Valmet FORWARD

Efficiency, value and cost optimization

Flow control solutions for petrochemical applications

Today’s petrochemical producers face everincreasing regulatory, environmental and performance demands. Now, more than ever, you need more than just a valve supplier.

Your partner in petrochemicals

You need a reliability partner who offers deep application knowledge with a complete offering of technologies, customer support and services.

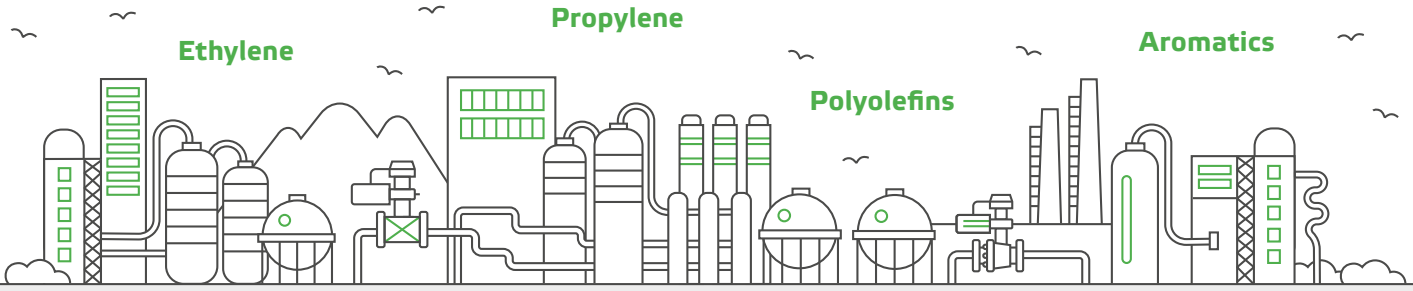
With over 60 years of valve engineering experience behind us, our products are famous for their reliability. We offer you a single source solution for efficient running of your plants, ensuring trouble-free operations.

Every valve we sell is backed by our comprehensive service including technical training, experienced applications assistance, full maintenance and repair, and support. Valve installation is only the beginning.

We understand the complex demands of petrochemical processing and are trusted for our expertise, built up over more than half a century of product development and successful partnerships.

Supporting the operations of various process units

The end result of petrochemical production is a wide variety of everyday items.



Our valves help in the manufacture of petrochemical commodities including ethylene, propylene, polyolefins, aromatics, and associated by-products such as ethylene oxide (EO), ethylene glycol (EG), monoethylene glycol (MEG), purified terephthalic acid (PTA) and many more.

Ethylene: Steam cracking

Steam cracking plants, which produce ethylene, are divided into three sections which together represent a very demanding environment. We've developed our valve solutions to ensure the utmost safety and reliability in your operations.

Hot zone valves

In the hot zone, the cracking and subsequent cooling occurs. We offer solutions for each step in this process including on/off and control valves for fuel gas, steam, quench oil, and other process media.

Compression zone valves

The compression zone is where compression, scrubbing and drying of the effluent occurs. Here, we provide valve solutions for secure compressor anti-surge, amine let down, and dryer switching operations.

Cold zone valves

The separation of components from the medium occurs in the cold zone. Here, we provide column control valves, refrigeration system high pressure drop valves, butadiene valves and many more.

Propylene: Propane dehydrogenation (PDH)

Propane dehydrogenation uses propane to produce high-quality propylene. Our valves offer the highest reliability throughout every step of the demanding PDH process.

Catalyst regeneration valves

In the continuous catalyst regenerator, the catalyst is repeatedly withdrawn from the reactor, regenerated, and returned to the reactor bed. Efficient operation requires top quality lock hopper block, catalyst addition and removal, and chloride injection and addition valves. Our valves are extensively used in such critical applications.

Dryer sequence valves

Dryers remove hydrogen sulphide and trace amounts of water formed through the catalyst regeneration process. Valves here must withstand fluctuations in temperature while maintaining tightness over years of operation. Our intelligent metal-seated ball valves with scraping and closed seat design are extensively used in these applications.

Polyolefins: Polyethylene (PE) & polypropylene (PP)

Polyolefin technologies include gas-phase, slurry, high-pressure, mixed-phase, and solution processes. Our valves have been developed to operate in extreme conditions, dealing with an abrasive flow media at very demanding cycling requirements.

