



EMERSON[™]



VANESSA SERIES 30,000 TRIPLE OFFSET VALVES

QUARTER TURN • NON-RUBBING • TORQUE SEATED • METAL-TO-METAL SEATING

VANESSA | TRIPLE OFFSET VALVES

EMERSON

A GLOBAL NETWORK OF INTERNATIONAL BRANDS

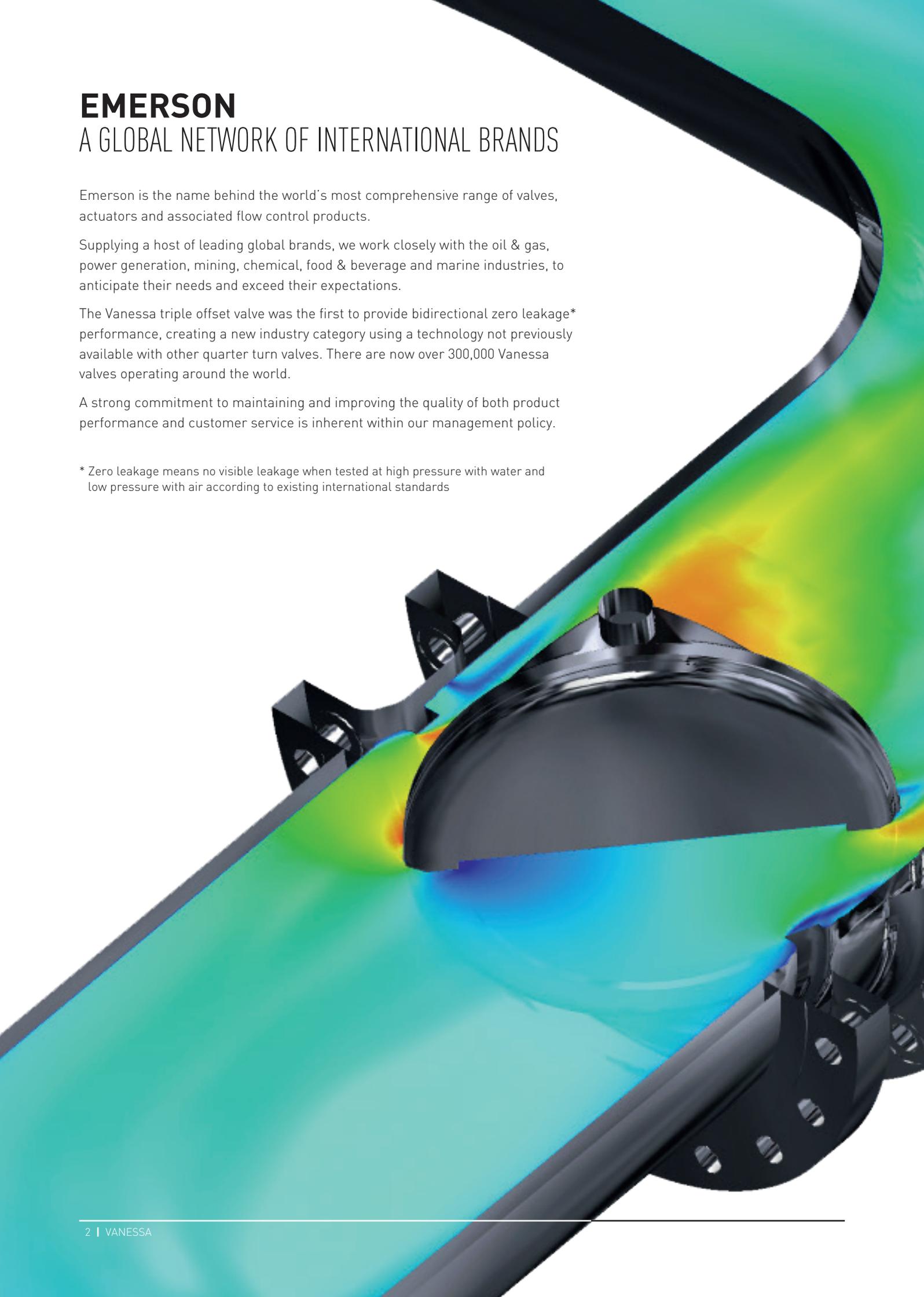
Emerson is the name behind the world's most comprehensive range of valves, actuators and associated flow control products.

