

BUTTERFLY VALVES FOR **EXTREME** CONDITIONS



...with confidence

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95036

WESTAD
CLASS 150
DN200

...with confidence

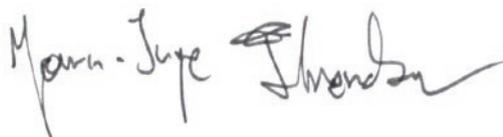
COMPANY PROFILE

Westad Industri AS is a leading supplier of high performance valves for ships and offshore installations and the oil, gas, chemical and mining industries. The core of Westad's business philosophy is to design, manufacture and sell high quality products at competitive prices to demanding clients.

The management is committed to keep the company at the front by carefully monitoring the changes in market requirements; emphasising innovation and performance as requisites to success.

Every staff member accounts for high standards in business ethics and proper workmanship in management, production and services, and seeks to meet with the expectations of the client at all times.

Westad products represent accountability and confidence through their qualities and characteristics, and are catered for by an international support network.



Jørn-Inge Throndsen - *Managing Director*



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Westad has been a part of the Klinger Group since 2013



The KLINGER Group of Independent Companies was founded in 1886 by Richard Klinger. Driven by challenges associated with glass tube indicators on steam engines he filed an early patent for a reflection level gauge, soon followed by innovations of compressed fibre gaskets and piston valves. Already at that time, the KLINGER brand was built on solutions for the most demanding industries.

Today, the KLINGER group is recognized as reliable partner for global Sealing and Fluid Control solutions, employing over 2300 professionals and operating over 60 manufacturing, distribution and service hubs on all continents. Total sales exceed €420M.

www.klinger-international.com



Cryogenic testing of a Westad gate valve for LNG in the late 1960s.

...with confidence

WESTAD HISTORY

The company history starts in 1895 with the establishment of a valve manufacturing company by Daniel Westad. At the time, to serve the local pulp and paper industry.

Various transitions in the industry allowed Westad to start serving the Marine industry around 1950.

Westad started making valves for LNG in the 1960s and made the first LNG butterfly valve in 1975.

With the arrival of oil and gas production in Norway in the 1970s, Westad adapted its product line to serve this demanding market segment.

The local Oil & Gas industry required more sophisticated materials, and Westad delivered on its reputation. Titanium, 6MO, Super-duplex and Duplex became the common materials for critical services.

Westad followed the maritime industry east, and have exported high quality valves to Korea, China and Japan since 1978.

After more than 120 years, Westad is still at the same location in Geithus, Norway.



Castings ready for machining at our factory in Geithus, Norway.

...with confidence



WESTAD TODAY

Westad is a leading supplier and a pioneer in the development of high performance butterfly valves for ships and offshore installations, the Oil & Gas, chemical and mining industries. The close connection to the North Sea enables Westad to expand its knowledge of critical applications, high-technology materials and valve design.

Focus on quality

Westad controls all activities from machining through assembly and testing, of course under the strictest quality control. Procedures and acceptance criteria are implemented at our sub-contractors and in our own production.

ISO 9001 certificate since its introduction.
Latest version available at westad.com

Environmental responsibility

We will do our best to take care of the environment. Westad strives to minimize the use of non-renewable resources and unnecessary packaging. Environmental knowledge is important among our employees and Westad has an open policy towards customers, suppliers, owners and the general public regarding the environmental impact.