Product discharge systems (PDS)

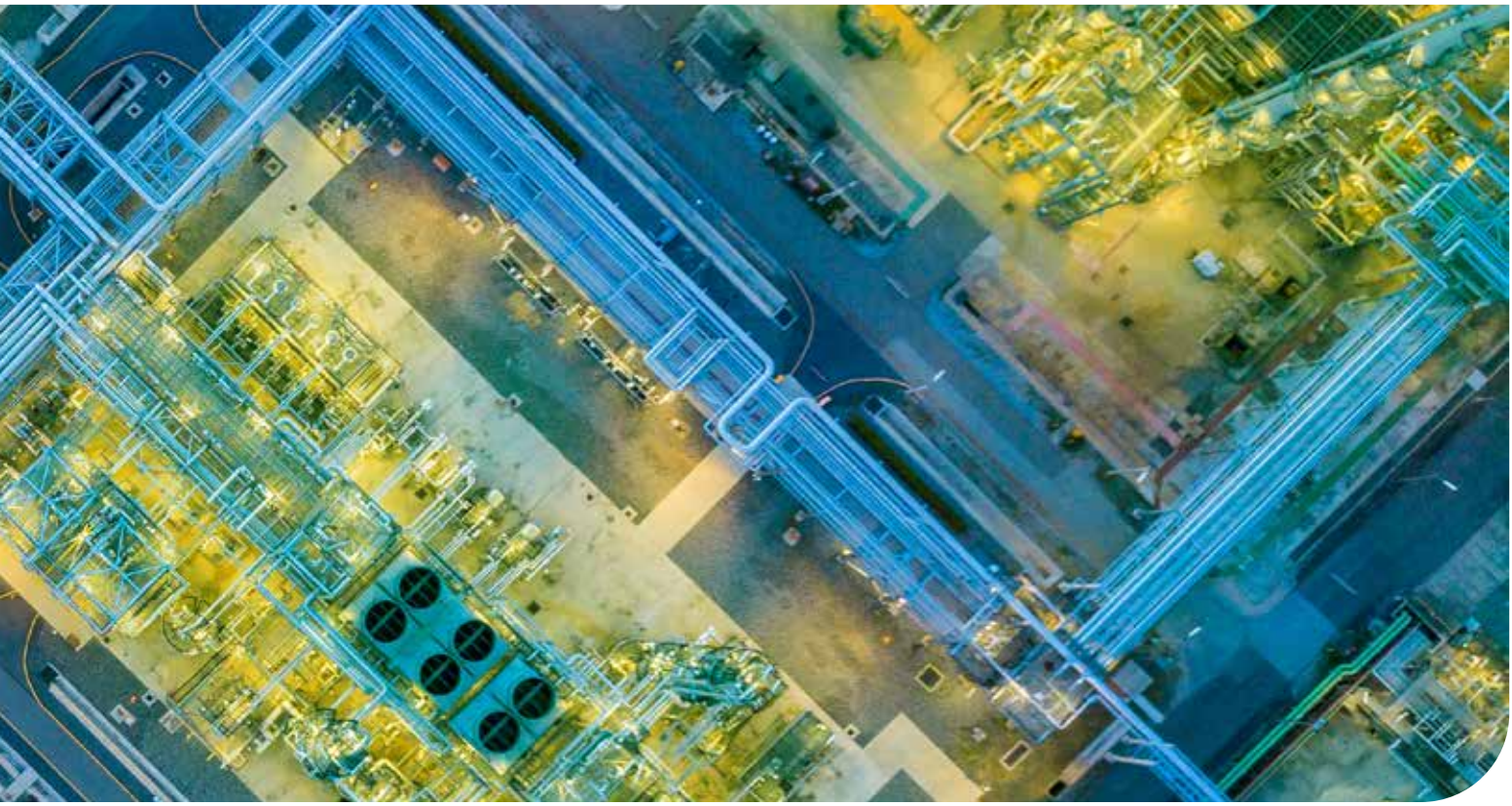
Unreacted gas is separated from the product and returned to the reactor via product discharge systems. Because they are anti abrasive, and also prevent polymer from penetrating behind the seat and seizing the valve, our metal-seated ball valves have been the choice for many producers.

Polymer handling valves

Our polymer handling valves are designed to cope with the erosive flow media typical in polyolefin processes, preventing it from entering the seat area, and helping remove any particle build-up.

High cycling valves

In polyolefin processes, valves must be able to withstand up to 1.5 million cycles annually. We offer solutions providing excellent flow characteristics and high capacity, while also maintaining internal tightness.



