Valmet FORWARD

The industry bench-mark for pumping

Flowrox™ pump solutions


MAXLAST 21on
FLOWROX
FLOWROX

We exist to make your life easier

We deliver advanced pumping solutions for the most demanding process conditions. Our story started over 40 years ago making us industry experts on flow control. Over the years we have delivered over 150,000 products worldwide. Our unique pump design saves energy and water increasing your process availability and reducing total cost of ownership.

Product portfolio

1977	Pinch valves
2002	Peristaltic pumps
2008	Pump service, metering pumps
2011	Name changed from Larox Flowsys to Flowrox
2011	Progressive cavity pumps
2015	Pulsation dampeners
2017	Packaged pumping systems
2019	Centrifugal pumps
2021	Flowrox brand acquired by Neles
2022	Valmet and Neles merged

We provide the optimal solution

Flowrox peristaltic pumps have the unique eccentric rolling hose compression. The rolling design extends the hose life time and simplifes maintenance.

Customer benefits

- Low total cost of ownership
- Low operating costs
- Improved process performance
- Long service intervals
- Minimized downtime
- Heavy duty design

Flowrox pump references

Customer case: LKAB iron ore mine, Sweden

Products: Flowrox LPP-T100 / LPP-T4" Hose Pumps
Application: Thickener underflow, tailings
Benefits:
- Ability to pump thicker slurries
- Extended service intervals with easier maintenance
- Operational reliability

Customer case: Terrafame, Finland

Products: Flowrox LPP-T65 / LPP-T2.5" Hose Pumps
Application: Washing liquid circulation pumps
Benefits:
- Large capacity
- Moving process water with high solids content
- Savings in energy

Customer case: Deer Island Waste Water Treatment Plant, USA

Products: Flowrox PC Pump, EL Series
Application: Waste water slurry pumping
Benefits:
- Increased pumping efficiency
- Savings in maintenance costs
- Savings in energy consumption

Customer case: Chemical plant, CHEMPARK, Germany

Products: Flowrox LPP-T65 / LPP-T2.5" peristaltic hose pumps
Application: Feeding automatic filter presses
Benefits:
- Long service intervals
- Less wearing parts
- Reliable operation

Customer case: Surfactor, Finland

Products: Flowrox LPP-D pumps
Application: Glue feed, color dosing
Benefits:
- Accurate dosing
- Long maintenance intervals
- Low maintenance cost

Customer case: Paper mill, Finland

Products: Flowrox E250/10 PC Pumps
Application: Paste pumping from coating kitchen to paper coating machine
Benefits:
- Higher capacity with better output
- Savings in maintenance costs
- Increased productivity

Reliable Flowrox pumps paired with automated flexible filtration

Customer case: Aquachem GmbH and CURRENTA GmbH & Co. OHG

OUR CUSTOMER: Aquachem GmbH

James Babbe founded Aquachem GmbH in 1994. The company is based in Senden, Bavaria, Germany. It is mostly involved in the water and wastewater industry as well as in construction, the chemical process industry, and metal, food, pharma and ATEX applications. Since 2000, Aquachem has focused on developing and designing fully automatic filter presses. With nearly three decades of experience in using filter presses for solid liquid filtration, Aquachem offers efficient and optimized solutions.

OUR END CUSTOMER: CURRENTA GmbH

CURRENTA GmbH & Co. OHG is the manager and service provider of three CHEMPARK sites located in Germany in Leverkusen, Dormagen and Krefeld-Uerdingen. A joint venture between Bayer and Lanxess offers 70 companies based at CHEMPARK more than 1,000 chemical-related services across an area covering 11 square kilometers / 4.4 sgmi. These include utilities, environmental services, safety and security, infrastructure, analytics, vocational training, logistics, and maintenance services.

Project name: Isolation of solids from waste water generated by flue-gas scrubbing

Products: LPP-T65 / LPP-T2.5” peristaltic hose pumps x 8

Application: Feeding eight fully automatic filter presses for flue-gas scrubbing process

Benefits:

- Long service intervals
- Self-priming
- Reversible run capability
- Less wearing parts
- High quality

CURRENTA has been extremely satisfied with operation and reliability of Flowrox pumps.

Flowrox LPP-T hose pumps are easy to incorporate into any control system.

Successfully isolated solids from waste water generated by flue-gas scrubbing. When pumps operate smoothly, filters can do their job.

Flexible production through automation

CURRENTA provides services to various operations and their different demanding applications within the large CHEMPARK area. Filters and pumps need to adapt quickly to changing process conditions.

"Slurry in the filtration plant varies as we have numerous types of waste from multiple producers. Applications vary from diffused lithium batteries to pharmaceutical waste. Filtration plant needs to adapt to continuous process changes receiving non-homogeneous feed from flue-gas scrubbing yet offer 100 % reliable and safe operation. It is a demanding application as the filtrate needs to be clean to be released back into the process or the river Rhine," explains **Michael Schulte**, Technical Foreman of incineration plants at CHEMPARK Leverkusen, CURRENTA.

"The application is very abrasive and requires high performance and resilience from the process equipment. As in any startup, we have faced some challenges. However, on rare occasions when a pump has failed, we have always received excellent and immediate support from Flowrox," adds **James Babbé**, the CEO & Founder of Aquachem GmbH. Aquachem is focused on developing and designing fully automatic filter presses used in this application.

Matching process requirements with Flowrox process equipment

"We have been using Flowrox pumps since 2009. They insure steady and reliable feed, which is essential for our unique fully automatic filter solutions. If the pump does not work, filtration equipment does not run either. Pump is the heart of the movement," Babbé explains.

> "I could recommend Flowrox pumps for any filter feed application."

Flowrox LPP-T hose pumps allow continuous monitoring and are easy to incorporate into any control system.

"We are familiar the with superior performance of Flowrox pumps. In 2008 we built a new tank farm for fluid waste treatment. We needed reliable pumps for challenging application which could handle extreme duty cycles. We first looked for joint membrane pumps which fit our requirements to pump 35 m^3/h / 154 gpm. However, we ended up ordering Flowrox LPP-T transfer pumps and they have performed to our expectations," Schulte explains.

Professional and localized customer service

"I could recommend Flowrox pumps for any filter feed applications. At Aquachem we are impressed by professionality of the company. Beyond product benefits and technical features that are superior to its competitors, I also appreciate the openness when working with Flowrox. They provide an outstanding representative network, localized customer service and utmost professionalism in everything that is being done," Babbé complements.

Peristaltic pumps

Flowrox heavy duty hose pumps are designed for the toughest industrial applications. They are ideal for demanding processes involving abrasive, corrosive, viscous or crystallizing media with high solids content.

Advanced rolling design

The operating principle of the Flowrox hose pumps is based on the peristaltic effect. As the cylindrical rotor rotates along the hose, the process medium gets pushed forward through the hose. At the same time, the hose behind the compression point reverts to its original circular shape creating a suction effect at the pump inlet port. As a result, the hose bore is re-filled with the medium. No backward flow or slip can occur as the hose is squeezed tight by the roller.