Supplying a host of leading global brands, we work closely with the oil & gas, power generation, mining, chemical, food & beverage and marine industries, to anticipate their needs and exceed their expectations.

The Vanessa triple offset valve was the first to provide bidirectional zero leakage* performance, creating a new industry category using a technology not previously available with other quarter turn valves. There are now over 300,000 Vanessa valves operating around the world.

A strong commitment to maintaining and improving the quality of both product performance and customer service is inherent within our management policy.

* Zero leakage means no visible leakage when tested at high pressure with water and low pressure with air according to existing international standards





VANESSA SERIES 30,000 THE ULTIMATE PROCESS VALVE

A VALVE DESIGNED TO THE HIGHEST STANDARDS OF RELIABILITY AND PERFORMANCE.

Our triple offset design completely eliminates any rubbing action of the sealing elements during the 90 degrees of rotation, positioning Vanessa Series 30,000 as the ultimate process valve. Based on these new and revolutionary concepts, we have achieved worldwide success across the Oil & Gas, Process and Power industries.

If you ask one of our customers the reasons why they choose us, you are likely to hear a recurring word: 'reliability'. Our engineering expertise, state-of-the-art technology and manufacturing capabilities ensure we continue to provide the most reliable triple offset valves across a wide range of applications for our customers worldwide.

Emerson Vanessa was a pioneer in the use of 3D Cad, Finite Element Analysis and Computational Fluid Dynamic calculations to design a valve capable of delivering better performance engineered in the most efficient way.

The complex geometry of Vanessa Series 30,000 valves requires precision engineering and using advanced technology for fixture tooling and inspection equipment. 3D measuring machines are used to check body and discs with tolerances in the order of fractions of millimeters to be verified and validated during different stages of manufacturing.

These advanced tools have allowed us to continuously improve the product design, enhance robustness, ensure long term durability and adapt the valve to provide the best-fit solutions to our customers.

'We have been using Vanessa triple offset valves in our Tank Farms & Offshore facilities for the past ten years for all of our five expansion phases and have found their performance to be extremely satisfactory.'

Terminal Manager
Major O&G End User

TECHNICAL SPECIFICATION

MATERIALS

Carbon steels, high temperature alloy steels, austenitic stainless steels, Duplex and Superduplex stainless steels, and more