Aromatics: Benzene, toluene & xylenes (BTX)

Aromatics complexes are used to produce benzene, toluene and xylenes. These products are extremely dry and create surface friction. Our valves ensure protection against erosion by providing suitable coatings for trim materials.

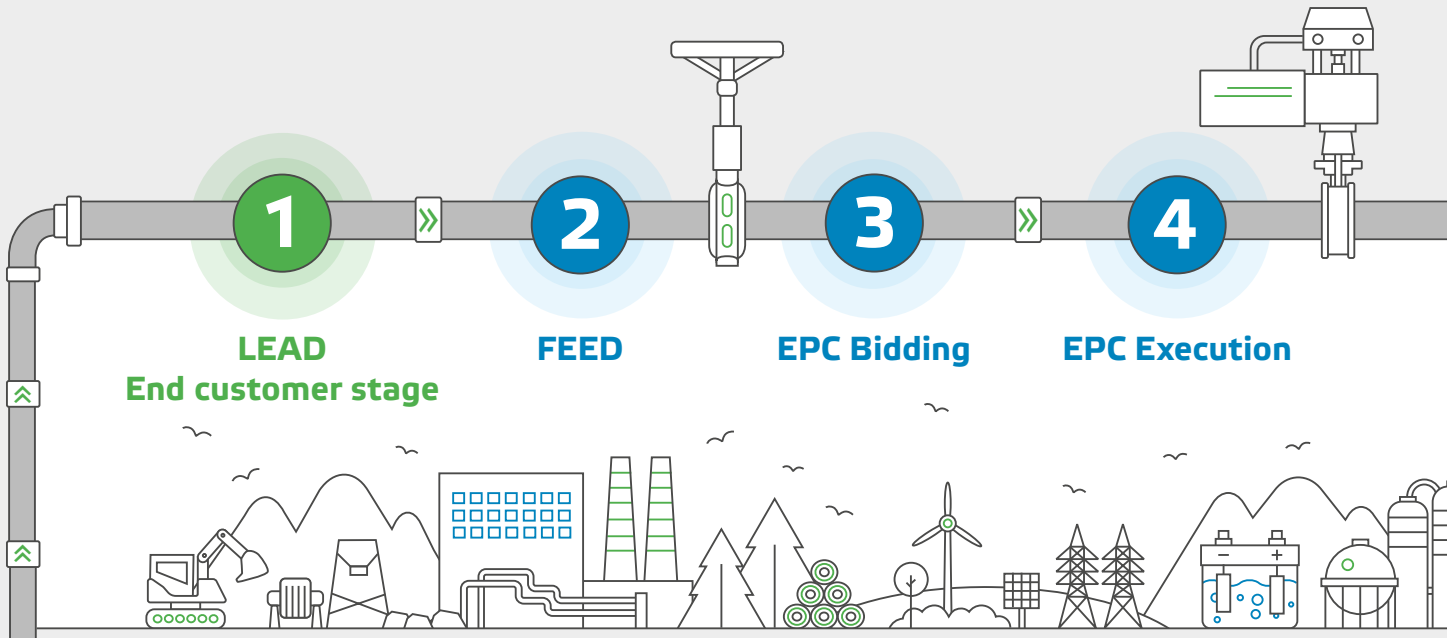
P-Xylene separation valves

Our metal-seated rotary ball valves are hard-coated and low temperature compatible, minimising friction and wear. Furthermore, quick response and high cycle compatibility is ensured with the Neles SwitchGuard™ controller.

Benzene and toluene extraction valves

In this process, valves must be able to withstand half- or full vacuum conditions, as well as ensure accurate emission control due to the flow medium's toxicity. Our true metal-seated, bi-directionally tight triple eccentric butterfly valves boast a robust design, resulting in extended service life while reducing material and piping costs.

Process industry EPC projects



1

LEAD End customer stage

Wide portfolio and strong understanding of end-user processes allow us to assist in definition of project scope and technical specifications.

3

EPC Bidding

Strong project knowhow and extensive global experience from a dedicated global project organization supported by modern digital tools for fast, accurate and efficient quotations following specifications against optimal cost.