Due to their technical features, Flowrox hose pumps provide exact flow per revolution. They also incorporate an advanced rolling design, which eliminates friction, maximizes hose life and lowers energy consumption. Energy efficiency, long hose life and low maintenance generates substantial savings during the life cycle of peristaltic pumps. Lifetime of Flowrox pumps' hoses is 3-5 times longer than conventional hose pumps.

Trailblazing pump technology

Flowrox LPP-T pumps are equipped with a patented hose flange and reliable in-line pipe connections, as well as a hose leak detection unit.

Flowrox heavy duty hose pumps from features to benefits

Rolling pump design	→	Save energy up to 40%
Less friction	→	75% less glycerine
Longer hose lifetime	→	Less maintenance
Pump up to 80% solids	→	Save water

Technical features

- Only the hose is in contact with the medium
- Positive displacement with no backflow
- Single roller design that enables minimized friction
- Low lubrication need, only 25% that of conventional peristaltic pumps
- No overheating at high continuous flow rate
- Dry run capability
- Selfpriming up to full vacuum

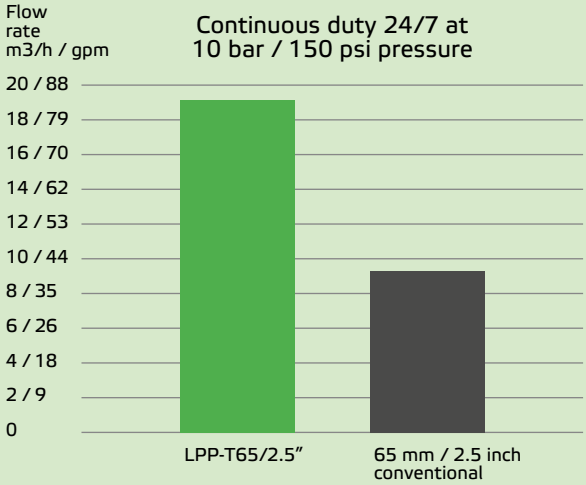
Comparison of Flowrox technology

Flowrox rolling technology is capable of operating in continuous duty with its maximum pressure and maximum flow in the same point. This is where the conventional pump compromises either on pressure or flow.

Compared to Flowrox pumps, conventional hose pumps can only reach either half the flow or half the pressure in continuous duty.

What is more, Flowrox pumps can perform even with high temperature media up to 95 °C / 203 °F.

Flowrox hose pump technology vs. conventional technology



Patented adjustment mechanism senses hose wear when compression is readjusted. This helps to maximize hose lifetime and minimize the risk of over-compression. There is no need for shimming.

The LPP-T100 / LPP-T4" is one of the world's largest hose pumps, with a maximum continuous flow of 100m³/h / 440 gpm.

For transferring, dosing and metering

The innovative Flowrox peristaltic pumps set the industry standard for peristaltic pump technology. Designed for heavy industrial duties, they are ideal for pumping diverse slurries and dosing a wide range of abrasive, corrosive, viscous or crystallizing media.

LPP-T pumps provide substantial savings through improved process performance and efficiency, long service intervals and low maintenance costs. They are manufactured using durable elastomers and advanced materials, making them perfect for pumping a wide range of media.

Progressive cavity pumps

Flowrox progressive cavity (PC) pumps are ideal for demanding industrial slurry and paste pumping applications, especially with highly viscous or shear sensitive liquids and sludges.

Advanced spiral technology

In PC pumps, the pumped medium continuously shifts spaces (progressing cavities) between the rotor and the stator, enabling nearly pulsation-free pumping. With Flowrox technology it is possible to deliver up to 10 bar / 150 psi of pressure per single stage. This is possible with our evenwall stator technology that forms the heart of the entire pump.

Customer benefits

- Over 30% higher pumping capacity compared to a conventional PC pump with same rpm
- Save energy up to 15% compared to a conventional model
- Minimized maintenance time enables the highest run time possible

Flowrox progressive cavity (PC) pumps from features to benefits

Advanced product structure	→	Longer maintenance interval
Evenwall® stator	→	Higher pressure with RPM
2/3 rotor geometry	→	30% higher flow with same speed

Technical features

- Combination of an elliptic rotor and a stator with even wall thickness
- More pressure with less strain
- Increased flow per revolution
- Long rotor/stator lifetime
- Less backflow

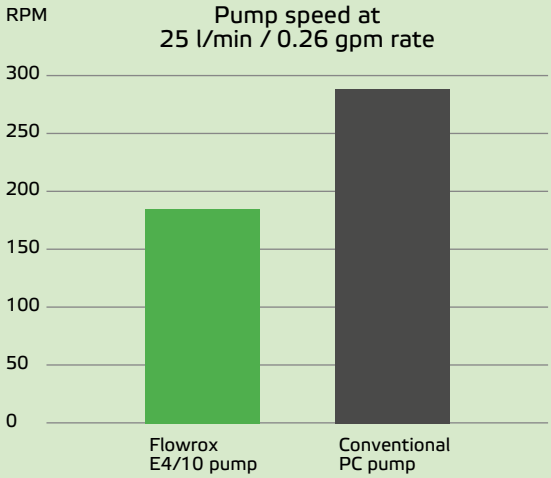
Through advanced technology and precise design, Flowrox PC Pumps offer you significant savings by reducing pumping costs.

Comparison of Flowrox technology

Less RPM needed to achieve the same flowrate.

When the Flowrox PC pump performance is compared with conventional PC pumps, Flowrox 2/3 geometry pumping elements need less RPM than conventional 1/2 geometry pumping elements to achieve the same flow rate. Slower rotation speed guarantees less wear.

Flowrox spiral technology vs. conventional technology



Centrifugal pumps

Flowrox centrifugal pumps are designed to continuously run in heavy duty conditions. The pump components are wear-resistant and can withstand the most abrasive and corrosive slurries.

Horizontal and vertical centrifugal pumps

Centrifugal pumps by Flowrox are most fit for mining, minerals processing and other industrial applications. Despite tough conditions, the pumps deliver reliable performance.

Flowrox CF-S is a horizontal centrifugal pump designed for the continuous pumping of extremely abrasive and corrosive slurries. Wear-resistant components are made to withstand heavy-duty conditions.

Flowrox CF-V centrifugal pump with vertical cantilever design runs continuously in heavy duty conditions. Wear-resistant components are fit for the most abrasive and corrosive slurries.

The CF-V pump is most suitable for mining, minerals processing and other industrial operations, delivering reliable performance in sumps and pits.