SIZES

DN 80 to DN 2800
(NPS 3 to NPS 112) and larger

CONNECTIONS

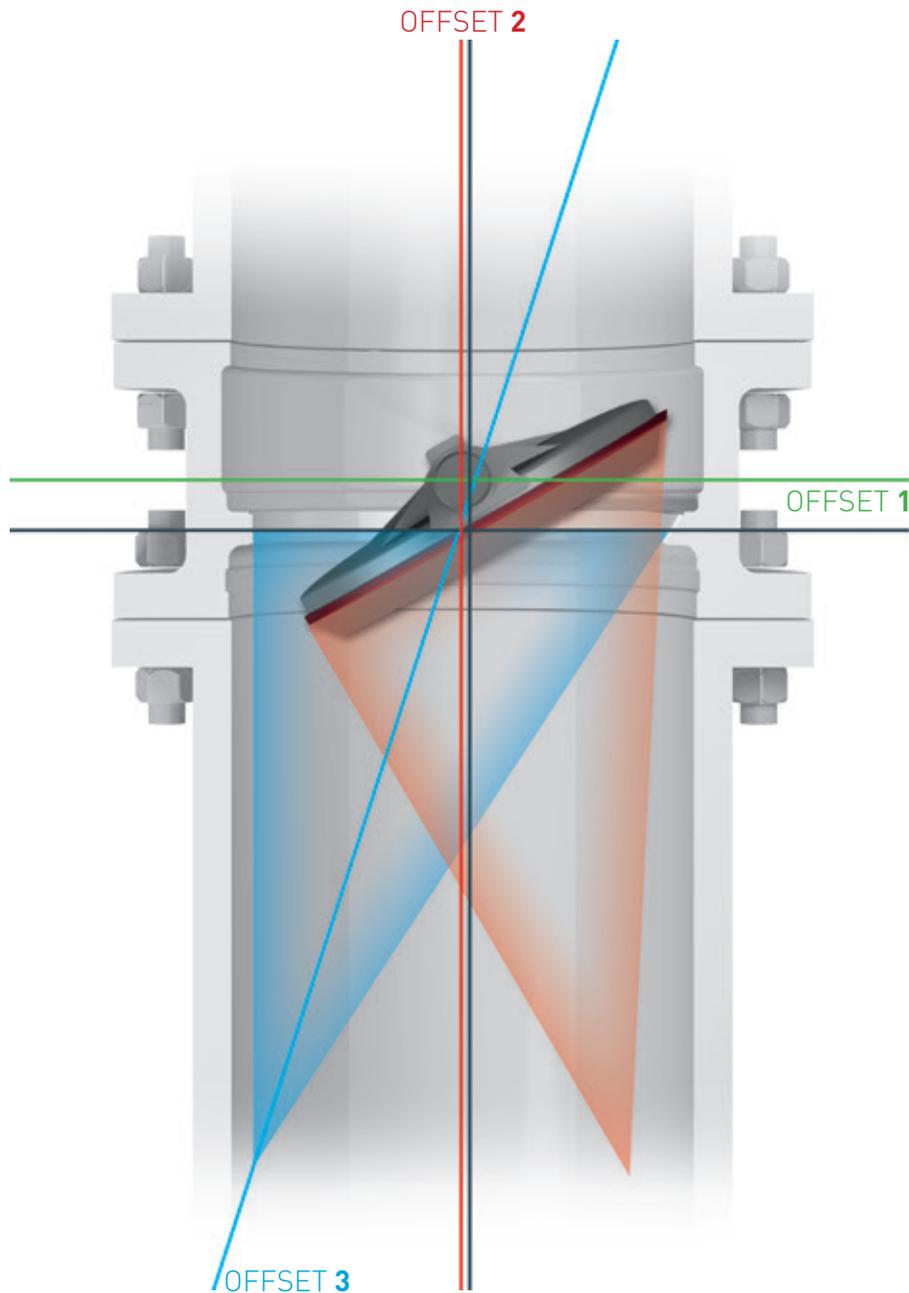
Double flanged, lug, wafer, butt weld

PRESSURE CLASS

ASME 150-1500; EN PN 10-160

TEMPERATURE RANGE

-254°C to 815°C (-425°F to 1500°F)



TRIPLE OFFSET THE CONCEPT

VANESSA TRIPLE OFFSET VALVE: METAL-TO-METAL TORQUE SEATED, QUARTER TURN NON-RUBBING ROTATION

OFFSET 1

The shaft is placed behind the plane of the sealing surface to provide a continuous seat path.

OFFSET 2

The shaft is placed to one side of the pipe/valve centerline to allow the displacement of the seal from the seat during the 90° opening.

OFFSET 3

The seat and seal cone centerlines are inclined in respect to the pipe/valve centerline. This third offset completely eliminates rubbing.

SERIES 30,000

CONTINUOUS IMPROVEMENTS TO OUR PRODUCT DESIGN ENSURE LONG TERM DURABILITY AND RELIABILITY

VANESSA SERIES 30,000 BECAME A MARKET LEADER THANKS TO ITS ZERO LEAKAGE* PERFORMANCE ACROSS A WIDE RANGE OF PRESSURE CONDITIONS.

Forty years of proven use and constant feedback from the field have been instrumental to product design improvement, machining optimization, appropriate materials selection and the refinement of several other aspects related to our product. All of this has contributed to making Vanessa Series 30,000 an innovative, successful solution for several applications and different functionalities.

Today, our triple offset valves represent an important step forward compared to traditional process valves - although they share the same cone-to-cone principle with a globe valve, sealing is performed by applying quarter turn rotation instead. The quality, robustness, durability, reliability of our Series 30,000, including its critical contribution inside automated emergency shutdown packages, are ultimately the result of an accurate application risk analysis and are based on four fundamental product design features:

TORQUE SEATED

Vanessa's seating force is generated by externally applied torque rather than by mechanical interference as in position-seated ball, butterfly and plug valves. This means that the cone-to-cone sealing occurs by contact pressure and not by friction generated by the elastic deformation of the seat. This feature allows our valve to handle high pressure classes and provide reliable and highly controlled operating torque.

METAL-TO-METAL SEATING

Vanessa's cone-to-cone concept requires metal-to-metal seating in order to handle more severe applications. We use Stellite® grade 21 seats and a resilient seal ring in Duplex as a minimum with high mechanical resistance. Stellite®21 is a cobalt alloy that coats the body seat to provide hardness, resistance to fluid abrasion and wear, while ensuring high corrosion resistance. Due to its unique design, the metal seal ring has elastic properties which allow the radial compression to be uniformly distributed around the seating surface.

