

Twin Screw Pumps

Tank Storage and Cargo



Expertise in Tank Storage and Cargo

Driving Excellence in Terminal Pumping Solutions

Bornemann Twin Screw Pumps are widely used in tank farms and terminals for loading, unloading, and tank stripping. They ensure reliable performance under demanding conditions such as varying viscosities, fluctuating discharge pressures, and challenging media, handling both heavy and light hydrocarbons.

In cargo operations, Bornemann pumps provide stable, controlled transfer of clean liquids, heavy residues, and high-viscosity media. Their self-priming capability and low-pulsation flow enable safe, efficient loading and unloading, even with changing tank levels, fluid properties, or pressures – ideal for continuous use in large-scale storage terminals.

As positive-displacement pumps with externally mounted bearings and contact-free screw designs, they offer high efficiency, long service life, and low operating costs. With a broad range of materials and configurations, Bornemann supports both low- and high-viscosity fluids as well as aggressive media.

Bornemann also supplies turnkey pumping systems based on proven twin-screw technology. Together with comprehensive engineering, integration, installation, and lifecycle support, these systems ensure safe, efficient, and reliable operation in demanding industrial, maritime, and offshore tank storage applications.

Maritime Solutions

Bornemann delivers advanced pumping solutions engineered to meet the demanding conditions of the maritime industry. Our technologies ensure safe, efficient, and compliant operation across all vessel types. Designed for maximum reliability at sea, our systems offer low maintenance requirements and seamless integration into onboard processes, supporting uninterrupted marine operations.

Key Application Areas:

- Cargo and fuel handling for smooth and controlled transfer operations
- Ballast and bilge management ensuring vessel stability and safety
- Tank cleaning and stripping systems for efficient and thorough tank operations

Bornemann pumps provide robust performance, long service life, and dependable operation – making them a trusted choice for maritime environments worldwide.



Twin Screw Pump Series



W



HC



SLW



VHC



HP



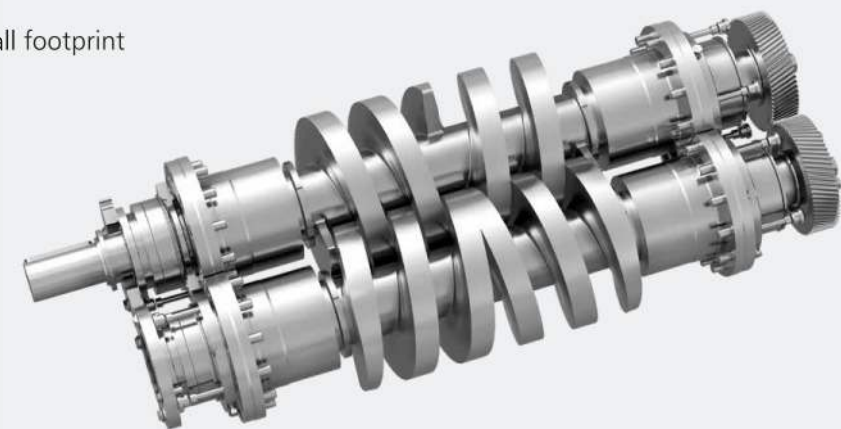
SLI

	Max. Flow		Max. Differential Pressure		Max. Viscosity		Max. Product Temperature	
	m ³ h	gpm	bar	psi	mm ² /s	cSt	°C	°F
W/V	2.800	12.300	40	600	200.000		350	660
HC/VHC	6.000	26.400	16	230	20.000		120	250
HP	1.500	6.600	100	1.500	10.000		120	250
SLW	300	1.320	16	230	100.000		300	570
SLI	180	790	16	230	100.000		120	250

Engineering Perspective on Pump Performance

Mechanical and Operational Benefits

- Bornemann Twin Screw Pumps are self-priming, up to 8,5 m (25 feet)
- Twin Screw Pumps are ideally suited for both, high and low viscous process liquids
- High total efficiency at different operating points
- Constant flow at varying pressures and viscosities
- Compact design ensures small footprint
- Functional principle ensures low-pulsation and low-noise operation
- Temporary dry run mode possible
- In conformity with ATEX 2014/34/EU, API 676 and the German TA Luft 2002, „Atex Zone 0 inside“ for Tank unloading



Comparison of Pump Technology

	Twin Screw Pump	vs	Centrifugal Pump
Flow rate vs. change of differential pressure	Constant flow		Flow rate decreases with increased differential pressure
Pressure generation	Independent of discharge pipe		Builds up system pressure
Operation range	Wide (1:10 speed range)		Narrow operating envelope
Viscosity handling	Ideal for low and high viscosity		Limited capability when handling varying viscosities.

Operating Flexibility



VLCC



Barge



Rail Tanker

Example: Performance Data of Installed Systems

Pump Type	Capacity		Pressure		Viscosity	Product
	m ³ h	gpm	bar	psi		
HP 255	248	1092	39	566	1 - 10	Crude Oil
HC 232	600	2642	8	116	126	Heavy Fuel Oil
W7T.2z	268	1180	3	44	20	Fuel Oil / Diesel
W7T.3z	300	1320	12	174	50	Bitumen
W9.5zk	1200	5283	8	116	80	Fuel Oil
VHC 180	250	1101	9	131	6	Fuel Oil

Ex Zone 0 Inside - Twin Screw Pumps

Maximum Safety for the Transfer of Liquid Chemicals and Petrochemical Products.

