The customer's own data and each delivered project's valve data is organized and stored into our installed base database for later utilization.



Improving performance based on real-time data

Over a mill's lifecycle, optimizing process performance based on real-time data can yield tangible results in terms of profitability. More stable flow characteristics ensure process efficiency and the even and predictable quality of the output. Accurate process control data also enables the effective planning of predictive maintenance operations, reducing the risks of valve failure and expensive unplanned shutdowns.



Valmet Customer Portal is our digital platform for collaboration. Through the portal we provide prioritized service recommendations, live maintenance recommendations and fast and easy spare parts ordering. You can also access product and installed base documentation, helping reduce wasted stock, plan efficient shutdowns or even reduce startup times for new plants. Contacting our experts through out Valmet, directly through the portal is made easy for you. Valmet Industrial Internet data-driven applications and services enable optimization of manufacturing cost, production quality and productivity mill wide. The applications bring the right insights and advice at the right time, from the field to the operators and to the managers alike.



Sustainability and profit go hand-in-hand

Paying attention to the details and making the right valve selections can make a difference in terms of business and environmental performance at the same time.

Intelligent control valves help optimize the flow of materials throughout the modern bioproduct mill. A high-quality process consumes less raw materials and optimizes energy consumption. These process attributes achievable with our valves save both money and the environment. Sustainability is not just something that consumers are calling for, it is something we have made a part of our agenda for today and the future.

We also provide high-quality valve solutions for power generation at modern bioproduct mills. To improve environmental performance and save on energy costs, many mills are turning process waste into bioenergy used to run their entire mill operations. These new energy self-sufficient mills are taking the pulp, paper and bioproducts industry a step closer to independence from fossil-based energy.

When it comes to reducing fugitive emissions, the main focus is on safety and sustainability. Ever-tightening regulations are rightfully calling for improved environmental performance, especially when it comes to potentially volatile and harmful gasses. Each of our valve constructions is designed and built for optimal tightness and sealing properties and tested thoroughly before it is shipped out. A reduction in fugitive emissions also means a reduction in lost flow media and energy wastage.

Comprehensive offering

We offer our customers an industry-leading portfolio of valve products designed and proven to work in pulp, paper and bioproduct processes. Our dedicated expert services and digital tools are what make our offering truly unique and complete.

Control valves

Proven designs for rotary and linear control service

- Improving uptime through reliability and serviceability
- Improving process accuracy (variability) and efficiency
- Ensuring a safe working environment
- Tested and certified assemblies through modularity

On/off valves

High-performance designs for rotary and linear on/off service

- Improving process safety and reliability
- Enabling faster service and maintenance
- Preventing major damage and disruptions
- Tested and certified assemblies through modularity
- Performance verified with full valve assembly testing

Modular smart devices

Intelligence for mill operation and maintenance

- Quick setup for easy start and maintenance
- Smart diagnostics for improved performance
- Proven open system interoperability
- Predictive functionalities for service planning and digital networking

Expert services

Good practices and proven formulas for success born in pulp and paper

- Digitalization improves efficiency during engineering and erection stages
- Solutions for predictive maintenance to secure high operational process performance
- Solutions to secure spare parts availability and optimize capital tied in inventory

Automation and digitalization ensure accurate and efficient service across the solution lifecycle

Industry-leading expertise and digital tools:

- Predictive maintenance
- Performance monitoring
- Installation and commissioning
- Valve selection and sizing
- Spare part inventory
- Planned shutdowns
- Valve replacement and recycling

Application support covers:

- Certification: Documented according to global standards
- HSE features: According to industry requirements
- Interoperability: Work with all common protocols (e.g. HART, FDT, EDD or FDI)
- Engineering: Nelprof valve sizing and selection
- Service: On- and off-line tools, asset management solutions

Standards and certifications



Flow control solutions for pulp, paper and bioproducts

We offer our customers an industry-leading portfolio of valve products designed and proven to work in pulp, paper and bioproduct processes.

