

# Twin Screw Pumps Chemical Industry



# ITT Bornemann - Expertise in Chemical Applications

## Tools of Choice

Plastics and chemicals have become a major part of our surrounding. Chemicals abound in almost all walks of life. There's hardly an end product today that does not incorporate chemical additives. Production of base chemicals, petrochemicals, polymers and fine and specialty chemicals entails complex processes.

Hazardous substances, high pressures, and the risk of explosion are part and parcel of everyday work in the chemical industry and result in the highest safety requirements for people, plants, machines, and the environment.

Processes are constantly being optimized in regard to productivity and energy efficiency. In this field where Bornemann is your expert partner. Bornemann pumps meet the most stringent requirements even in complex processes and are always a profitable solution. They reliably deliver both low- and high-viscosity media, also with non-Newtonian viscosity and aggressive and abrasive media.

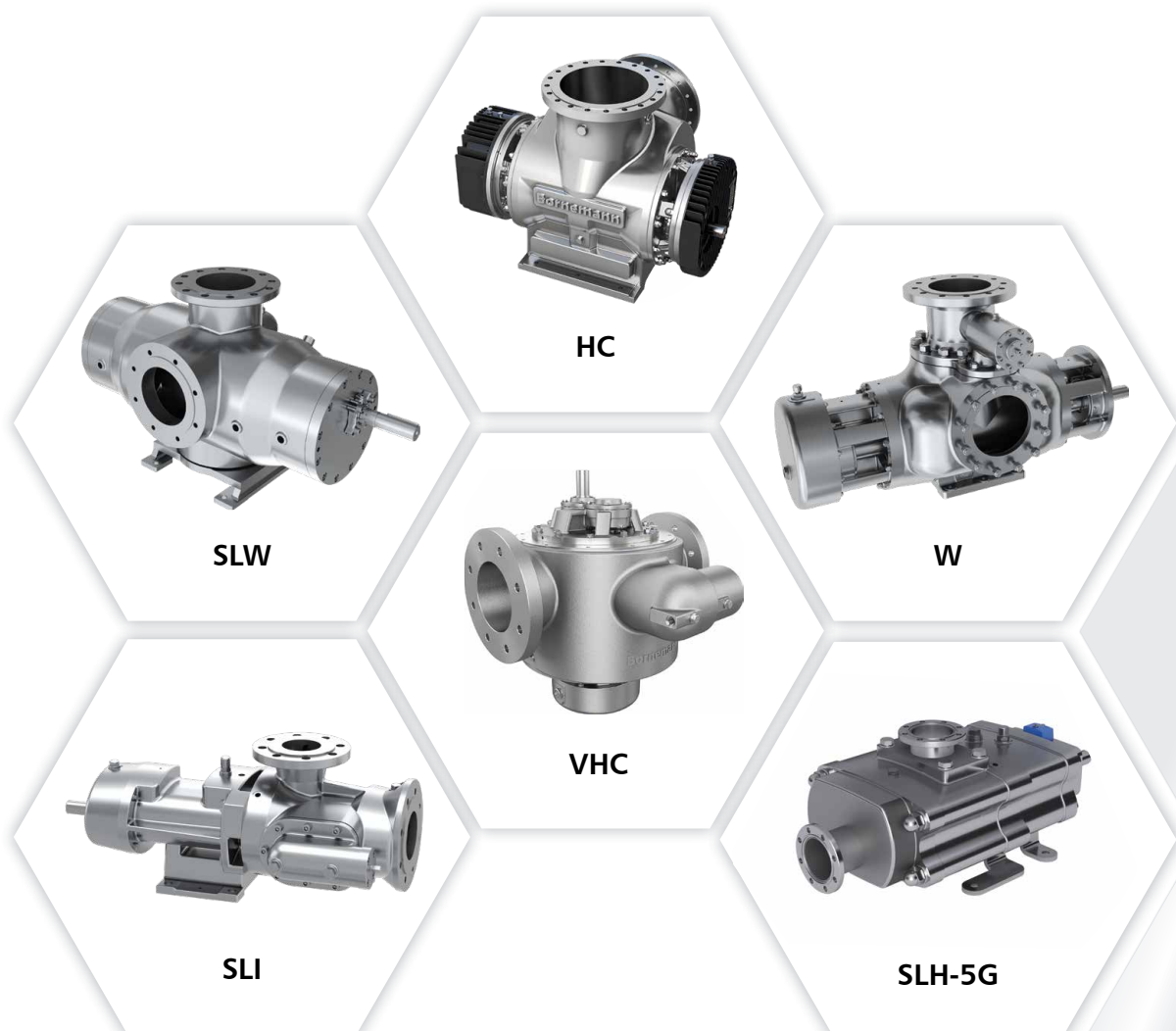


In the chemical industry, Bornemann pumps are employed in highly specialized fields of application. The properties of the media to be delivered often change over the course of the production process. It is in this field that Bornemann Twin Screw Pumps are renowned for their flexibility and up-time. Thanks to their speed control, they can be optimally adjusted to the respective consistency of the medium. New

technologies and processes, shifting demands, and intense competition – increasing your knowledge is a constant necessity.

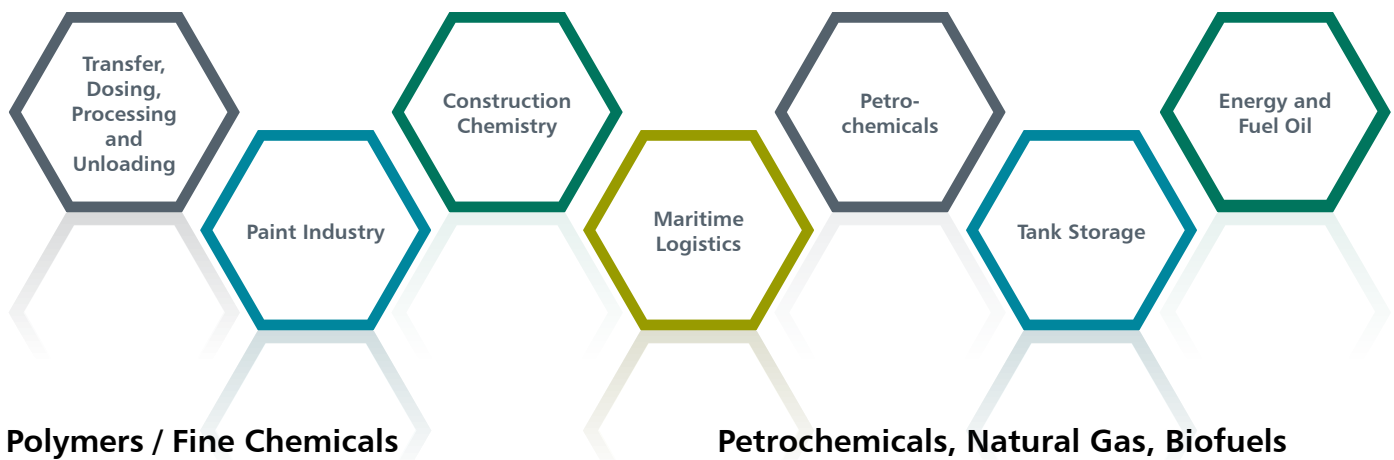
Bornemann is your expert partner when it comes to exploring even the most unconventional solutions – the insider's choice among specialists!