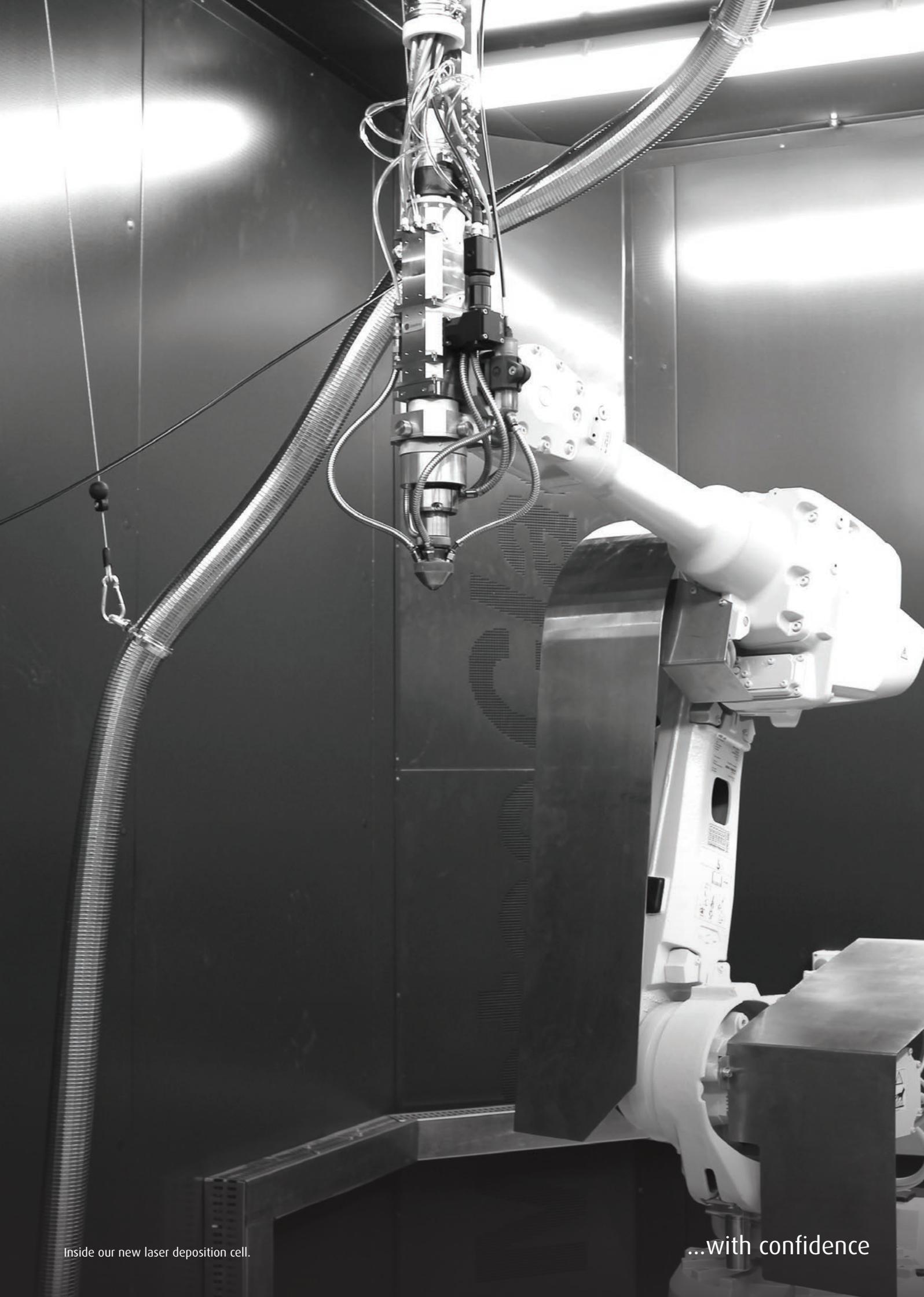
ISO 14001 certificate since March 2010.
Latest version available at westad.com

Certifications and approvals

In addition to a proven track record of delivering high quality products for more than hundred years, Westad is classified and certified by most major classification societies.



- Valves can be delivered according to NORSOK L-001
- Approved by Achilles - ID 15965
- Pressure Equipment Directive - PED-H-137
- Westad is self certified with DNV GL, LR and BV
- Approved by major oil companies



Inside our new laser deposition cell.

...with confidence

WESTAD FACTORY

Westad with our manufacturing plant and head office is still located in Geithus, and we can proudly say that our valves are made in Norway since 1895.