Ball valves

| Neles™ ball valves – Flanged ball valves optimized for demanding applications. Build to stand. | | | | | | | |
|---|-----------------------------------|---|---|--|---|-------------------------|-------|
| Product | Series | Design | Specifications | | Service | Bulletin | |
| Neles ball valves  | M-series Q-elements (noise) | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | Size: Pressure: | DN25 – 600 (1" – 24") EN PN10 – 40, ASME 150 – 300, JIS 10K – 20K | High capacity design for harsh service in bioproducts manufacturing, including biochemicals and biodiesel | 1M120, 1M220 | |
| | E-series ceramic | Lime slurries, coaters | Size: | DN25 – 200 (1" – 8") | | Paper, board, pulp | 1E220 |
| | PZ-series Capping valve | Chip feed | Size: | DN500 & 600 (20" & 30") | | Batch digester for pulp | 8PZ20 |
| | M1/M2-series Pocket valve | Sand, scrap catch | Size: | DN150 & 200 (6" & 8") | | Pulp mill, fibre line | 8PF20 |
| Jamesbury™ ball valves – Flanged ball valves for high flow capacity and reliability | | | | | | | |
| Product | Series | Service | Specifications | | Design | Bulletin | |
| Jamesbury ball valves  | 7000-series Standard port | Applications up to 260 °C / 500 °F High performance Xtreme™ seat materials Low emission stem seals | Size: Pressure: Body: | DN15 – 500 (½" – 20") ASME 150 & 300 Carbon steel, 316SS, Alloy 20, Monel, Hastelloy C | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | B107-1 | |
| | 9000-series Full port | High consistency pulp | Size: Pressure: Body: | DN15 – 600 (½" – 24") ASME 150 & 300 Carbon steel, 316SS, Alloy 20, Monel, Hastelloy C | | B107-2 | |
| Jamesbury ball valves  | 4000-series | Bubble tight shut off | Standard port: Full port: Pressure: Body: Ball/stem: | DN15 – 65 (½" – 2½") DN15 – 50 (½" – 2") ASME 800 Carbon steel, 316 stainless steel Carbon steel, 316 stainless steel, Monel, Hastelloy C | | B105-1 | |
| Neles Easyflow™ 3-piece floating ball valve | | | | | | | |
| Product | Series | Design | Specifications | | Service | Bulletin | |
| Neles Easyflow floating ball valves  | J4-series | Full and reduced bore, threaded, socket-weld, or butt-weld | Size: Pressure: | DN15 – 50 (½" – 2") ASME 800 | Bubble-tight shut-off through pressure and temperature cycles | B137-1EN | |

Butterfly valves

Neles butterfly valves – Triple eccentric disc valves for economical and high performance

| Product | Series | Design | Specifications | Service | Bulletin |
|--|--------------------------------|---|--|---|---|
| Neles butterfly valves  | L-series S-discs (noise) | Economical performance for control and shut-off service in bioproduction lines: TM, PM, BM and pulp | Size: DN80 – 1400 (3" – 88") Pressure: ASME 150 – 600 / PN10 – 50 Temperature: -200 °C to +600 °C / -330 °F to +1110 °F | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | 2LBF20, 2L121, 2L1220, 2LW22, 2LW23, 2L622, 2L623 |

Jamesbury butterfly valves – High-performance valve in wafer or single-flanged lugged designs

| Product | Series | Design | Specifications | Service | Bulletin |
|--|------------|---|--|---|----------|
| Jamesbury butterfly valves  | 800-series | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | Pressure: ASME 150 & 300 Size: Wafer: DN65 – 750 (2½ – 30") Body: Lugged: DN65 – 1500 (2½" – 60") Seat: Teflon®, Xtreme, UHMV, 316SS/PTFE, 316SS/XT | Economical performance for control and shut-off service in all soft seated applications | W160-1 |

Neles Easyflow butterfly valves – Resilient seated butterfly valves

| Product | Series | Design | Specifications | Service | Bulletin |
|---|-----------|---|---|--|----------|
| Neles Easyflow butterfly valves  | JA-series | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | Size: DN50 – 600 (2" – 24") Pressure: PN10, PN16, ASME 150 Body: GGG40 ductile iron, GG25 cast iron, WCB carbon steel, CF8M stainless steel Seat: Ethylene-Propylene (EPDM), Nitrile (Buna-N, NBR), Fluorocarbon (FKM), Silicone (VMQ) | Economical performance in all soft seated applications Water and waste water Sewage treatment Other water and utility services in mill operations | W152-1 |