# Twin Screw Pumps Series



|               | Max. Flow        |        | Max. Differential Pressure |     | Max. Viscosity     |     | Max. Product Temperature |     |
|---------------|------------------|--------|----------------------------|-----|--------------------|-----|--------------------------|-----|
|               | m <sup>3</sup> h | gpm    | bar                        | psi | mm <sup>2</sup> /s | cSt | °C                       | °F  |
| <b>W/V</b>    | 2.800            | 12.300 | 40                         | 600 | 200.000            |     | 350                      | 660 |
| <b>HC/VHC</b> | 6.000            | 26.400 | 16                         | 230 | 20.000             |     | 120                      | 250 |
| <b>SLH-5G</b> | 250              | 1.100  | 25                         | 360 | 1.000.000          |     | 180                      | 350 |
| <b>SLW</b>    | 1.000            | 4.400  | 40                         | 580 | 100.000            |     | 300                      | 572 |
| <b>SLI</b>    | 180              | 790    | 16                         | 230 | 100.000            |     | 120                      | 250 |

# Markets and Selected Applications



Country: United States  
 Pump Type: W10.6zk  
 Product: 1-octene with 4,5% melted polymers - flash recirculation  
 Capacity: 450 m<sup>3</sup>/h  
 Pressure: 40 bar  
 Viscosity: 2 - 1,000 cSt



Country: The Netherlands  
 Pump Type: SLI 80  
 Product: Gasoil / Naphtha  
 Capacity: 17 m<sup>3</sup>/h  
 Pressure: 4 bar  
 Viscosity: 1 - 10 cSt

## Paint Industry



Country: Austria  
 Pump Type: SLH  
 Product: Binder, Paint  
 Capacity: 13-35 m<sup>3</sup>/h  
 Pressure: 6-9 bar  
 Viscosity: 4,000 - 22,000 cSt

## Cosmetic Raw Materials



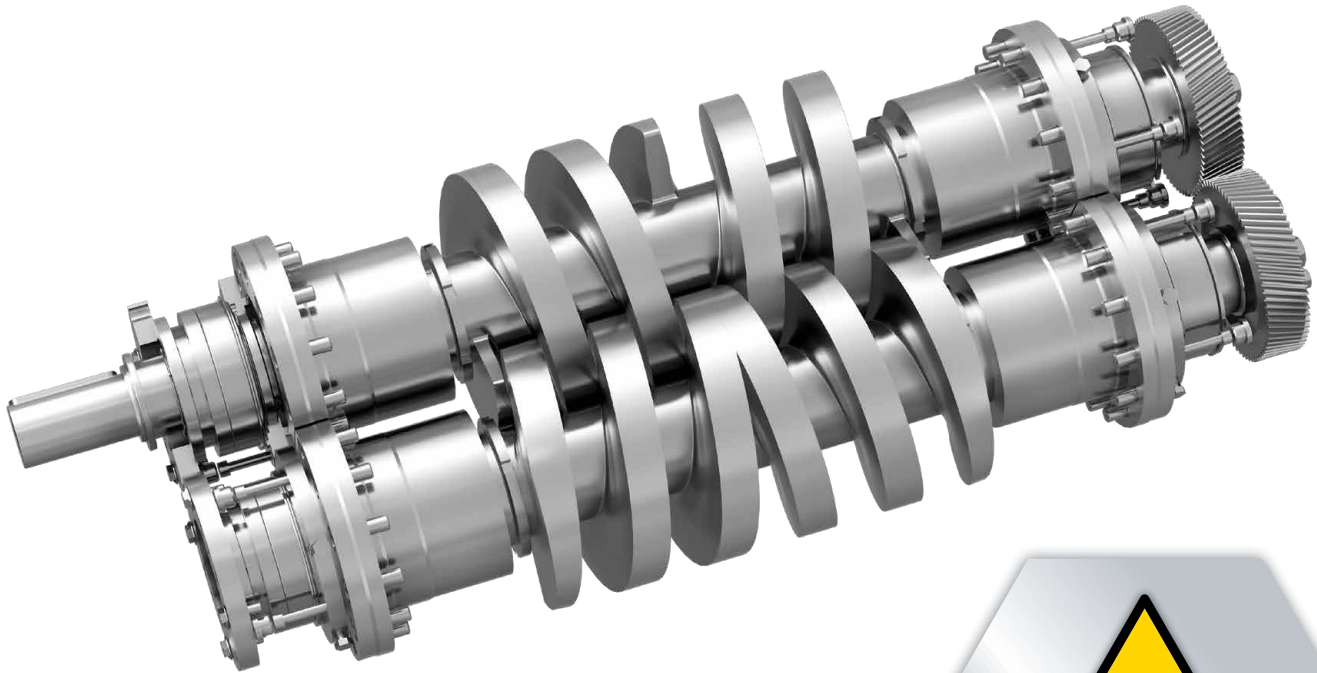
Country: Germany  
 Pump Type: SLH  
 Product: Raw Chemicals  
 Capacity: 18 m<sup>3</sup>/h  
 Pressure: 4 bar  
 Viscosity: 10,000 cSt