QUARTER TURN ROTATION

Thanks to sealing elements that remain in position and rotate around their own axis, Vanessa valves allow customers to save valuable space and significantly improve operability due to lower and more consistent running torque compared to any other rising stem valve. Furthermore, the quarter turn rotation eliminates any negative effects on packing caused by rising stems, such as extrusion and abrasion, improving valve performance and reducing fugitive emissions.

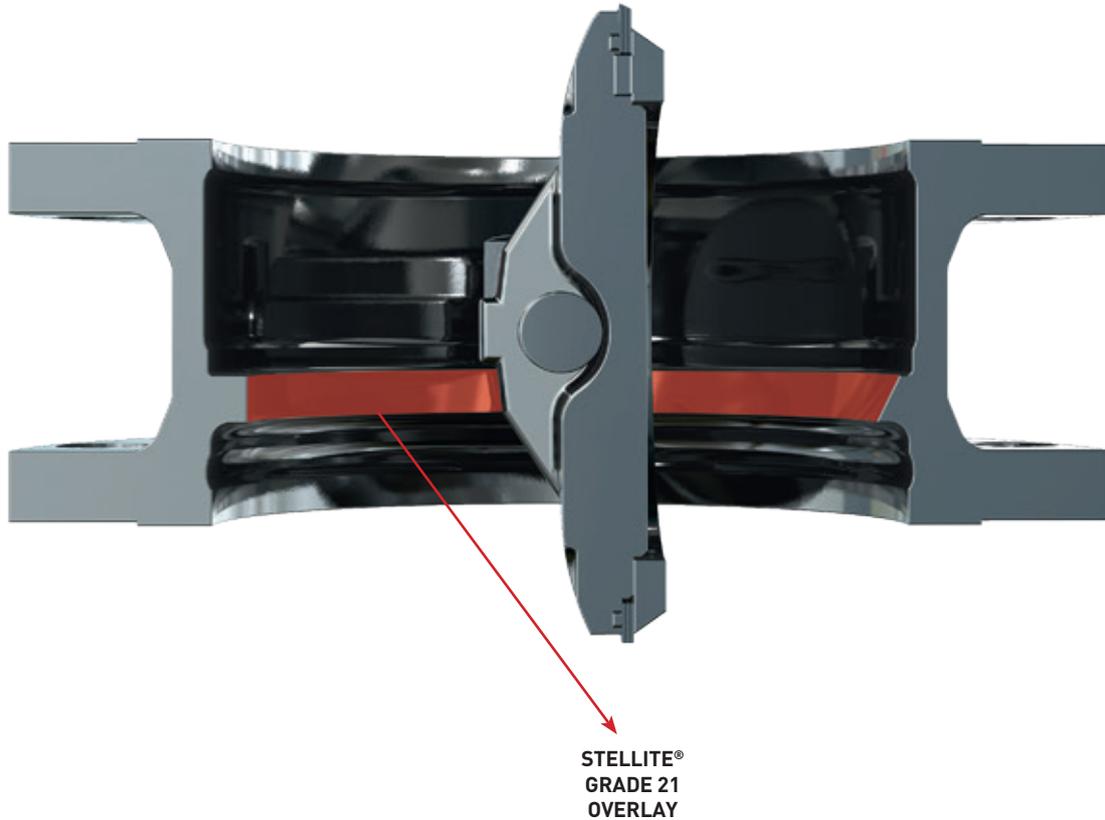
NON-RUBBING ROTATION

Eliminating contact between seat and seal during opening-closing means extending the life of the sealing elements and the valve altogether. This also combines with the main feature of quarter turn rotation, i.e. low and consistent running torque, for which valve operation remains quick and easy over time and modulating is possible even at very low angles. This feature makes our triple offset valve the ideal solution for any application requiring emergency shutdown, blow off or frequent cycling (e.g. molecular sieve).