2

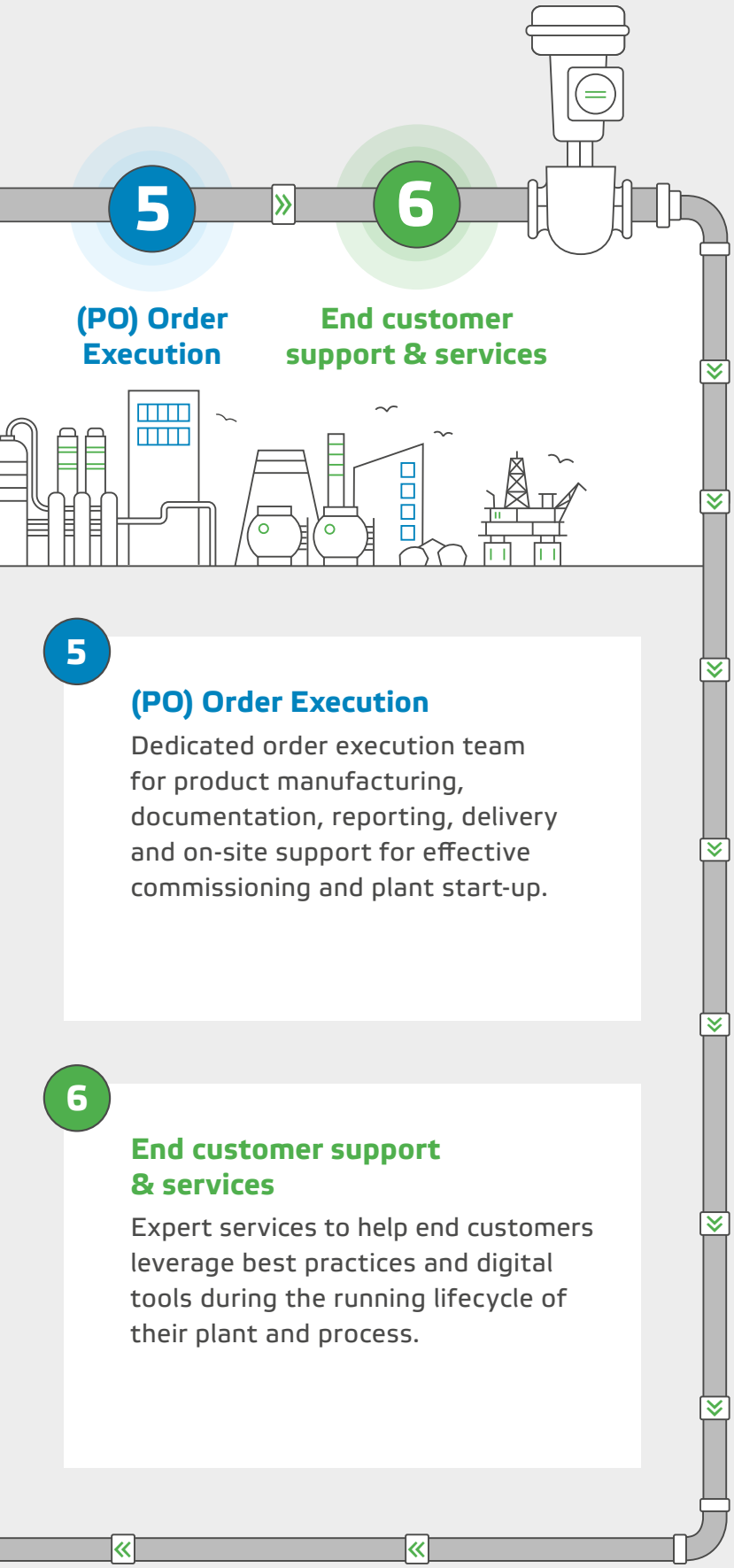
Front End Engineering and Design

Close cooperation with FEED EPC to provide early phase cost estimation, value engineering and technical data support to meet project requirements and licensor alignment.

4

EPC Execution

Project organization working globally with EPC's and Package Unit Manufacturers offering a full product coverage, engineering services and DCS solutions for optimized and responsible plant performance from a single source.



5

(PO) Order Execution

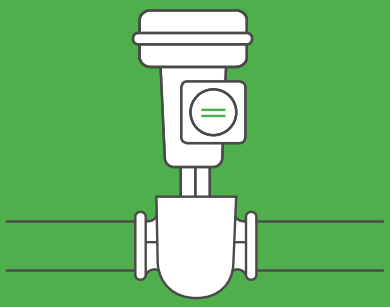
Dedicated order execution team for product manufacturing, documentation, reporting, delivery and on-site support for effective commissioning and plant start-up.

6

End customer support & services

Expert services to help end customers leverage best practices and digital tools during the running lifecycle of their plant and process.