Engineering

3D CAD/CAM software technology ensures high precision engineering, required by the advanced geometry of Westad valves. Westad is using a 3D measuring machine to control all tolerances.

Manufacturing

The manufacturing facilities include highly modern CNC machining centers and rely on educated and skilled work force. To utilize the advanced engineering tools, Westad has several state of the art 5-axis machining centers supporting computer-aided manufacturing.



Newest laser technology

Westad uses next generation laser deposition technology for hardfacing to assure high performance in critical applications.



Laser cladding prior to machining



Machined surface

Ambient testing

The Westad factory is equipped with three computerized test units for valves. Horizontal clamping ensures quick and easy (un)loading and allow testing of bigger actuated valves. Testing is done in accordance with the highest quality standards. The company performs hydrostatic tests and high/low pressure tests with gas.

Cryogenic testing

We also run our own cryogenic testing facilities with digital instrumentation, remote observation and the highest safety standards for tests with helium and liquid nitrogen.



Westad Cryoseal valves installed on an LNG tanker.

...with confidence

WESTAD CRYOSEAL 2X™

Double Eccentric High Performance Butterfly Valve for LNG

KEY FEATURES

- DEVELOPED FOR USE IN LNG SYSTEMS
- DOUBLE ECCENTRIC DESIGN TO REDUCE WEAR ON SEAT
- BI-DIRECTIONAL AT FULL PRESSURE RATING
- FREE ACCESS TO STUFFING BOX AND GLAND
- BONNET EXTENSION
- FIRE SAFE ACC. TO API 607

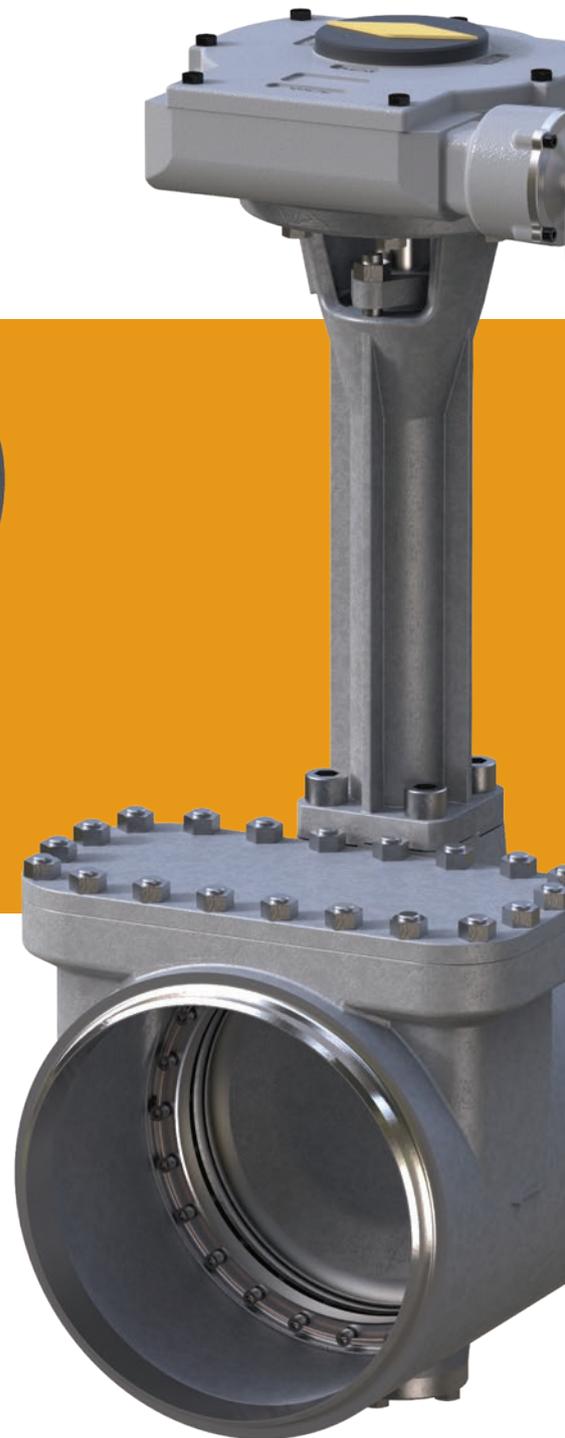
The Westad butterfly valve for cryogenic service is designed for tight shut off and throttling service.

