



# Hygienic Pumps



**ITT**

ENGINEERED FOR LIFE

# ITT Bornemann-The Pump Pioneer

## About Bornemann

Founded in 1853, German-based Bornemann has achieved and secured a leading position worldwide with its numerous ground-breaking pump developments over the decades. Besides Food & Beverage, several industries are served, i.e. chemical, petrochemical and marine as well as oil & gas applications. Systematic research and development are leading to innovative solutions for the future.

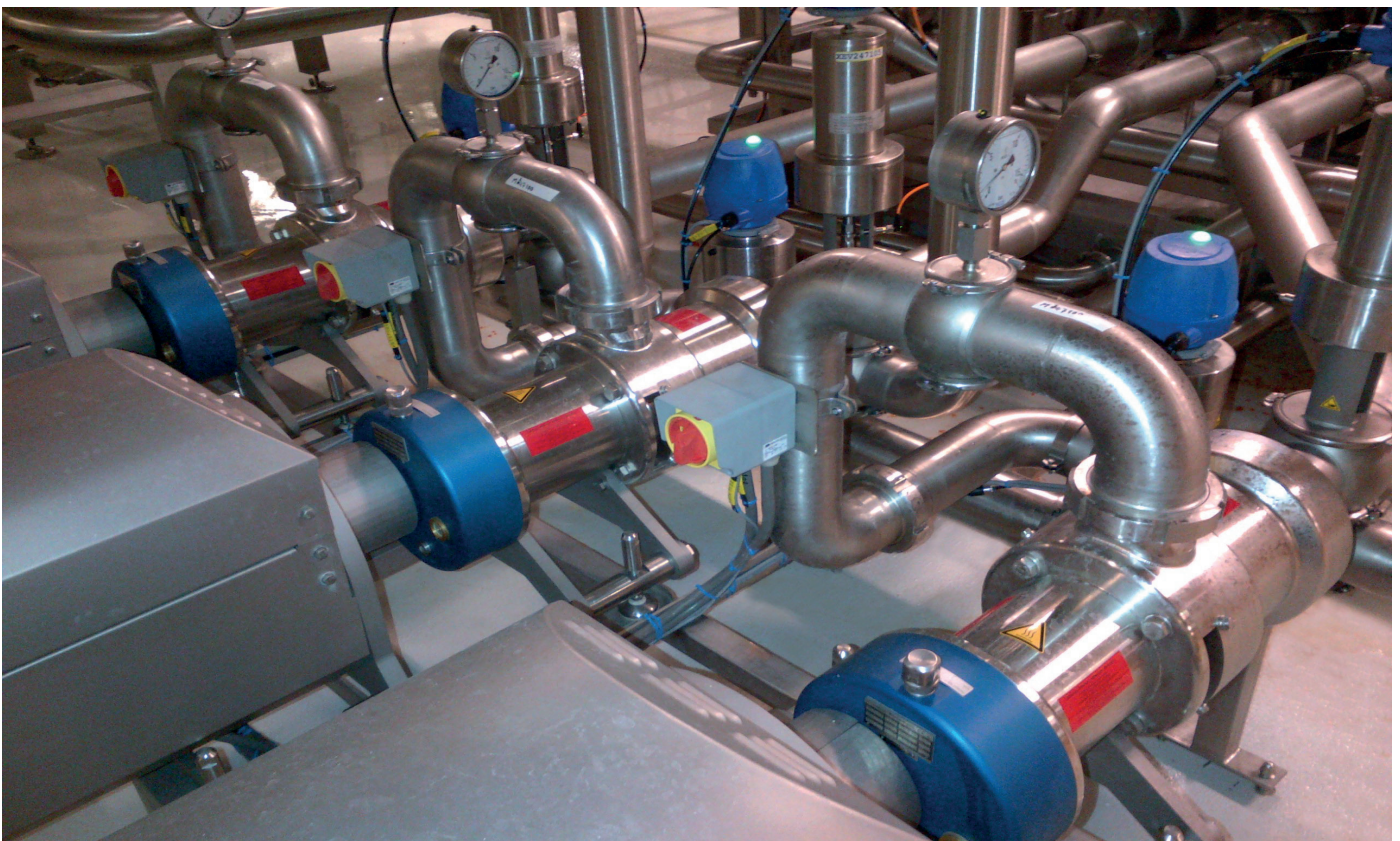
## About ITT

ITT is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for the energy, transportation and industrial markets. Building on its heritage of innovation, ITT partners with its customers to deliver enduring solutions to the key industries that underpin modern way of life. Founded in 1920, ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries and sales in a total of approximately 125 countries.