CF-S from features to benefits

Large particle impellers	→	General pump for coarse & fine slurries
Abrasion and corrosion resistant	→	Longer maintenance intervals
Two piece body	→	Ease of maintenance

CF-S technical features

- High flow rates
- Robust bearing assembly
- Liner easily replaceable
- Metal and elastomer liners are interchangeable
- Cast in impeller threads require no inserts or nuts
- One-piece frame cradles the cartridge type bearing and shaft assembly

Despite tough conditions, Flowrox centrifugal pumps deliver reliable performance.

CF-V from features to benefits

Advanced cantilevered design	→		No bearings in slurry
Large particle impellers available	→		Robust pump for any application
Continuous or "snore" operation capability	→		Dry run capability

CF-V technical features

- Cantilevered depth up to 3,6 m / 9.8 ft
- No bearings in slurry
- Large particle impellers available
- Continuous or “snore” operation
- Abrasive & corrosive resistant
- Ease of maintenance

Despite tough conditions, Flowrox centrifugal pumps deliver reliable performance.

Flowrox Expulse™ pulsation dampeners

We provide complementary equipment that is designed to support the optimal flow. Enhance your process with the Flowrox Expulse pulsation dampener.

Quiet and durable design

It is common for positive displacement pumps to produce pulsation. The Flowrox Expulse is a flexible inline pulsation dampener, which quiets noise while settling pressure peaks and uneven flows. The design is based on a double hose structure with resilient inner hose, reinforced outer hose and compressed air between the hoses.

Flowrox Expulse

- Absorbs up to 90% of the pulsation
- Up to 10% energy savings
- Reduces hammering of the pipeline and makes pump bearings and gearboxes last longer
- All in one; flexible pipeline connection and dampener
- Can be installed on any pulsating pump from any brand
- There are no breaking diaphragms or bladders
- Flowrox Expulse is self-cleaning
- Does not collect sediment or particles

Flowrox Expulse from features to benefits

Reduces noise	→	Quiets the annoying noise of the pulsating pump in the pipelines
Saves energy	→	Absorbs up to 90% of pulsations and saves up to 10% of energy
Easy, independent and reliable	→	Easy to install for any pulsating pump
Protects pump bearings and gearbox	→	Reduces pipeline pulsations
Simple and flexible	→	Easy and fast to maintain

Technical features

- Absorbs up to 90% of pulsations
- Enables pump bearings and gearbox last longer
- Saves pumping energy up to 10%
- Easy to install on any pulsating pump type

Standard spare parts

With decades of experience in developing innovative flow control solutions and elastomer technology, we offer a wide selection of superior elastomers for diverse media and process conditions. The correct mechanical hose design and material selection are essential for optimizing hose lifetime.

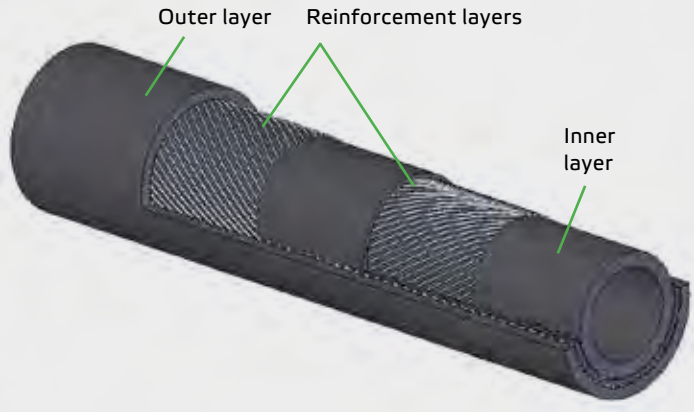
Optimal pump hoses and tubes for each media

Our high-grade hose materials include chemical resistant ethylene propylene (EPDM), oil and fat resistant nitrile rubber (NBR), which is available also for food grade mediums (NBRF), and extremely abrasive natural rubber (NR), which is ideal for heavy wearing applications.

- To guarantee the best possible mechanical characteristics, the hose cover is always made of natural rubber.
- FXM tube material options are Norprene®, Tygothane® and Tygon lined Norprene®.