Globe valves

Neles globe valves – Superior accuracy

| Product | Series | Design | Specifications | Service | Bulletin |
|--|---------------------------------|--|--|---|---|
| Neles globe valves  | G-series T pattern globe | Top-guided, cage-guided, anti-cavitation & noise abatement, Tendril™, Omega™ trims and flanged & welded ends | Size: DN 15 - 900 (½" – 36") Pressure: ASME 150 – 2500 Temperature: -196 to +593 °C | Power and recovery boiler, chemical treatment application | 4GV20, 4GV21, 4GV24, 4GV25, 4GV23 |
| | A-series Angle pattern globe | | | | |
| | ZX-series Rotary globe | Very low capacity controls | Size: DN15 – 100 (½" – 4") Pressure: PN40 – 250 / ASME 150 – 1500 | Rotary trim, trim sets | 1RG20 |

Segment valves

Neles segment valves – High control performance and wide rangeability

| Product | Series | Design | Specifications | Service | Bulletin |
|--|---|--|---|--|---------------|
| Neles segment valves  | R-series Cv-element Q-elements (noise) On-off segment valves | Pre-engineered valve types and materials according to industry standards for control | Size: DN25 – 800 (1" – 32") Pressure: ASME 150 – 600, PN10 – 100 Seat: DIN, JIS-ratings Metal and soft seated | Benchmark control performance for bio-processes Constant gain over wide control range for industry specific needs | 3R21, 3R24 |
| | R2-series | MC-pumping control | Size: DN50 – 500 (2" – 20") | High consistency pulp | 3R22 |
| | NelesAce-series | Quick grade change | Size: DN25 – 500 (1" – 20") | Basis weight for paper | 8ACE21 |

Pinch valves

| Flowrox™ pinch valves | | | | | |
|--|--------------------------------------|---|--|--|----------|
| Product | Series | Design | Specifications | Service | Bulletin |
| Flowrox pinch valves  | PVE-series Enclosed body | The enclosed body valve is the most common body type for Flowrox pinch valves. Its enclosed design prevents premature sleeve deterioration and protects the sleeve from the environment, making it extremely safe to operate. | Size: DN25 – 600 Pressure: ASME 1" – 24" Pressure range: 0 – 100 bar Bigger sizes upon request | Flowrox pinch valves for shut off and control applications involving abrasive or corrosive slurries, powders or granular substances. The rubber sleeve is the only wearing part. | 4PV20 |
| Flowrox pinch valves  | PVE/S-series Enclosed/sealed body | PVE/S includes extra stem and body seals to provide a secondary containment of the fluid in the valve and to prevent leakage to the outside environment from the valve body. | | | 4PV20 |

Pumps

| Peristaltic pumps | | | | | |
|--|--------------|---|--|---|----------|
| Product | Series | Design | Specifications | Service | Bulletin |
| Flowrox metering pumps  | FXM-series | Accurate metering: Positive displacement provides same output on every cycle | Size: 2 and 3 Volume: 0 – 0,84 m ³ /h Pressure: Up to 8,6 bar / 124 psi Temperature: Up to 46 °C / 115 °F Suction lift: 0 – 8 m / 0 – 26 ft capability | Chemical dosing applications that require accurate metering | 4FXM20 |
| Flowrox hose pumps  | LPP-D-series | Flowrox LPP pumps incorporate an advanced rolling design, which eliminates friction, maximizes hose life, and lowers energy consumption | Size: DN15, 20, 25; LPP-D½", ¾", 1" Volume: 0,1 – 2 m ³ /h / 0 – 7.9 gpm Pressure: 7,5 or 16 bar / 108 or 232 psi Solids: Up to 80% Temperature: Up to 95 °C / 203 °F Particle size: 25% from DN size Suction lift: 0 – 8 m / 0 – 26 ft capability | Chemical dosing applications | 4LPPD20 |