* Zero leakage means no visible leakage when tested at high pressure with water and low pressure with air according to existing international standards

Stellite® is a registered trade name of Deloro



SERIES 30,000

A HISTORY OF OUTSTANDING RESULTS
WITH STELLITE® GRADE 21 SEAT OVERLAYS

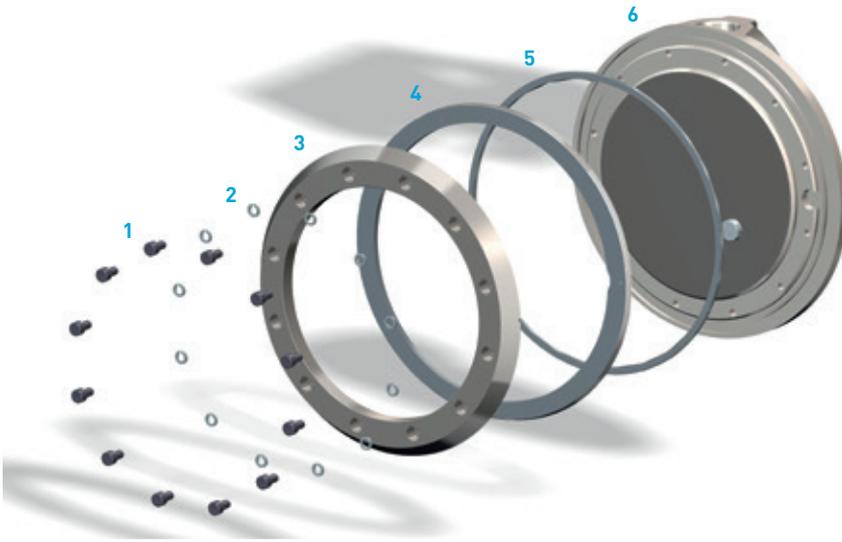
SERIES 30,000 USES A ROBUST INTEGRAL-TO-BODY SEAT WHICH REPRESENTS AN OPTIMAL SOLUTION FOR POSITIVE ISOLATION, ELIMINATING ANY POSSIBILITY OF MECHANICAL FAILURE AND LEAKAGE

* our manufacturing plant holds an ISO 3834 welding process certification and two on-site International Welding Engineers (IWEs) are responsible for the specification, qualification, control and quality of all welding processes

Stellite® grade 21 is specifically designed to withstand wear produced by metal-to-metal contact.

High quality weld overlays* are obtained with welding robots and are designed to be maintenance free for the entire life of the valve.

Stellite® grade 21 overlays contribute to achieving higher reliability on heavy duty applications, including high cycling and quick stroking time.



KEY

- 1 Bolts
- 2 Washers
- 3 Disc retainer
- 4 Seal ring
- 5 Spiral wound gasket
- 6 Disc and reference pin

BASIC CONFIGURATION - SEALING

DUE TO THE ELASTICITY AND THE RADIAL COMPRESSION OF THE SEAL RING, THE CONTACT PRESSURE IS UNIFORMLY DISTRIBUTED AROUND THE SEATING SURFACE GUARANTEEING ZERO LEAKAGE.

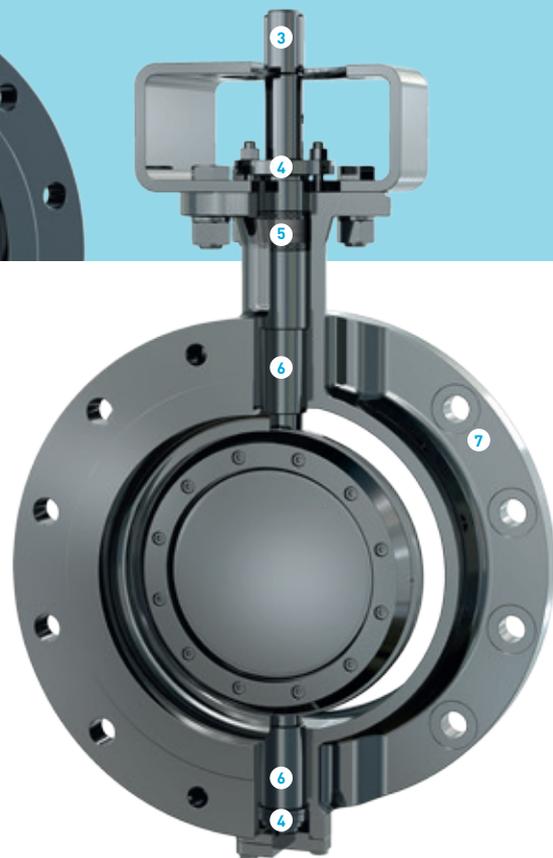
As for all Vanessa triple offset valves, seal rings are easily interchangeable thanks to their self-centering ability and the presence of reference pins that simplify assembly. The use of graphite ensures tightness between seal ring layers and an ideal

level of flexibility allowing each metal layer to independently find the optimal seating position. For some specific severe applications, a one-piece metal Solid Seal Ring (SSR) is used instead.