LPP-T pump hose is preformed for easier installation

LPP-D pump hose construction



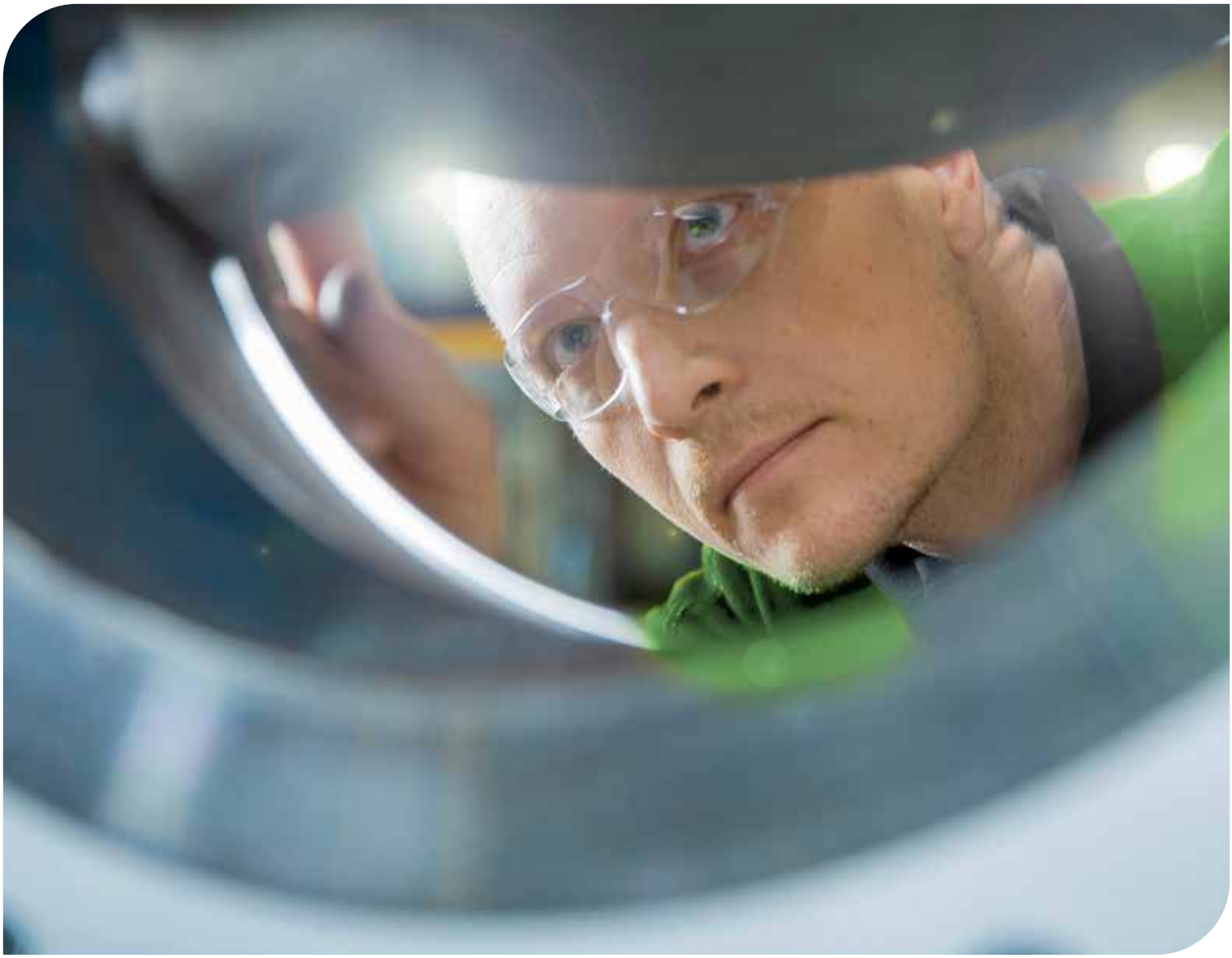
Auxiliaries

Revolution sensor & pressure transmitter

The revolution sensor calculates the cycles of the pump. Pressure transmitter can be used to detect overpressure of the pipeline.

The hose leak detector

The hose leak detector indicates hose leakage into pump housing. It automatically stops the rotation of the pump when connected to the control system.



Pump services

We offer prompt support, spare parts and services in order to maximize your pump performance.

We manufacture and supply rotors, stators, drive shafts, coupling rods, joint assemblies, bearings sets and sealings. Spare parts are manufactured according to highest quality and environment standards with 20 years of experience.

A reliable partnership

Enjoy the benefits that come with selecting a partner that understands your process needs and unique challenges.

Our products provide industry-proven efficiency and reliability based on well-thought-out designs and material selections paired with dedicated service expertise.

Full product assemblies with service coverage across their entire lifecycle, all from one responsible source, ensure optimized performance.

We offer:

- On-time trouble-free delivery of spares and services
- Cost savings through optimized service cycles and reduced downtime of equipment
- Longer life cycles for equipment

Customer benefits

- Maintenance for valves & pumps
- Specialised customer service
- Fast deliveries
- Wide selection of materials
- High-quality spare parts
- Service and warehousing agreements

Flowrox pump product portfolio

Pumps

Peristaltic pumps

Product	Series & type markings	Design	Specifications	Application
Flowrox hose pumps, transfer pumps 	**LPP-T-series** Global: LPP-T65GM10-2-0-N-D North America: LPP-T2.5GM10-2-0-N-D	Advanced rolling design eliminates friction, maximizes hose life, lowers energy consumption	**Size:** DN32, 40, 50, 65, 80, 100 LPP-T1.25", 1.5", 2", 2.5", 3", 4" **Volume:** 0,5 – 100 m³/h / 2.2 - 440 gpm **Pressure:** 7,5 or 10 bar / 150 or 108 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	Toughest industrial applications such as thickener underflow, heavy duty slurry transfer, tailings transfer, sampling and dosing
Flowrox hose pumps, dosing pumps 	**LPP-D-series** Global: LPP-D20GM7.5-G3/4-3-N-DR North America: LPP-D3/4GM108-G3/4-3-N-DR		**Size:** DN15, 20, 25 LPP-D½", 3/4", 1" **Volume:** 0,1 – 2 m³/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	
Flowrox hose pumps, metering pumps 	**FXM-series** Global: FXM2-S-36-N011 North America: FXM2-S-36-N011	Accurate metering: Positive displacement provides same output on every cycle	**Size:** 2 and 3 **Volume:** 0 – 0,84 m³/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

Progressive cavity pumps

Product	Series & type markings	Design	Specifications	Application
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 m³/h / 0 – 1000 gpm **Pressure:** Up to 10 bar / 150 psi 0 – 1000 gpm **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 m³/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 m³/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

Pumps

Centrifugal pumps

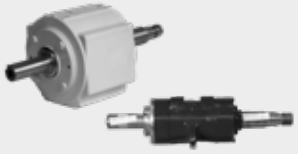
Product	Series & type markings	Design	Specifications	Application
Flowrox centrifugal pumps 	**CF-S-series** Global: CF-6S4-F-MMM-GP-20-BD North America: CF-6S4-F-MMM-GP-20-BD	Open and closed impellers. Several material options for impellers and liners.	**Volume:** 2,3 – 4000 m³/h / 10 – 18 000 gpm **TDH:** Up to 73 m / 240 ft	Corrosive and abrasive slurries e.g. minerals processing
Flowrox centrifugal pumps 	**CF-V-series** Global: CF-1,5V-P-MM-900-BD North America: CF-1,5V-P-MM-900-BD		**Volume:** 0 – 1135 m³/h / 0 – 5000 gpm **TDH:** to 50 m / 160 ft	Coarse, abrasive and corrosive slurries e.g. sump pump in minerals processing. Dry run capability.

Auxiliaries

Complementary products

Product	Series & type markings	Design	Specifications	Application
Flowrox Expulse pulsation dampener 	Global: FPD65-10-0-2-NR North America: FPD2.5-10-0-2-NR	All in one; flexible pipeline connection and dampener	**Size:** DN32 – DN100 / 1.25" — 4" **Hose:** NR Standard **Wetted parts:** AISI316 & NR **Pressure:** 10 bar / 145 psi **Temperature:** +75 ºC / +167 ºF **Filling media:** Oil free compressed air **Auxillaries:** Flanges	For hose pumps in applications where pulsation dampening is needed
Revolution sensor & pressure transmitter 			The revolution sensor calculates the cycles of the pump. Pressure transmitter can be used to detect overpressure of the pipeline.	For hose pumps
Hose leak detector 			The hose leak detector indicates hose leakage into pump housing. It automatically stops the rotation of the pump when connected to the control system.	For hose pumps

Standard spare parts

Standard spare parts		
Product	**Specifications**	**Application**
Hoses 	• NR, EPDM, NBR, NBRF	For transferring and dosing pumps
Tubes 	• FXM tube material options: Norprene®, Tygothane® and Tygon lined Norprene®	For metering pumps
Spare parts and spare part kits 	• Bearing sets • Sealing sets	For hose pumps
Rotors 	• 1/2 and 2/3 geometry • Black nitrated carbon steel • Stainless steel • Hard chrome plated • Hardened • Ceramic coated	For PC pumps
Stators 	• All materials e.g. NBR, EPDM, CSM, FPM • 1/2 and 2/3 geometry	For PC pumps
Shafts 	• Drive shafts	For centrifugal pumps
Bearing units 	• Complete bearing assemblies	For centrifugal pumps
Shaft seals 	• Mechanical seals • Sealing cords e.g. teflon and graphite	For centrifugal pumps