| Progressive cavity pumps | | | | | |
|--|---|--|---|---|--|
| Product | Series | Design | Specifications | Service | |
| Flowrox progressive cavity pumps  | E-series Global: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C / North America: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C | Advanced spiral technology, 2/3 rotor geometry, combination of an elliptic rotor and a stator with even wall thickness | Size: 2/10, 4/10, 10/10, 20/10, 35/10, 70/10, 150/10, 250/10 Volume: 0 – 228 m ³ /h / 0 – 1000 gpm Pressure: Up to 10 bar / 150 psi Temperature: Up to 70 °C / 158 °F | Flooded suction duties e.g. paper coating and paste pumping | |
| Flowrox progressive cavity pumps  | EL-series Global: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C / North America: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C | Advanced spiral technology and 2/3 elliptic rotor geometry | Size: 50/6, 100/6, 200/6, 330/6 Volume: 0 – 188 m ³ /h / 0 – 830 gpm Pressure: Up to 6 bar / 87 psi Temperature: Up to 70 °C / 158 °F | Flooded suction duties e.g. municipal waste pumping | |
| Flowrox progressive cavity pumps  | D-series Global: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C / North America: FPC-E35 / 10-80-2-0-0-0BN-NBR-GP-C | 1/2 rotor geometry and compact size | Size: 004/12, 010/12, 025/12, 075/12 Volume: 0 – 0,75 m ³ /h / 0 – 6.6 gpm Pressure: Up to 12 bar / 175 psi Temperature: Up to 70 °C / 158 °F | Flooded suction duties e.g. flocculant and chemical dosing | |

Knife gate valves

| Neles knife gate valves | | | | | | |
|--|---|---|--|---|----------|--|
| Product | Series | Design | Specifications | Service | Bulletin | |
| Neles wafer-design knife gate valves  | KA-series Uni-directional | Pre-engineered valve types and materials according to industry standards for control, on/off and manual use | Pressure: DN50 – 700 / 2" – 28" Size: PN10, ASME 150 Body: Stainless steel / CF8M | Knife gate valve with soft sealing is suitable for various process applications Suitable for liquids that contain a maximum of 4% suspended solids Pulp and paper Sewage and water treatment | 4KA20 | |
| | KAB-series Bi-directional | | | | 4KAB20 | |
| | KL-series Bi-directional through going | | | | 4KL20 | |

Actuators

| Modulating control and on-off service for double and single acting | | | | | | |
|--|-----------------|---|--|--|----------------|--|
| Product | Series | Design | Specifications | Service | Bulletin | |
| Neles actuators  | B1-series | Pneumatic rotary piston type cylinder actuator, spring return and double acting model | Torque output: 40 – 100 000 Nm / 30 – 73 800 ft-lbs Temperature: -55 to +120 °C / -67 to +250 °F | High performance on/off and modulating control actuator for ball, butterfly and segment valves | 6B20 | |
| Neles actuators  | N1-series | Pneumatic rotary scotch yoke type actuator, spring return and double acting model | Torque output: 25 – 218 765 Nm / 18 – 161 352 ft-lbs Temperature: -20 to +125 °C / -4 to +257 °F | High performance on/off, ESD and modulating control actuator for ball and butterfly valves | 6N120 | |
| Neles actuators  | VD-series | Pneumatic linear spring diaphragm actuator, spring return model | Thrust output: 1890 – 22 800 Nm / 424 – 5125 ft-lbs Temperature: -55 to +85 °C / -67 to +185 °F | High precision actuator for modulating control and on/off actuator for globe valves | 6DA20 | |
| | VB- & VC-series | Pneumatic linear spring piston type actuator, spring return and double acting model | Thrust output (VB): 16 823 – 78 160 N / 3781 – 17571 lbs Thrust output (VC): 27 480 – 264 860 N / 6 177 – 59 542 lbs Temperature (VB): -55 to +120 °C / -67 to +250 °F Temperature (VC): -30 to +85 °C / -22 to +185 °F | High precision modulating control and on/off actuator for globe valves | 6VB20 6CA20 | |
| Spring-diaphragm rotary actuator | | | | | | |
| Product | Series | Design | Specifications | Service | Bulletin | |
| Jamesbury Quadra-Powr™ actuator  | QPX-series | Pneumatic rotary spring diaphragm actuator, spring return | Torque output: 15 – 796 Nm / 11 – 587 ft-lbs Temperature: -30 to +66 °C / -20 to +150 °F | High performance on/off and modulating control actuator for segment, ball and butterfly valves | A110-4 | |