## The Original

As the worldwide first Twin Screw Pump supplier, Bornemann introduced in 2004 the hygienic SLH design of Twin Screw Pumps to the Food & Pharma industries. The design is based on the 150 year proven technology of Bornemann Industrial Twin Screw Pumps, aligned with the special hygienic requirements of Food-, Pharma- and Chemical operations. Bornemann SLH pumps are carrying certificates as per EHEDG, 3A Sanitary and other standards since 2006.

Today, ITT Bornemann serves hygienic and sanitary applications with five different pump series in modular design, complete with mechanical, electrical and control systems. 50 different pump hydraulics, 500 design options and more than 10.000 installed pumps worldwide are the unmatched statement of Bornemann Hygienic Twin Screw Pumps – The Original!

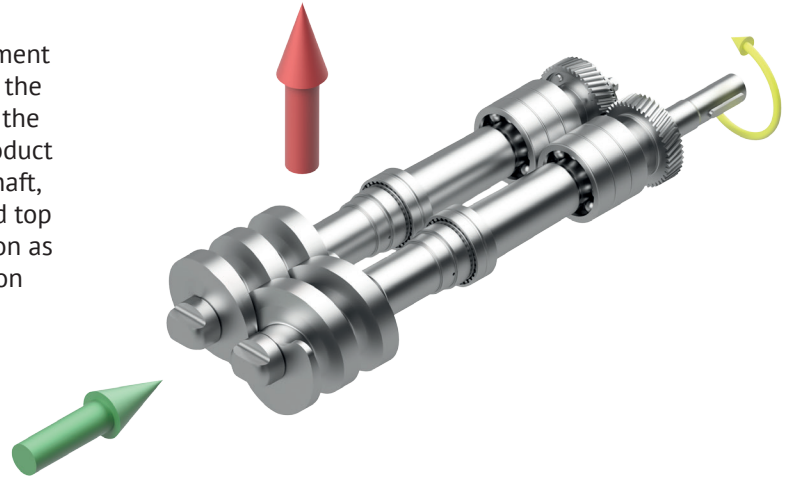


SLH-4G 3000 in Tomato Sauce Production

# Bornemann - Unique Technology

## Bornemann Operating Principle

SLH 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. By right turn of the drive shaft, the flow direction goes from the front axial to the mid top position. The pump can operate in the opposite direction as well. Reverse operation is possible to empty the suction piping from product before cleaning.



Rotating Screw Set - Operating Principle

## Pump Characteristics

- Self-priming
- Safe operation at high viscosities
- Low pulsations
- Low noise level
- Dry running possibility
- Constant flow at varying pressures and volumes
- Suction lift up to 8.5 m (25 feet)

## User Advantages -Made by Bornemann

### Convey & Clean with One Pump Only

Pump speed range 1:15 plus proportional flow characteristics ensure process cycles and cleaning procedures with just one pump.

### Product Integrity

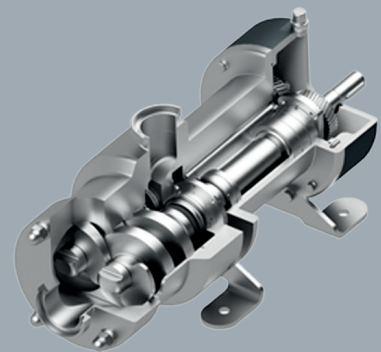
The axial conveyance protects products and maintains its size, surface and visual integrity.

### Flexibility

50 different combinations of screw diameter and pitches fit customers requirements. The pump operates at a wide range of speeds, providing flexibility for different operating points.

### Long Service Life

SLH Pumps feature no metal-to-metal contact between screws and housing. This secures trouble-free conveyance even for abrasive media and minimized downtime.