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

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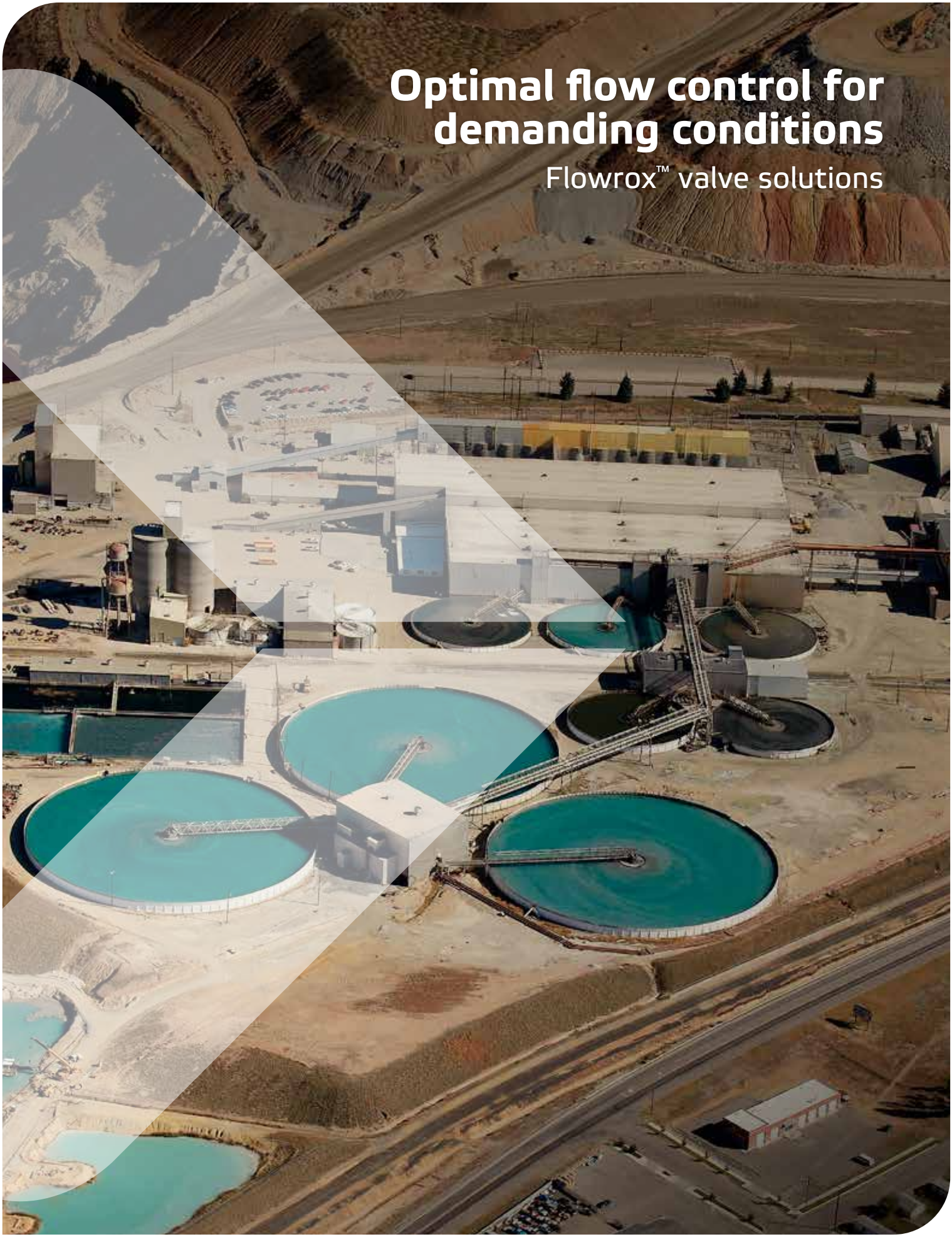
Valmet FORWARD

Optimal flow control for demanding conditions

Flowrox™ valve solutions




FLOWROX
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Valve solutions for demanding shut-off and control applications

We deliver flow control solutions for the most demanding process conditions. Our story started over 40 years ago. Our valve technology experts develop the industry benchmark solutions. Over the years we have delivered over 150,000 products worldwide. Our robust full bore design enables effortless process flow. We also provide services ranging from valve type selection, sizing, materials selection, installation, spare parts and maintenance to optimise your up- and downstream flows.

Product portfolio

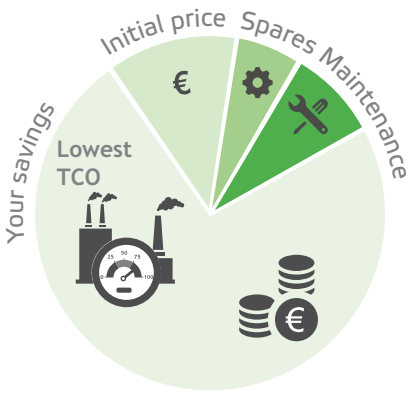
1977	Pinch valves
2000	Plastic body valves
2002	Pumps introduced
2009	Slurry knife gate valves
2011	Name changed from Larox Flowsys to Flowrox
2020	Big knife gate valves DN900-1500
2021	Flowrox brand acquired by Neles
2022	Valmet and Neles merged

We provide the optimal solution

Here you can see the relative costs over a five-year period between a conventional stainless ball valve with PTFE seats and a Flowrox DN100 pinch valve feeding abrasive slurry. The valve operates 4-6 times per hour.

Ball valve

Flowrox pinch valve solution



Customer benefits

- Low total cost of ownership
- Low operating costs
- Improved process performance
- Long service intervals
- Heavy duty design

Flowrox valve references

Customer case: Uranium Mine, Namibia

Products: Pinch valves
Application: Tailings transfer
Benefits:
- Increased process reliability
- Cost efficiency with remote valve control
- Low total cost of ownership

Customer case: Wastewater treatment plant, Poland

Products: DN500 control pinch valves
Application: Flow control of biological sludge
Benefits:
- Gentle handling due to living bacteria in sludge
- Wide and accurate flow control range
- Extended maintenance interval

Customer case: Iron ore mine, Sweden

Products: PV and PVE pinch valves
Application: Thickener underflow
Benefits:
- Reliability with abrasive slurry
- Wide and accurate flow control range
- Extended maintenance interval

Expansion project:

Saving time during start-up with 330 Flowrox valves

Customer case: Trafigura Mining Group, MATSA mine, Spain

Trafigura Mining is a market leader in copper, lead and zinc concentrates trading. Their flagship mine, Aguas Teñidas (MATSA), is located in Andalucia, Spain. In 2015, production of concentrates nearly doubled to 4.4 tons per year.

Products: 330 PVE enclosed body & PVG shut-off valves

Application: Ore & water treatment & process water supply in copper, zinc and lead mining

Benefits:
- Increased safety
- Easy installation & maintenance
- Process reliability
- Lightweight products

Long-term benefits in ownership

Trafigura Mining Group ordered 330 Flowrox PVE enclosed body pinch valves and PVG shut-off pinch valves for various demanding flow control and shut-off duties, from ore treatment to water treatment plant and process water supply.