Actuators

| Rack and pinion actuators – Compact pneumatic performance | | | | | |
|--|---|--|--|--|----------|
| Product | Series | Design | Specifications | Service | Bulletin |
| Neles Easyflow actuators  | RNP-series | Pneumatic rotary rack and pinion actuator, spring return and double acting model | Torque output: 4 – 5 005 Nm / 2.9 – 3 691 ft-lbs Temperature: -60 to +125 °C / -76 to +257 °F | Economical on/off and modulating control actuator for segment, ball and butterfly valves | A112-1 |
| Jamesbury Valv-Powr™ actuators  | VPVL-series (Only for North-American market) | Pneumatic rotary rack and pinion actuator, spring return and double acting model | Torque output: 3.2 – 7 187 Nm / 2.5 – 5 300 ft-lbs Temperature: -51 to +150 °C / -60 to +302 °F | Economical on/off and modulating control actuator for segment, ball and butterfly valves | A111-5 |

Valve controllers

| Valve controllers – Smart controls and monitoring for optimal valve performance | | | | | |
|---|------------------------------------|--|--|---|-------------------------------|
| Product | Series | Design | Specifications | Service | Bulletin |
| Neles valve controls  | Neles™ NDX™ Neles™ ND9000™ | Single and double action, linear and rotary operation for control and on/off service, with open integration e.g. FDT, EDD or FDI | Communication: HART® 4 – 20 mA smart-functions, Profibus (ND9000) | Leading control performance for bio-processes Modular design with add on functionalities | 7NDX22, 7NDX23, 7ND9021 |
| Stonel™ on/off valve monitoring  | Axiom™ valve controller, AN/ANX | For ¼-turn pneumatically actuated valves Advanced explosionproof, nonincendive or intrinsically safe | Switch type: Solid state sensors, NAMUR Communication: DeviceNet, AS-Interface (wireless capabilities optional) Temperature: -40 to +80 °C / -40 to +176 °F | Extremely durable and well suited for use in hazardous, corrosive, heavy wash-down environments where internal/integrated solenoid is desired Universal voltage solenoid | 7AN21, 7STWL70 |
| Stonel on/off valve monitoring  | Quartz™ valve monitor, QX/QN/QC/QG | For ¼-turn pneumatically actuated or manually operated valves Explosionproof, nonincendive, intrinsically safe or general purpose | Switch type: Solid state sensors, reed, NAMUR, mechanical Communication: DeviceNet, AS-Interface Temperature: -40 to +80 °C / -40 to +176 °F (QX/QN/QG); -55 to +80 °C / -67 to +176 °F (QC) | Extremely durable and well suited for use in hazardous, corrosive, heavy washdown environments 3rd party solenoids | 7QZ22 |
| Neles Easyflow limit switch  | K-series | For ¼-turn pneumatically actuated or manually operated valves Explosionproof or general purpose | Switch type: NAMUR, mechanical contact, inductive proximity, reed, proximity Temperature: General: -20 °C to +80 °C / -4 to +176 °F Cold: -40 °C to +80 °C / -40 to +176 °F High: -20 °C to +100 °C / -4 to +212 °F | Compact size, fast commissioning, secure wiring Aluminum, stainless steel, or polycarbonate | S100-1 |



Valmet's professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.

Valmet Flow Control Oy

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Valmet supplies board, tissue and paper machinery, equipment and machine rebuilds for the board, tissue and paper industries. The solutions are designed to be fit-for-purpose, focusing on energy and raw material savings, efficiency, flexibility and safety. We also supply complete pulp mills and process equipment for chemical and mechanical pulp production, as well as biomass- and waste-fueled power plants, boiler islands and related environmental systems.

In addition to this, we also provide future-proof automation solutions for the board and paper production. The industry-leading distributed control system (DCS), quality control system (QCS), analyzers and measurements continuously improve your process performance while achieving savings in fibers, chemicals, and energy. With our stabilizing controls and optimization solutions we ensure your performance from stock preparation and headbox to forming, pressing, drying, sizing, coating, reeling, and winding.