Technologies and services for optimum performance



Reliable and accurate solutions for control, on/off and emergency shutdown applications from the industry's widest valve portfolio.

Easy, safe and reliable performance with solutions such as intelligent valve controllers, advanced diagnostics software and loop optimisation.

Comprehensive expert services and digital tools available globally, covering everything from commissioning and start-up to intelligent shutdown planning and lifecycle asset management.

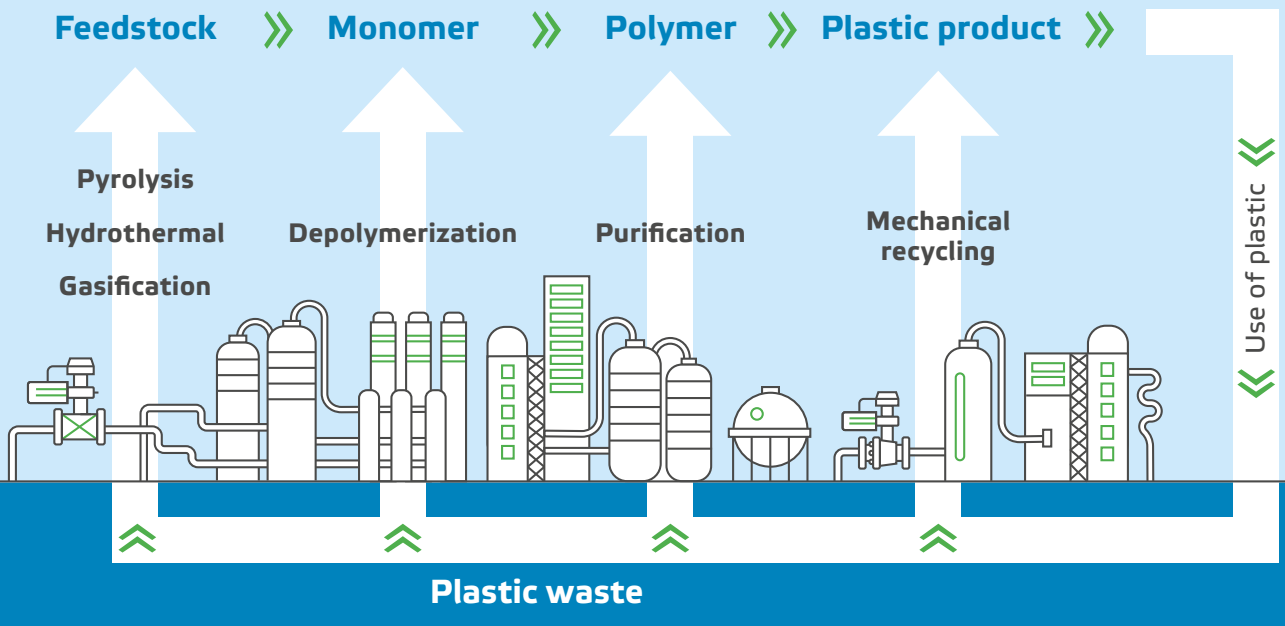
Plastics recycling

With plastic usage growing, there's more focus now on its recycling. The common goal for increasing the share of recycled plastic in circulation will require major investments into recycling processes. Especially chemical recycling continues to become more interesting. It is estimated that by 2050 more than 60% of the plastic produced will be from recycled plastics.

Valmet offers a wide range of flow control solutions for plastics recycling processes, such as pyrolysis, gasification, depolymerization and hydrothermal and pneumatic conveying processes. These chemical recycling processes offer solutions for the recycling and repurposing of all grades of plastics.

Our valve offering for these various processes includes high-temperature valves as well as valves that can handle the high pressures in many of these applications. These valves can handle molten plastics as a flow media as well as a wide range of high-quality general service valves to choose from.