Liquid chemical and petrochemical products are produced, processed, and consumed at numerous locations across the European Union. These materials are transported by road, rail, or inland waterways. Transport on European waterways is regulated by the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN), which was revised in 2019. This revision introduced stricter explosion protection requirements for pumps. Loading and unloading pumps must now comply with equipment category 1G inside (Ex Zone 0 inside), ensuring the highest safety level in potentially explosive atmospheres.

Safe Handling of Flammable and Explosive Media

The application range of Bornemann twin screw pumps covers the oil and gas, chemical, and pharmaceutical industries. Flammable liquids are often among the transferred media. Under specific operating conditions – such as when emptying a tank containing a flammable liquid – an ignitable mixture may form inside the pipeline and consequently within the pump, caused by the ingress of ambient air.

Certified Safety According to ATEX Directive

The ATEX Directive 2014/34/EU defines the safety requirements for equipment used in potentially explosive atmospheres within the European Economic Area. Explosive environments are classified into Ex Zones 0 to 2, based on the probability and duration of occurrence of explosive atmospheres. The Bornemann product portfolio has been expanded with a new series designed for the continuous transfer of explosive liquid–gas mixtures, featuring “Ex Zone 0 inside” capability. This series meets the equipment category 1G internal requirements in accordance with the ATEX Directive and therefore fulfills the highest level of operational safety.

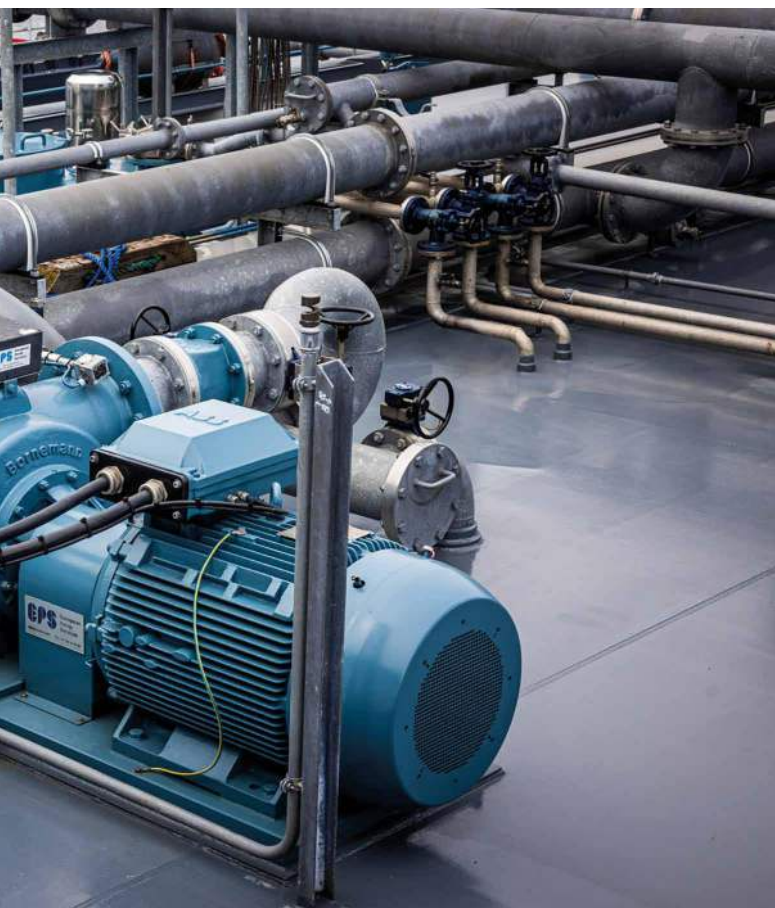


Twin Screw Pump
ATEX Zone 0 Inside



HCI

Safe Unloading on European Waterways



Bornemann HCI pump in marine service on the deck of a tanker vessel – engineered for continuous, pressure-stable transfer operations.

Driven by Regulatory Progress – Compliant with ADN 2019

The development of this new pump generation was driven by the 2019 revision of the “Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures” (ADN) for inland waterway transport, which includes a defined listing of flammable liquids. With the successful completion of development and certification for Ex Zone 0 inside, Bornemann twin screw pumps are now fully compliant with ADN 2019 requirements. This eliminates the need for special exemption permits from classification societies when using twin screw pumps with equipment category 2G inside on inland waterway vessels.

Extending Our Range for Tank Storage and Refineries

Building on this innovation, Bornemann is currently developing solutions to expand its product range for tank storage facilities and refineries. These ongoing developments will ensure that future Bornemann screw pumps meet the specific operational and safety requirements of these sectors – delivering reliable, ATEX-compliant performance for the next generation of fluid handling systems.

Operational envelope for ATEX Zone 0 inside	HC	HCI
	head-side outlet	inline version, variant with side outlet
Operating permissible ambient temperature range of the pump	-20 °C to +45 °C	-20 °C to +45 °C
Maximum surface temperature of the pump	≤ 75 °C	≤ 75 °C
Drive power	65kW – 265kW	65kW – 265kW
Speed	1800 min ⁻¹	1800 min ⁻¹
Inlet suction pressure	0.4 to 2 bar abs	0.4 to 2 bar abs
Operating pressure	8 bar	8 bar
Kinematic viscosity of the medium	0.5 to 1000 mm ² /s	0.5 to 1000 mm ² /s
Product temperature at inlet side of the pump	0 °C to 60 °C	0 °C to 60 °C



ITT Bornemann GmbH

Industriestrasse 2
31683 Obernkirchen
GERMANY
Phone: +49 5724 390-0
info.bornemann@itt.com
www.bornemann.com



Bornemann

— An ITT Company