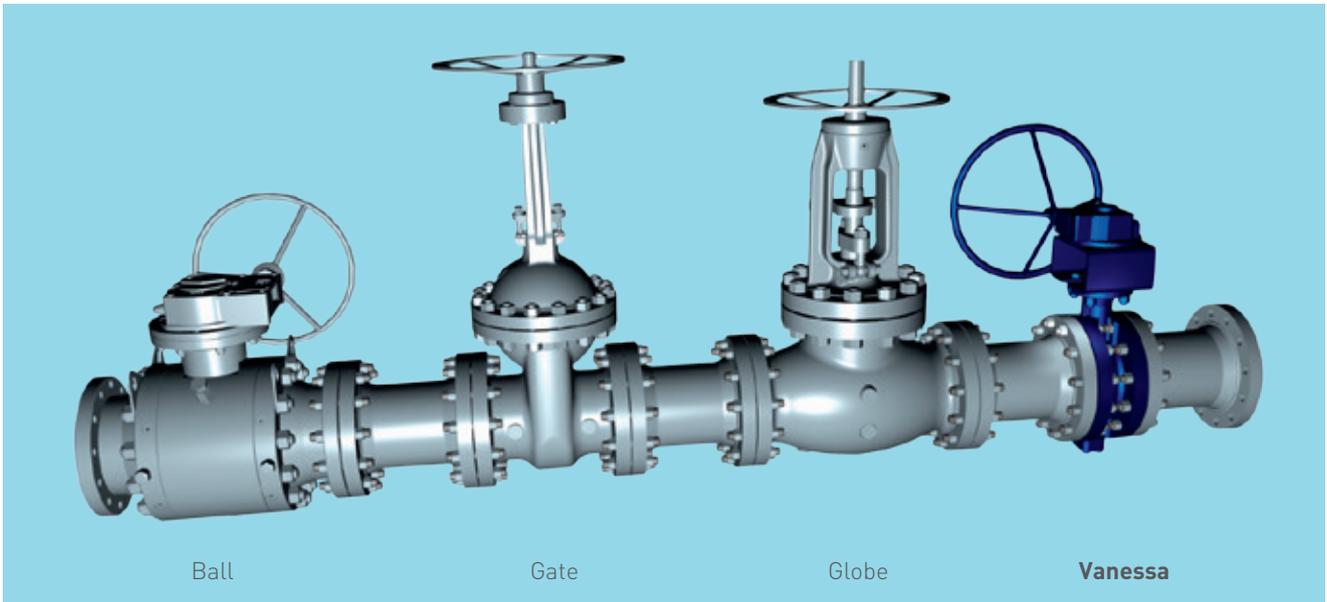


FEATURES

- 1. Open/close indicators facilitate quick installation of actuators when the valve is already in-line.
- 2. The Series 30,000 does not feature pins that would reduce the shaft resistant section.
- 3. The one-piece shaft ensures high pressure containment safety/ maximum torque seating integrity.
- 4. The Series 30,000 is designed to handle the risk of shaft extrusion both internally and externally in total compliance with API 609.
- 5. External emissions are minimized with a two-piece packing gland - our proprietary packing design is qualified according to ISO 15848-1, EPA method 21, TÜV TA luft/ VDI 2440 certifications.
- 6. Robust bearings and thrust bearings are designed to withstand high pressure and minimize galling.
- 7. Flange spot facing maximizes the integrity of the connection to the pipe, thus limiting the possibility of leakage over time.







SERIES 30,000

A PREMIUM QUALITY VALVE THAT MINIMIZES YOUR COST OF OWNERSHIP

YOU WOULD NOT USUALLY ASSOCIATE A PREMIUM PRODUCT WITH COST SAVINGS. HOWEVER, THE REALITY IS QUITE DIFFERENT WITH VANESSA SERIES 30,000 VALVES.

In fact, our customers regularly replace existing gate, ball and globe valves achieving substantial reduction of space and weight, while benefitting immediately from lower installation costs.

Triple offset valves have been used extensively in all applications where positive isolation is required. The quarter turn design and extremely low running torque also allow for accurate flow and pressure control. With our valves true isolation and control capabilities can be combined in a single product against the usual need for two distinct valves. In addition, low torque also means low cost of actuation.