The plastics recycling chain



Control valves

Neles™ globe control valves

Product	Series	Design	Specifications		Service	Bulletin
Neles top-guided globe valves 	GU-series	Globe unbalanced, single seated, top-guided, flanged, butt & socket welded **Options:** Low noise and anti-cavitation Tendril trims	**Size:** **Pressure:** **Temperature:** **Body:** **Tightness:**	DN15 – 150 (½" – 6") ASME 150 – 2500 / PN10 – 320 / JIS 10K – 20K -200 to +593 ºC / -320 to +1053 ºF WCB, CF8M ANSI Class IV ~ VI	General, severe, high pressure, cryogenic and high temperature, low emissions, fire safe, SIL	4GV21
Neles cage-guided globe valves 	GB-series	Globe balanced, single seated, cage-guided, flanged, butt & socket welded **Options:** Low noise and anti-cavitation Tendril trims	**Size:** **Pressure:** **Temperature:** **Body:** **Tightness:**	DN 50 – 900 (2" – 36") ASME 150 – 2500 / PN10 – 320 / JIS 10K – 20K -200 to +593 ºC / -320 to +1053 ºF WCB, CF8M ANSI Class IV ~ V	General, severe, high pressure, cryogenic and high temperature, low emissions, fire safe, SIL	4GV23
Neles Omega™ globe valves 	GM-series	Globe Omega, multi-stage, single seated, top- & cage-guided, flanged, butt & socket welded	**Size:** **Pressure:** **Temperature:** **Body:** **Tightness:**	DN 25 – 900 (1" – 36") ASME 150 – 2500 / PN10 – 320 / JIS 10K – 20K -200 to +593 ºC / -320 to +1053 ºF WCB, CF8M ANSI Class IV ~ VI	Severe, high pressure and high temperature, low emissions, fire safe, SIL	4GV20
Neles angle pattern valves 	AU, AB & AM -series	Angle body, single seated, top- & cage -guided, flanged, butt & socket welded **Options:** Low noise and anti-cavitation trim Tendril™ trim Omega™ trim	**Size:** **Pressure:** **Temperature:** **Body:** **Tightness:**	DN15 – 1200 (½" – 48") ASME 150 – 2500 / PN10 – 320 -200 to +593 ºC / -320 to +1053 ºF WCB, CF8M ANSI Class IV ~ VI	General, severe, erosive, high pressure, cryogenic and high temperature, low emissions, fire safe, SIL	4GV23
Neles 3-way globe valves 	GW-series	Globe 3-way, diverting / mixing double seated, flanged, butt & socket welded	**Size:** **Pressure:** **Temperature:** **Body:** **Tightness:**	DN25 – 250 (1" – 10") ASME 150 – 600 / PN10 – 100 -29 to +425 ºC / -20 to +797 ºF WCB, CF8M ANSI Class II ~ IV	Diverting, mixing	4GV24

Flowrox™ pinch valves

Product	Series	Design	Specifications		Service	Bulletin
Flowrox heavy duty pinch valves with enclosed body 	PVE, PVE/S and PVS -series	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:** **Pressure:** **Temperature:** **Actuator**	DN 25 – 800 NPS 1" – 32" Bigger sizes upon request Up to 100 bar / 1500 psi -50 to +160 ºC / -58 to +320 ºF Manual, manual with gear, pneumatic, electric, hydraulic	Pneumatic conveying, isolation and control applications	4PV20

Ball valves

Neles ball valves

Product	Series	Design	Specifications	Service	Bulletin
Neles X-series modular ball valves 	XA, XB, XC, XU & XT -series Seat supported XG, XM & XH -series Trunnion mounted	Full or reduced port, metal and soft seats **Options:** Steam jacket, cryogenic and high temperature, catalyst handling, polymer service, oxygen service, Q-Trim™, Q2-Trim™	**Size:** DN25 – 600 (1" – 24") For larger sizes, see bulletin **Pressure:** ASME 150 – 900 / PN 10 -160 **Temperature:** -200 to +600 ºC / -320 to +1110 ºF **Body:** CF8M, WCB. For other body materials, see bulletin **Tightness:** ANSI Class IV ~ VI	General, demanding, SIL, fire safe, low emission	1X22 1X23 1X26 1X27 1XH20 1XH21
Neles top entry rotary valves 	T5-series	Reduced or full port, flanged, weld-ends **Options:** Cryogenic, high temperature	**Size:** DN25 – 400 (1" – 16") **Pressure:** ASME 150 – 600 / PN10 – 40 **Temperature:** -200 to +600 ºC / -320 to +1110 ºF **Body:** CF8M, WCB. For other body materials, see bulletin **Tightness:** Class IV ~ VI	High MTBF, SIL 3 certified	1T520
Neles D-series ball valves 	D2C, D2D & D1F -series	Full or reduced port, stemball construction **Options:** Cryogenic, high temperature	**Size:** D1F: DN50 – 700 (2" – 28") D2: DN700 – 900 (28" – 36") **Pressure:** ASME 150 – 600 / PN10 – 100 **Temperature:** -200 to +600 ºC / -320 to +1110 ºF **Body:** CF8M, WCB. For other body materials, see bulletin **Tightness:** Class V ~ VI	High MTBF, SIL 3 certified	1D21