The disc movement is double offset (triple offset available on request). This eliminates concentrated wear points on the sealing ring and extends its lifetime. Standard body patterns are flanged and butt welded types.

Butt welded type has extended body to prevent heat conduction to the sealing area during welding installation. An inspection door on top of the body enables easy inspection, maintenance and replacement of inner parts without the need to remove the valve or to cut the pipe.

To prevent internal stress in the bonnet during the cool-down period, all bonnet joints are bolted. This bonnet is extended to ensure that the gland area remains free from freezing even for temperatures down to -196°C.

The valve can be installed with the shaft in any direction. The topflange drilling is according to ISO 5211 standards to fit a large range of gears and actuators.



Specifications

Temp. range:	+200°C to -196°C
Pressure rating:	Up to 50 bar
Size range:	DN80 - 1000 (3" - 40") Other sizes on request
Services:	For tight shut-off and throttling services
End to end:	Butt welded type according to drawing Double flanged type according to ISO 5752, s.14
End connection:	ISO PN 10/16/20/25/40/50 ANSI Class 150/300



...with confidence

WESTAD SCORPIO 2X™

Double Eccentric High Performance Butterfly Valve

KEY FEATURES

- DEVELOPED FOR USE IN LPG/LEG-, CHEMICAL-, OIL-, SEA WATER SYSTEMS ETC.
- DOUBLE ECCENTRIC DESIGN TO REDUCE WEAR ON SEAT
- BI-DIRECTIONAL AT FULL PRESSURE RATING
- FREE ACCESS TO STUFFING BOX AND GLAND
- SHAFT EXTENSIONS AVAILABLE
- FIRE SAFE ACC. TO API 607



The Westad Scorpio 2X™ is designed for full shut-off and throttling services.

After more than 120 years of valve manufacturing, Westad has designed a valve for special applications that will perform under extreme conditions.

The main design focus has been to minimize maintenance. No special tools are required - to reduce operational cost.

A wide range of materials are available to suit different service requirements and all bearings, gaskets and packings are made from non-corrosive materials.

Specifications

Temp. range: +200°C to -110°C

Pressure rating: 25 / 50 bar

Size range: DN80 - 1000 (3" - 40") Other sizes on request

Services: For tight shut-off and throttling services

End to end: Wafer acc. to API 609, Cat. B, table 3A. Above 24" acc. to ASME B16.47, A
Lug acc. to API 609, Cat. B, table 3A. Above 24" acc. to ASME B16.47, A
Double flanged type according to ISO 5752, s.13

End connection: ISO PN 10/16/20/25/40/50
JIS 10K/16K
ANSI Class 150/300



Production platform in the North Sea. Westad has more than 15.000 valves on such installations.

...with confidence

WESTAD SCORPIO 3X™

Triple Eccentric High Performance Butterfly Valve

KEY FEATURES

- TRIPLE ECCENTRIC DESIGN: METAL-TO-METAL SEALING
- SOLID OR LAMINATED METAL SEALING
- BI-DIRECTIONAL AT FULL PRESSURE RATING
- FREE ACCESS TO STUFFING BOX AND GLAND
- SHAFT EXTENSIONS AVAILABLE
- FIRE SAFE ACC. TO API 607



The Westad Scorpio 3X™ is designed for full shut-off and throttling services.