"When the project was engineered, we constantly had in mind that the choice of appropriate instrumentation for each application is fundamental to the process performance. We decided that all control valves and also some of the shut-off valves would be pinch valves, which finally ended up saving us a lot of time in the start-up of the plant," says **Ms. Luisa Montes**, a Project Team Member from MATSA mine.

> "We are definitely expecting cost savings."

All installed Flowrox pinch valves have an enclosed body type and include an SBRT valve sleeve to meet the requirements of various mediums in different process areas and to achieve the longest sleeve life time. As the valves are self-cleaning, even if any solids are accumulated in the sleeve wall, it breaks away when the valve is operated. This is due to the flexibility of the sleeve, making the valve lifetime longer than many other competing products on the market.

Flowrox pinch valves were chosen to provide long-term benefits based on low total cost of ownership. The PVE control valves at the plant are operated by pneumatic double acting actuators with positioners. Also, all of the on/off PVG valves include limit switches for position indication.

"In the future, we are definitely expecting cost savings," Ms. Montes states.

Heavy duty pinch valves

Flowrox heavy duty pinch valves are made to last and are ideal where shut-off and control applications involve abrasive or corrosive slurries, powders or coarse substances.

Made to Last

The operating principle of Flowrox pinch valves is simple. In the open position, the valve is full bore with no flow restrictions. During closing, two pinch bars squeeze the valve sleeve shut on the centerline. The sleeve is naturally wear-resistant and when particles hit the sleeve's rubber surface, the energy is absorbed and released when the rubber bounces back.

Heavy duty pinch valves provide bubble tight shut-off even if solids have built up on the sleeve wall.

When compressed, any crystallized particles flake off the sleeve surface. The full bore structure ensures free flow of the medium. The construction and materials of the three main components (sleeve, body and actuator) can be tailored to suit your process conditions.

From features to benefits

Full bore	→	No flow restrictions
Center line closing	→	Increased sleeve lifetime
Only sleeve in contact with medium	→	Only one wearing part
Self cleaning	→	No jamming
Several options for sleeve materials	→	Process fit
Robust design	→	Long service intervals

Product benefits

- Long service intervals
- Only one wearing part
- Excellent for dry powders
- Low maintenance cost

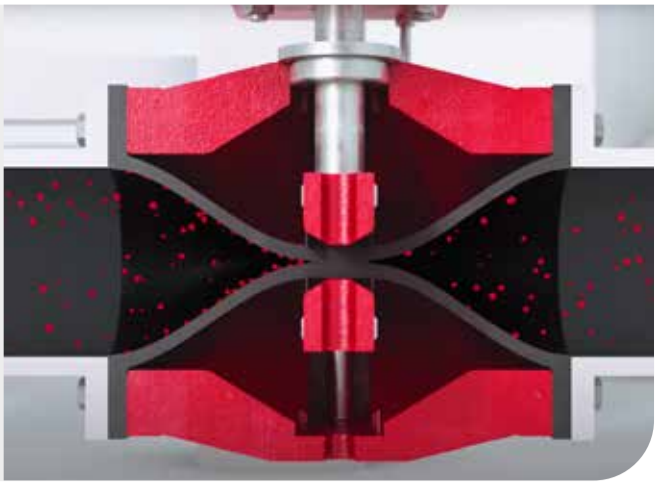


Image: *During closing, two pinch bars squeeze the valve sleeve shut on the centerline.*

Control Valves

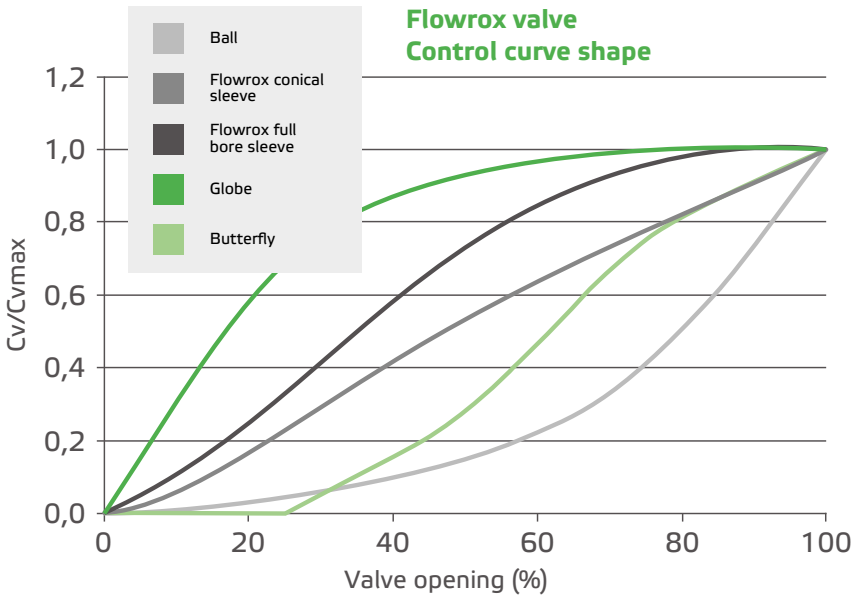
Flowrox control valves are designed for demanding control applications in which conventional valves encounter problems with wear due to increased turbulence.

When the controlled flow is abrasive, it is a big advantage to have only one, wear-resistant, valve part in contact with the medium. The need for maintenance and spare parts is reduced.

Each valve can be sized and optimized for the optimal control range, to limit wear and velocity, and also to prevent cavitation from occurring in the control valve. Controllability can be further improved, for example through the use of conical sleeves and smart positioners, or linearizing and widening.

The Flowrox Control Valve Sizing Programme makes your work easier. Sizing is based on the international IEC60534 standard (harmonized with ANSI/ISA S75).

Improved controllability with conical sleeve results in linear control curve



Customer benefits

- Cost-effective
- Reliable operation
- Predictive maintenance
- Sizing programme to choose correct valve
- Process-optimized equipment

General line pinch valves

Flowrox general line pinch valves are ideal for low cycle applications involving abrasion, corrosion and aggressive slurries.

PVG and PVEG valves

Flowrox pinch valves are robust and cost-effective valves with simple, single-sided closing mechanism. PVG valves have a strong valve body and opening tags in the sleeve as standard. PVEG valves have a corrosion resistant and lightweight plastic body.

Efficient design eliminates jamming and provides a precise fit for your processes. Thanks to their reliability, Flowrox pinch valves offer substantial savings based on improved performance, long servicelifetime and low total cost of ownership.