So what happens when you install and start operating the valve? Vanessa Series 30,000 is designed to be

virtually maintenance free and does not require planned maintenance in most applications, providing extra cost savings across its lifecycle.

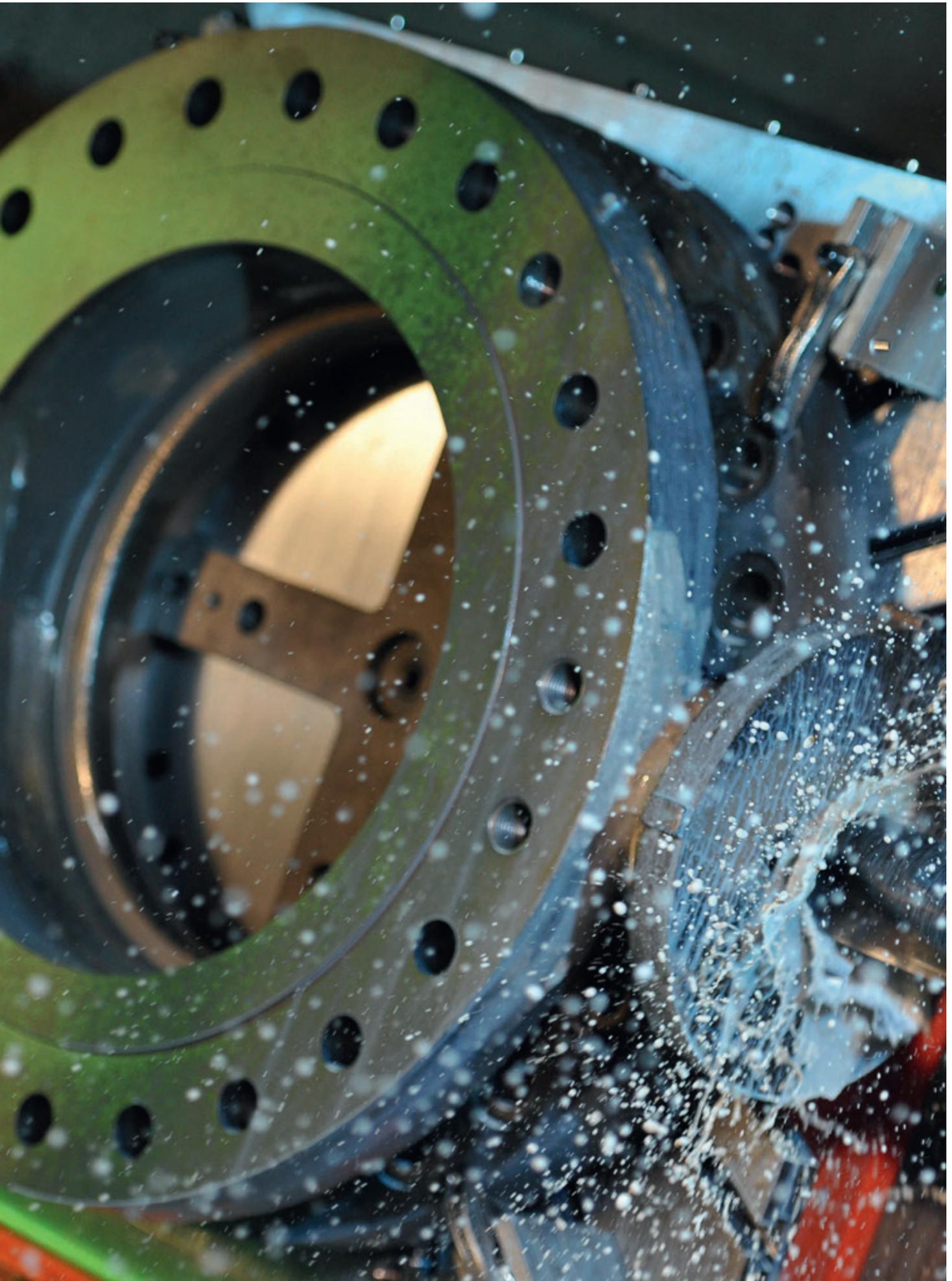
SAFELY REPLACE YOUR EXISTING VALVES WITH VANESSA SERIES 30,000

Replacing an existing valve can be a necessity but also a strategic choice. Vanessa Series 30,000's bi-directional zero leakage and inherently fire safe design allows our customers to easily replace gate, ball and globe valves and, with our long face-to-face valves (designed in accordance to ASME B16.10), this operation can be carried out without the need of any piping modification.