# Operating Principles

## Non-Product Lubricated Synchronisation

Twin Screw Pumps are rotating positive displacement pumps, using two screws to convey the product along the screw axis. The contact-free intermeshing screws and the housing form closed chambers, constantly moving product from suction to discharge. Due to the arrangement of the pump elements, the delivery direction is reversible

simply by reversing the shaft rotation. Axial delivery results in smooth, low-pulsation pumping. Products sensitive to shear are subjected to hardly any stresses during delivery, thus ensuring that the media retain their volumes, look, and properties.



Twin Screw Pump  
ATEX Zone 0 Inside

## User Advantages - Made by Bornemann

- ATEX inside and outside
- ATEX Zone 0 inside certification available
- Non-contact pump elements
- Dry operation possible
- Bornemann Twin Screw Pumps are equally suited to delivering high- and low-viscosity products
- Low-pulsation and low product stresses
- Adaptation to changing process parameters thanks to speed control
- TA Luft compliant designs available
- Self-priming, outstanding aspiration power
- High delivery rate and pressure range
- Less wear parts

# Safety Regulations - ATEX, TA Luft

## Requirements of ATEX Directive

According to the European Directive 2014/34/EU, manufacturers are obliged to design their products suitable for the safe use in the explosive atmosphere when placing a product on the European Single Market.

The Directive for example covers the classification of a product and appoints essential health and safety requirements for the design and construction of products for potentially explosive atmosphere.

The Industrial Safety Regulation encourages Operators to operate equipment of specific categories to ensure safe operation.

## Fields of Application

Especially during the emptying process in tanks, tank storages, vessels or tank wagons, temporary conveyance of hydrocarbon-air-mixtures appears.

Bornemann pumps, specifically designed for these processes, can perform the complete emptying process safely, cost-effective and without complex processing technology (e.g. flow sensor, nitrogen pendulum system).

Bornemann pumps meet highest standards, operate in complex processes and ensure economic and efficient solutions. The Technical Guideline for Air Pollution Control.



## Technical Execution

Twin Screw Pumps are used in various Industrial Sectors where flammable liquids are pumped.

Flammable liquid-/gas-/air-mixtures can arise.

## TA Luft

The Technical Guideline for Air Pollution Control (TA Luft) has been approved according to the German Federal Law on the Prevention of Immissions (BImSchG).