From features to benefits

Full bore	→	No flow restrictions
Only sleeve in contact with medium	→	Only one wearing part
Self cleaning	→	No jamming
Several options for sleeve materials	→	Process fit
Simplified construction	→	Lower intial cost

Product benefits

- Long service intervals
- Only one wearing part
- Excellent for dry powders
- Simple sleeve replacement

Image: *The closing element squeezes the sleeve shut against the lower body half, providing a 100 % tight shut-off.*

General line pinch valve references

Customer case: Copper Mine, Finland

Products: PVG150M
Application: Tailings transfer, isolation valves
Benefits:
- Increased process reliability
- Extended maintenance interval
- Low total cost of ownership

Customer case: Kara Mine, TMM, Tasmania, Australia

Products: PVEG50M
Application: Hydrocyclone
Benefits:
- Trouble-free operation
- Low maintenance costs
- Long lifetime

Slurry knife gate valves

Heavy duty slurry knife gate valves isolate flow, even in the most demanding process conditions. The complete valve is built around an ease-of-maintenance concept.

Flowrox slurry knife gate valves are based on years of experience providing reliable solutions for abrasive and corrosive process applications.

They feature a load distribution ring that prevents over-compression and ensures tight sealing between the sleeve and the valve gate. To ease maintenance, the load distribution ring is integrated into the valve's sleeves.

The valve's universal tower design accommodates most actuator types, allowing the actuator's interchange-ability. The tower also ensures that the top plate, body and actuator are always aligned and the gate is in the right position. The valve body itself is a one-piece casting, eliminating the need for sealing between the body halves.

Flowrox SKF knife gate valves DN 900 – 1500 (36" – 60") use a new approach. Instead of a tower design, two actuator cylinders are positioned on the sides.

From features to benefits

One piece body	→	No leak risk
Full bore	→	No flow restrictions
Integrated load distribution ring	→	Reliability in installation
Lubricated polyuretane secondrary seal	→	Reliable operation
Bi-directional flow	→	Easy installation
Removable bottom plate accommodates flushing ports	→	Increased process safety

Product benefits

- Small face-to-face dimension
- Easy installation
- Available in large size scale
- Low maintenance cost

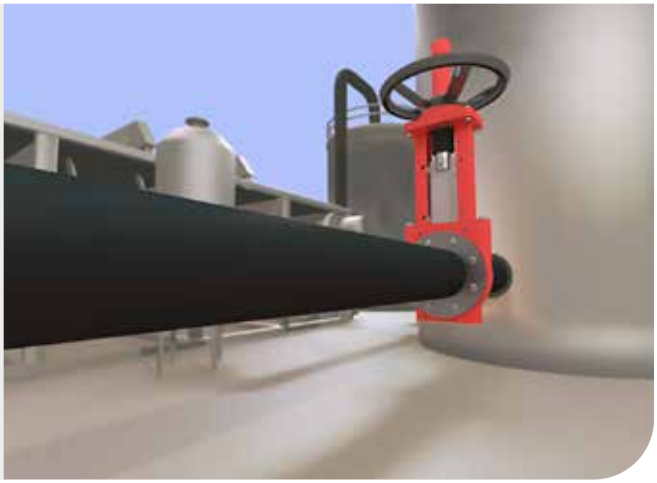
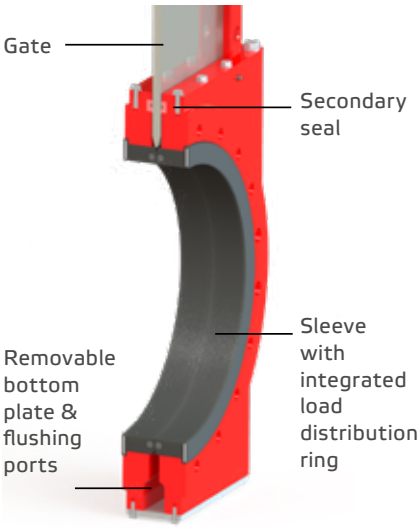


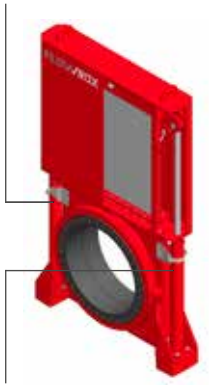
Image: *Elastomer sleeves on both sides of the gate provide a tight shut off.*

Slurry knife gate design
DN50 – 800 / 2” – 32”



Slurry knife gate design
DN900 – 1500 / 36” – 60”

Flowrox SKF knife gate valves use a new approach



Instead of tower design, we use the “twin-actuator” where the actuators are positioned on the sides.

Customer benefits

- Cost-effective
- Reliable operation
- Long service intervals
- Trouble-free operation

Sleeves – The core of Flowrox valves

Our technologically advanced Flowrox sleeves guarantee high resistance to wear and corrosion, trouble-free operation and extended lifetime.

Robust heart of the pinch valve

The handmade sleeve has reinforced construction, making it the pressure-containing part of the valve.

Standard Flowrox PV, PVE and PVG sleeves are equipped with opening tags to ensure full valve opening in all process conditions.

The high-grade Flowrox sleeve materials range from wear resistant styrene butadiene to numerous other elastomers and rubber compunds. These materials are highly resistant to abrasive and corrosive slurries, powders and granular substances.

Sleeve Material Alternatives

- SBRT = Styrene butadiene
- EPDM = Ethylene propylene
- NR = Natural rubber
- NBR = Nitrile
- CSM = Hypalon
- EPDMB = Green liquor sleeve
- CR = Chloroprene
- IIR = Butyl
- NRF = Foodstuff natural rubber
- NBRF = Foodstuff Nitrile
- HNBR = Hydrogenated nitrile
- FPM = Fluorine rubber

Ring sleeves for knife gate valves

The sleeve is a moulded part with a reinforced steel ring integrated near the sealing area. The flange of the sleeve is reinforced with a load distribution ring to ensure even compression.

Ring sleeve material alternatives:

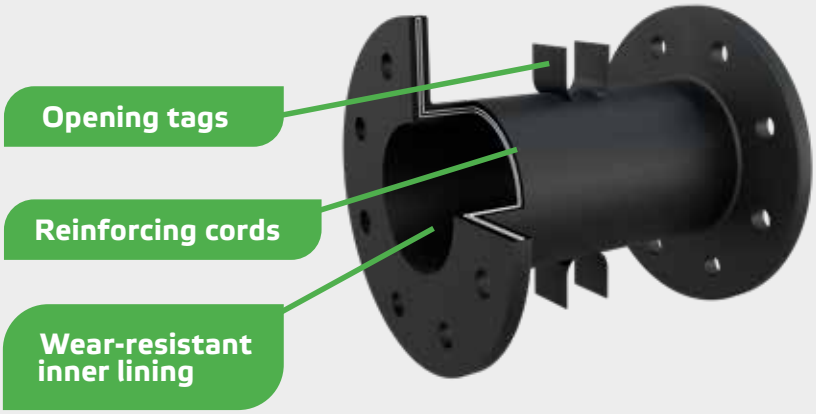
- NR
- EPDM
- NBR

Special Sleeve Features

- Conical sleeve for control valves
- Suction sleeve for negative pressure applications
- SensoMate sleeve detecting and signalling critical wear
- Polyurethane-lined sleeve with improved protection against wear in abrasive control applications
- Food grade rubber for FDA requirements

Product benefits

- Flexible
- Self-cleaning
- Multilayer construction
- Full bore
- 100% tight
- Only the sleeve is in contactwith the medium
- Numerous elastomer compounds
- Special sleeve designs



The standard sleeve design consists of three sets of layers: the inner layer, the reinforcement layer and the outer layer.