Using Vanessa valves can also contribute to reducing systemic failures thereby improving the overall Safety Integrity Level (SIL); in fact by using triple offset valves with an appropriate actuator selection, it is possible to configure the product to assist the required protective function.

'We have several hundred Vanessa triple offset valves operating in molecular sieve service and these have been working very effectively since initial installation four years ago [...] triple offsets are now our standard for valve type for this difficult duty and we are more than happy to recommend them to other users.'

Engineering Manager
Major Process Licensor





SERIES 30,000

WE CAN DELIVER: LARGE SCALE MANUFACTURING IN ACTION

WITH OUR HISTORY OF CONSISTENT GROWTH OVER THE YEARS, WE HAVE EXPANDED VANESSA MANUFACTURING FACILITIES SEVERAL TIMES AND NOW VANESSA SERIES 30,000 VALVES ARE MADE IN A 70,000 SQUARE METER SITE CAPABLE OF PRODUCING OVER 35,000 VALVES PER YEAR.

There is also a separate production facility based on Advanced Flow Manufacturing technology producing up to 1,000 valves per month (sizes DN 80 to DN 600, NPS 3 to NPS 24) to delivery times as short as four weeks.

Besides a proven track record of delivering outstanding products for decades to hundreds of satisfied

customers, our high quality standards are acknowledged by certifications including ISO 9001, ISO 14001 and OHSAS 18001.

Furthermore, through the introduction of rigorous manufacturing methodologies such as 'Lean' and 'Six Sigma', we are committed to operational excellence and high integrity processes throughout our business.

Valves of all sizes and ratings can be tested with helium in one of our cryogenic testing facilities. The largest of these fully computerized testing facilities is equipped with a 20 ton crane, a 30,000 liter liquid nitrogen tank and cameras to ensure operation and control in total safety.

A WORLDWIDE IN-HOUSE SUPPORT FOR OUR CUSTOMERS

Our goal is to ensure that our customers receive services matching the same outstanding level of quality we deliver through our products.

As part of an international group Vanessa has a truly global presence through a network of sales offices, service centers, valve automation centers and local inventory.

This is extended to training and service operations in all the major industrial markets allowing us to look after our customers throughout a valve's lifecycle.



SERIES 30,000

ONE PRODUCT, HUNDREDS OF APPLICATIONS

OVER 300,000 VANESSA VALVES ARE SUCCESSFULLY INSTALLED WORLDWIDE ON A WIDE RANGE OF APPLICATIONS INCLUDING OIL & GAS, POWER, PROCESS AND MANY OTHER DEMANDING INDUSTRIES.

From cryogenic up to extremely high temperatures, we offer solutions to critical and non-critical applications ensuring the highest reliability and, more importantly, total safety of your facilities.

Suitable from full vacuum to 250 bars (over 3,600 psi), Vanessa Series 30,000 valves are available in sizes between DN 80 and DN 2800 (NPS 3 and NPS 112) and can be configured in wafer, lug, double flanged, butt weld and butt weld top entry body styles

across virtually all bills of materials. Our valves handle fluids ranging from H₂ gas to high viscosity liquids, from food grade to toxic and corrosive. The most common process functions are:

- Isolation
- Flow and pressure control
- ON-OFF
- Switching
- Emergency / safety operations
- HIPPS
- Major equipment protective function, including:
 - Turbine backflow
 - Turbine supply and bypass
 - Compressor blow-off and anti-surge

'Your team demonstrated a great capability to adjust and deal in a very professional way with very tough constraints.'

Senior Instrumentation Engineer
Major Petrochemical End User

	 Basic configuration	 Cryogenic configuration	 High temperature configuration
 Double flanged short	X	X	X
 Double flanged long	X		
 Lug	X	X	X
 Wafer	X		
 Butt weld	X	X	
	 Class 1500	 Cryogenic butt weld top entry	 Molten salt

For detailed technical information about our products, visit our online catalog at:

www.vanessavalves.pentair.com/catalog



OIL & GAS

upstream
downstream
pipeline & storage
supply & service



POWER

renewables*
fossils
district heating
nuclear

* solar, geothermal and hydro



PROCESS

chemical & coal
petrochemical
desalination plants
waterworks
food & beverage



OTHER INDUSTRIES

iron & steel
other mining
automotive
shipyards
aerospace