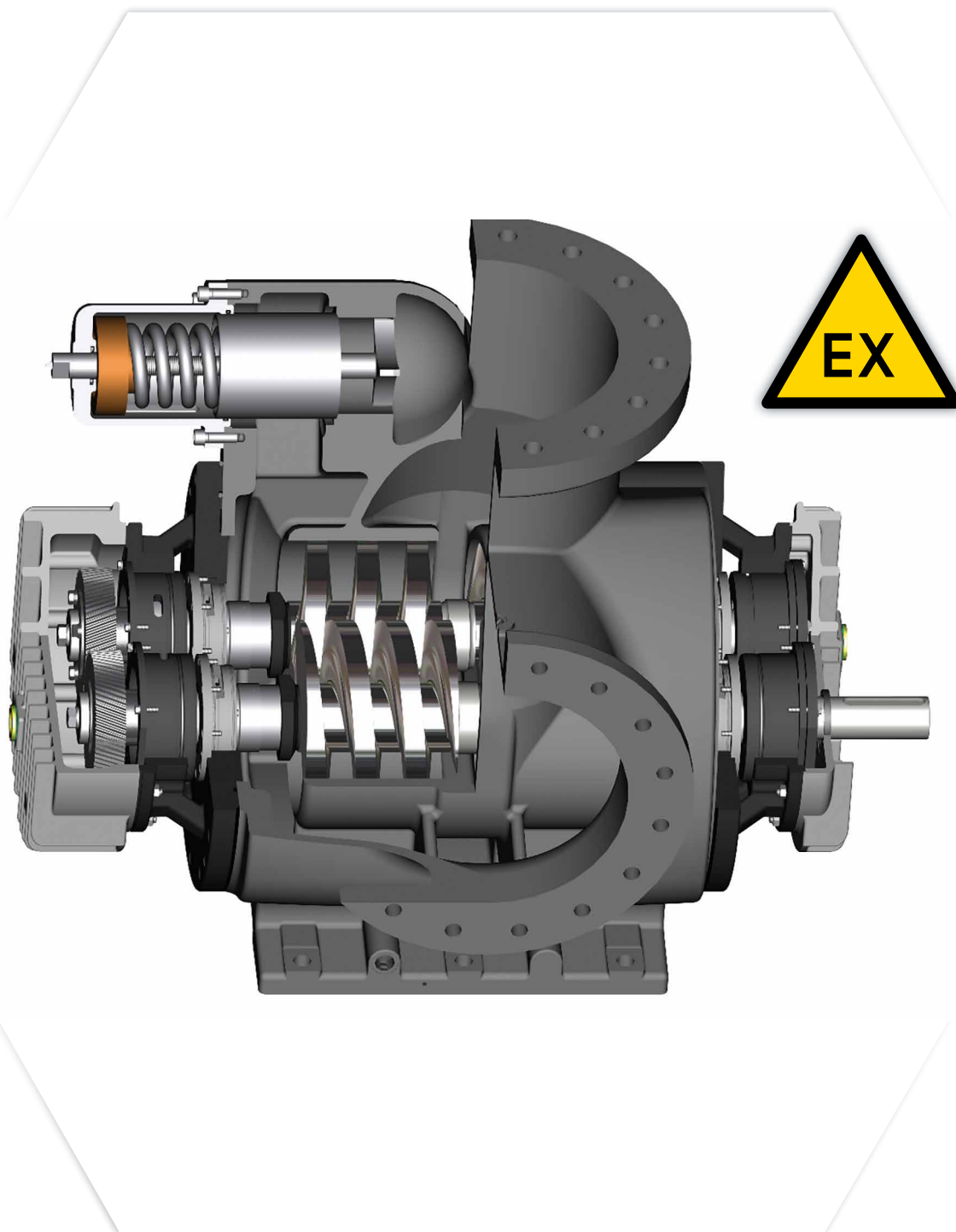
TA-Luft applies in cases of conveyance of harmful media in classified installations as this guideline limits the handling of fluids to technically sealed installations.

Pumps are a central component, such as magnetic drive pumps, pumps with double mechanical seal and sealing medium. The Bornemann product portfolio includes pump executions that meet these requirements. Retrofitting solutions available on request.

# ATEX Zone 0 - Inside a Twin Screw Pump

Model-specific advantages of the Twin Screw Pump can be fully utilized. The pumps are suitable for conveyance of intermittent explosive mixtures and can be operated in areas where explosive atmospheres may occur.

Bornemann offers pump types that are approved for conveyance of flammable mixtures, ATEX Zone 0 inside certification available.





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