Global product support with local presence

We offer prompt support, spare parts and services in order to maximize your performance.

Optimizing operations

We manufacture and deliver original spare parts and components for all Flowrox products including valves, hose pumps, and PC pumps.

Thanks to our dependable, fast, and trouble-free delivery of spares and services you can rest assured that downtime is minimized. Top-quality product construction ensures the longevity of your equipment.

And thanks to our optimized service cycles and reliability, you can expect noticeable cost savings in your operations.

A reliable partnership

Enjoy the benefits that come with selecting a valve partner that understands your process needs and unique challenges.

Our products provide industry-proven efficiency and reliability based on well-thought-out designs and material selections paired with dedicated service expertise.

Full product assemblies with service coverage across their entire lifecycle, all from one responsible source, ensure optimized performance.

Comprehensive valve installation, maintenance and spare services

- Site survey services
- Spare parts and component services
- Installation, maintenance and repair services
- Analysis services / commissioning / training

Flowrox valve product portfolio

Valves

Flowrox™ pinch valves				
Product	**Series & type markings**	**Design**	**Specifications**	**Application**
Flowrox heavy duty pinch valves with enclosed body 	**PVE, PVE/S and PVS-series** Global: PVE200AK6-203L,SBRT North America: PVE8AK90-203L,SBRT	Enclosed body prevents premature sleeve deterioration and protects the sleeve, making it extremely safe to operate. The rubber sleeve is the only wearing part.	**Size:** DN 25 – 800 NPS 1" – 32" Bigger sizes upon request **Pressure:** Up to 100 bar / 1500 psi **Temperature:** -50 to +160 ºC / 32 to +210 ºF **Actuator:** Manual, manual with gear, pneumatic, electric, hydraulic	High cycle applications Shut off and control applications involving abrasive or corrosive slurries, powders or granular substances.
Flowrox heavy duty pinch valves with open body 	**PV-series** Global: PV150M10-203L, EPDM North America: PV6M10-203L, EPDM	Open body for non-hazardous media, lower pressures, and operating temperatures. Isolates vibration and tolerates minor misalignments of the pipeline.	**Size:** DN 80 – 800 / NPS 3"– 32" Bigger sizes upon request **Pressure:** 25 bar / 375 psi **Temperature:** -50 to +160 ºC / 32 to +210 ºF **Actuator:** Manual, manual with gear, pneumatic, electric, hydraulic	
Flowrox general line pinch valves with actuator 	**PVG-series** Global: PVG100A6-2/60, SBRT North America: PVEG4M150-2/65,SBRT	Robust with strong metal body, single-sided simple closing mechanism. Substantial savings based on improved performance.	**Size:** DN50 – 250 / 2" – 10" **Pressure:** Up to 10 bar / 150 psi **Temperature:** 0 to +110 ºC / 32 to +230 ºF **Actuator:** Manual, pneumatic, electric	Low cycle applications Isolation duty Shut off involving pressure resistance, heat, abrasion, corrosion and aggressive slurries.
Flowrox general line pinch valve with polyamide body 	**PVEG-series** Global: PVEG100M10-2/65, SBRT North America: PVEG4M150-2/65,SBRT	A robust yet compact and light-weight, made of polyamide blend with single-sided closing mechanism.	**Size:** DN 50 – 150 / NPS 2" – 6" **Pressure:** Up to 10 bar / 150 psi **Temperature:** 0 to +70 ºC / 32 to +158 ºF **Actuator:** Manual, pneumatic	Low cycle applications Isolation duty Industries that require bubble tight shut-off involving aggressive slurries, abrasion, corrosion, and pressure resistance.

Flowrox™ slurry knife gate valves				
Product	**Series & type markings**	**Design**	**Specifications**	**Application**
Flowrox slurry wafer knife gate valve 	**SKW-series** Global: SKW100A10-20S1-NR North America: SKW4A150-20S1-NR	Wafer Integrated load distribution ring prevents over compression during installation. One-piece body & universal tower design for actuator interchangeability.	**Size:** DN50 – 600 / 2" – 24" **Pressure:** 10 bar / 145 psi **Temperature:** 0 to +100 ºC / -32 to +212 ºF **Seat:** Several material options	Isolation duties only For heavy duty purposes to isolate flow, even in the most demanding process conditions. Bi-directional flow tolerates backflow and elastomer sleeves on both sides of the gate provide tight shut off.
Flowrox slurry flanged knife gate valve 	**SKF-series** Global: SKF100A10-20S1-NR North America: SKH4MG300-40S1-NR	Flanged Integrated load distribution ring prevents over compression during installation. One-piece body & universal tower design for actuator interchangeability.	**Size:** DN80 – 900 / 3"– 36" **Pressure:** 0 bar / 145 psi **Temperature:** 0 to +100 ºC / -32 to +212 ºF **Seat:** Several material options **Size:** DN1000 – 1200 / 40"– 48" **Pressure:** 6 bar / 87 psi **Temperature:** 0 to +100 ºC / -32 to +212 ºF **Seat:** Several material options **Size:** DN1300 – 1500 / 54" – 60" **Pressure:** 4 bar / 58 psi **Temperature:** 0 to +100 ºC / -32 to +212 ºF **Seat:** Several material options	
Flowrox slurry high pressure knife gate valve 	**SKH-series** Global: SKH100MG20-40S3-NR North America: SKH4MG300-40S3-NR	Featuring ring sleeve retaining flanges preventing over compression and ease of installation. One-piece body and universal tower design for actuator interchangeability.	**Size:** DN80 – 600 / 3"– 24" **Pressure:** Up to 20 bar / 300 psi **Temperature:** 0 to +100 ºC / -32 to +212 ºF **Seat:** Several material options	For high pressure applications Isolation duties only

Spare parts for Flowrox valves

Spare parts for Flowrox valves			
Product	**Series**	**Design**	**Specifications**
Sleeves 	PV, PVE, PVE/S, PVS PVEG and PVG-series	Reinforced construction, pressure-containing. Opening tags to ensure full opening in all conditions	**Material:** SBRT, EPDM,NR, NBR,CSM, EPDMB, CR, NRF, NBRF, HNBR, FPM
Ring sleeves 	SKW, SKF and SKH-series	Moulded part with a reinforced steel ring near the sealing area. Sleeve flange reinforced with a load distribution ring for even compression.	**Material:** NR, EPDM, NBR
Sealing sets for valve cylinders 	All		Pneumatic and hydraulic actuators
Other spare parts 	All		Bushings, secondary seals, sealing strips and others parts

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

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