Jamesbury™ ball valves

Product	Series	Design	Specifications	Service	Bulletin
Jamesbury standard port flanged ball valves 	7000 -series	Pre-engineered valve types and materials according to industry standards for control, on/off and manual use	**Size:** DN15 – 500 (½" – 20") **Pressure:** ASME 150 & 300 **Temperature:** Up to +260 ºC / +500 ºF **Materials:** Carbon steel, 316SS, Alloy 20, Monel, Hastelloy C **Seat:** Xtreme™ High performance **Seals:** Low emission stem seals	Isolation and control applications	B107-1 B107-3
Jamesbury full port flanged ball valves 	9000 -series	Pre-engineered valve types and materials according to industry standards for control, on/off and manual use	**Size:** DN15 – 600 (½" – 24") **Pressure:** ASME 150 & 300 **Temperature:** Up to +260 ºC / +500 ºF **Materials:** Carbon steel, 316SS, Alloy 20, Monel, Hastelloy C **Seat:** Xtreme High performance **Seals:** Low emission stem seals	Isolation and control applications	B107-1 B107-3

Ball valves

Neles Easyflow™ ball valves*					
Product	**Series**	**Design**	**Specifications**	**Service**	**Bulletin**
Neles Easyflow flanged ball valves 	J7-series	Reduced bore flanged floating ball valve	**Sizes:** DN15 – 200 (NPS ½ – 8) **Pressure:** ASME Class 150 or 300 **Temperature:** -29 ºC to +200 ºC **Body:** WCB carbon steel, CF8M stainless steel **Seat/seal:** TFM™ 1600 / Graphite **Leakage:** No visible leakage	General, utility services	B135-1
Neles Easyflow flanged ball valves 	J9-series	Full bore flanged floating ball valve	**Sizes:** DN15 – 200 (NPS ½ – 8) **Pressure:** ASME Class 150 or 300 **Temperature:** -29 ºC to +200 ºC **Body:** WCB carbon steel, CF8M stainless steel **Seat/seal:** TFM™ 1600 / Graphite **Leakage:** No visible leakage	General, utility services	B136-1
Neles Easyflow angle stem tank bottom valves 	JT-series	Angle stem tank bottom ball valve	**Sizes:** DN25 – DN150 (NPS 1 – 6) **Pressure:** ASME Class 150 **Temperature:** -29 ºC to +200 ºC **Body:** WCB carbon steel, CF8M stainless steel **Seat/seal:** TFM™ 1600 / Graphite **Leakage:** No visible leakage	General, utility services	B134-1

*Neles Easyflow valves are not for sale in North American market.

Segment valves

Neles segment valves					
Product	**Series**	**Design**	**Specifications**	**Service**	**Bulletin**
Neles V-port segment valves 	RA & RE -series	Wafer, flanged **Options:** Reduced Cv trim, low noise and anti-cavitation Q-Trim	**Size:** DN25 – 800 (1" – 32") **Pressure:** ASME 150 – 600 / PN10 – 100 **Temperature:** -52 to + 425 ºC / -60 to +797 ºF **Body:** CF8M, WCB, CG8M, Titanium, Hastelloy C, SMO Class IV ~ VI **Tightness:** 10xISO Rate D, Rate D	General, demanding, erosive, severe, fire safe, low emission	3R21 3R24

Eccentric plug valves

Neles eccentric plug valves					
Product	**Series**	**Design**	**Specifications**	**Service**	**Bulletin**
Neles Finetrol™ 	FC, FG & FL -series	Flanged, eccentric rotary plug valve **Options:** Reduced Cv trim, low noise and anti-cavitation Q-Trim, cryogenic, globe valve face-to-face	**Size:** DN25 – 300 (1" – 12") **Pressure:** ASME 150 – 600 / PN10 – 100 **Temperature:** -200 to +450 ºC / -320 to +842 ºF **Body:** CF8M, WCC **Tightness:** Class IV ~ VI	General, severe, SIL, fire safe, low emission	5FT20 5FT22