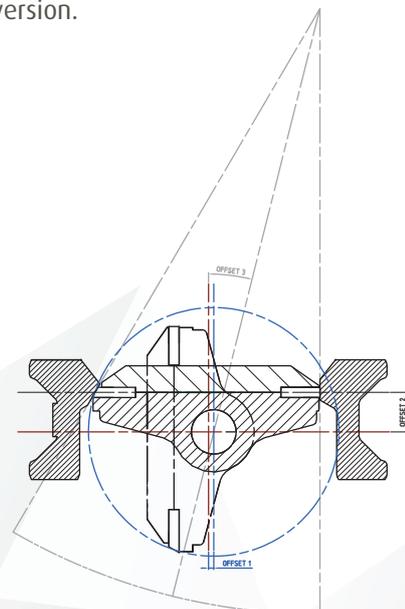
In addition to the double offset shaft design, the seat cone axis is offset from the shaft centerline. This eliminates friction during closing/opening and makes a uniform compressive sealing around the entire seat.

A wide range of materials are available to suit different service requirements and all bearings, gaskets and packings are made from non-corrosive materials.

The metal sealing of the Westad Scorpio 3X™ makes the valve suitable for higher temperature and higher pressure than the soft seated double eccentric version.

Specifications

- Temp. range: +450°C to -110°C
- Pressure rating: up to 50 bar
- Size range: DN80 - 600 (3" - 24") Other sizes on request
- Services: For tight shut-off and throttling services
- End to end: Wafer acc. to API 609, Cat. B, table 3A
Lug acc. to API 609, Cat. B, table 3A
- End connection: ISO PN 10/16/20/25/40/50
JIS 10K/16K
ANSI Class 150/300





Top side pipelines of an LNG tanker with Westad valves.
GTT no.96 membrane design.

...with confidence

WESTAD SERVICE & MAINTENANCE

Aftermarket

Westad strive to offer excellent service on their products for Ship-Owners, Ship Managers, Operators and/or Oil companies. Our service continues after the delivery of the vessel, plant or unit from the building yard and to the very end of its operational life up to 40 years later. Westad has strong focus towards aftermarket clients and operates on a 24/7/365 basis, with minimum mobilization time for both Spares and Services. Westad keeps an extensive database on valves delivered, and even though operating clients may have changed and documentations are lost, Westad take pride in helping out. Old documentations/drawings and spares are normally just a phone call away at Westad.

Extreme conditions

Westad butterfly valves have been designed and manufactured with the toughest operational conditions in mind. With temperatures ranging from minus 196°C to plus 50°C only the very best materials and design will survive client's stringent operational requirements.

Dry dock service and maintenance

Even though the Westad valves are designed for minimum maintenance, Westad recommend to include regular inspections and renewal of "wear & tear" parts into clients Planned Maintenance System (PMS). Westad can assist clients i.o. to secure time efficient and correct services by use of well-trained service personnel, which gives a guarantee on both job and spare -parts delivered. Unnecessary to say, Westad only uses OEM parts for their services, which safeguard trouble free operation for their clients between defined PMS intervals (DD intervals). For some Owners/Operators (LNG) services can only be done during docking/shutdown/repair periods, and Service Engineers from Westad are attending LNG-vessels all around the world and in any dry-dock/repair facility, as well as sailing with the vessel if necessary. With Westad Service Engineer to do the job, clients can rely on a correct result and minimum time spent on the job; important factors for both Owners and Operators.

Cryogenic

These valves in particular requires trained and skilled personnel to secure its performance. Only Westad Service Engineers are authorized to perform services and maintenance on Westad Cryogenic butterfly valves. For many of the major LNG operators Westad has developed close relationships with Clients through Service Agreements. This to maximize the output of relationship and minimize cost to their clients.

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WESTAD REFERENCES

Our references include these world class companies among others:



Complete reference list available on request

GLOBAL NETWORK

Westad caters for the global Marine and Oil & Gas markets, and operates world wide with the dedicated support of a well established network of representatives.

Contact information

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