Butterfly valves

Neles butterfly valves

Product	Series	Design	Specifications	Service	Bulletin
Neles high performance triple eccentric disc valves 	L12, L6, LW & LG, L1 & L2 -series	Wafer, lugged, double flanged **Options:** High tightness, erosion resistant version, cryogenic and high temperature, high cycling	**Size:** DN80 – 2200 (3" – 88") **Pressure:** ASME 150 – 600 / PN10 – 100 **Temperature:** -200 to +650 ºC / -320 to +1200 ºF **Body:** CF8M, WCB, CG8M, LCC, 5A **Tightness:** Up to ISO Rate A, API 598 & Class VI	General, moderate SIL, fire safe, low emission	2L121 2L1220 2LW20 2L621 2LBF20
Neles butterfly valves 	BWX -series	Wafer, lugged, double flanged	**Size:** NPS 4 – 24 / DN100 – 600 **Pressure:** ASME 600 / PN63 **Temperature:** -29 to +470 ºC / -20 to +880 ºF **Body:** Stainless steel, special material	Cryogenic LNG applications, high temperature, nitrogen, helium and hydrogen	2BWX20

Jamesbury butterfly valves

Product	Series	Design	Specifications	Service	Bulletin
Jamesbury high performance butterfly valve 	800 -series	Pre-engineered valve types and materials according to industry standards for control, on/off and manual use	**Size:** DN65 – 750 (2½" – 30") Lugged: DN65 – 1500 (2½" – 60") **Pressure:** ASME 150 & 300 **Temperature:** Up to +260 ºC / +500 ºF **Body/trim:** Carbon steel, 316SS, Alloy 20, 254SMO®, Monel, Hastelloy C **Seat:** Teflon®, Xtreme, UHMV, 316SS/PTFE, 316SS/XT	Economical performance for control and shut-off service in all soft seated applications	W101-6 W104-1 W105-1 W130-1

Neles Easyflow butterfly valves*

Product	Series	Design	Specifications	Service	Bulletin
Neles Easyflow butterfly valves 	JA-series	Resilient seated butterfly valves, wafer, lugged	**Sizes:** DN50 – DN600 (NPS 2 – 24) **Pressure:** PN10, PN16, Class 150 **Temperature:** -30 ºC to +200 ºC **Body:** GGG40 ductile iron, GG25 cast iron, WCB carbon steel, CF8M stainless steel **Seat/seal:** Ethylene-Propylene (EPDM), Nitrile (Buna-N, NBR), Fluorocarbon (FKM), Silicone (VMQ) **Leakage:** No visible leakage	General, utility services	W152-1

* Neles Easyflow valves are not for sale in North American market.

Valve controllers offering

Valve automation excellence – best possible valve performance

Valmet offers a complete range of solutions for your valve automation needs. Our valve automation offering ranges from limit switches to reliable actuators and intelligent valve controllers with third generation diagnostics. The unique solutions ensure the best possible valve performance and compliance to environmental regulations, regardless of valve make, model or manufacturer.

ND-series valve controllers

Neles NDX™ and ND9000 valve controllers provide a solution for all valve brands in a wide range of applications regardless of customer or industry. The product delivers all the robustness and reliability you'd expect from a valve controller by Valmet. At the same time it is extremely easy to install and use.

Neles SwitchGuard™ SG9000

Neles SwitchGuard is a top class intelligent on/off valve controller designed to operate on any valve actuator. Large pneumatics capacity and embedded diagnostic features enable users to guarantee the availability of their switching and high cycling valves in demanding processes.

Neles ValvGuard™ VG9000

Neles ValvGuard is a top class intelligent safety solenoid with partial stroke testing features for emergency shutdown and venting valves. Based on the automatic PST and other diagnostics data, VG9000 increases safety and plant safety targets can be reached more economically than with other solutions.

Axiom™ AN / ANX

The Stonel Axiom AN / ANX offers unmatched reliability using non-contact position sensing with solid state electronics and contaminant-tolerant pneumatic control. Coupled with its space-efficient design, corrosion resistance and networking/wireless link capability, the AN / ANX offers unrivaled convenience and cost-saving benefits in hazardous and general purpose process applications.

Other proven, high-efficiency solutions for demanding feedstock from Valmet

In addition to our flow control offering, Valmet's solutions for helping petrochemical companies achieve plant-wide circular economies also include boilers, emission control technologies and automation solutions – all backed up by our comprehensive service expertise.

Valmet DNA Automation System
Valmet DNA is the Distributed Control System (DCS) for all your process automation needs. It gives you complete control of all your processes and provides user experience and transparency that go far beyond traditional automation systems.

The automation system has built-in control, optimization, condition monitoring, advanced analytics, information management and remote support, as well as seamlessly integrated Safety Instrumented Systems (SIS). This single system architecture saves on both costs and effort while ensuring open growth for your future challenges.

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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