# Bornemann SLH-4 Series - The Design

## Materials

- Wetted Metal Parts 1.4404 / 316L, 1.4462 / 318 LN Ra < 0.8µm
- Optional Surface Roughness Ra < 0.5 µm
- Wear Resistance Hardening Basic (1200 HV)
- Wear Resistance Hardening Advanced (2000 HV)

## Feed Screws

- Two Piece Design
- 50 different Hydraulics
- Surface Hardened to 1200HV
- Reverse Flow Direction Possible

## Suction & Discharge Connections

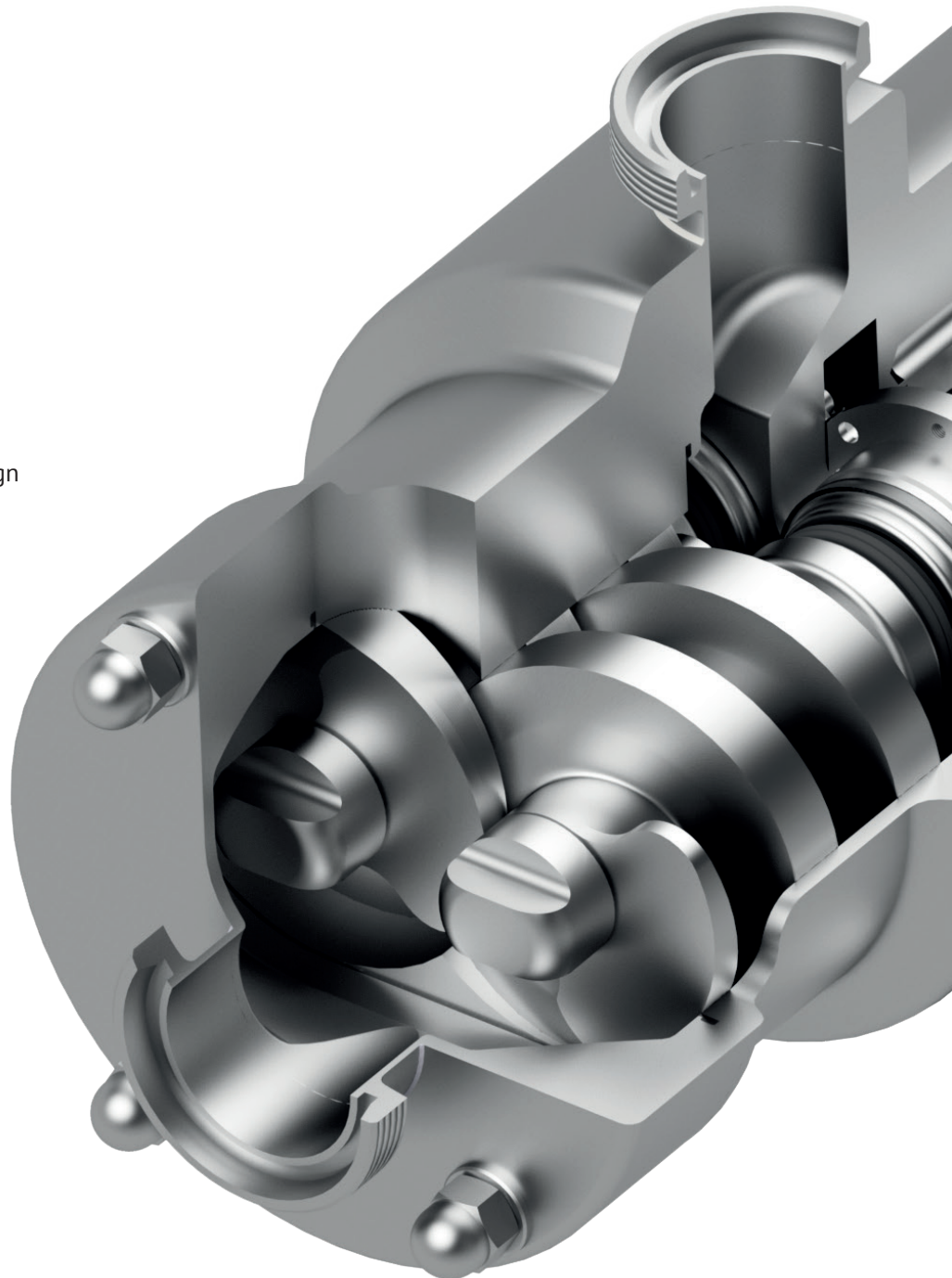
- DIN 11851
- DIN 11864-2
- SMS 1145
- DIN 32676 (Tri-Clamp)
- Customized Connections

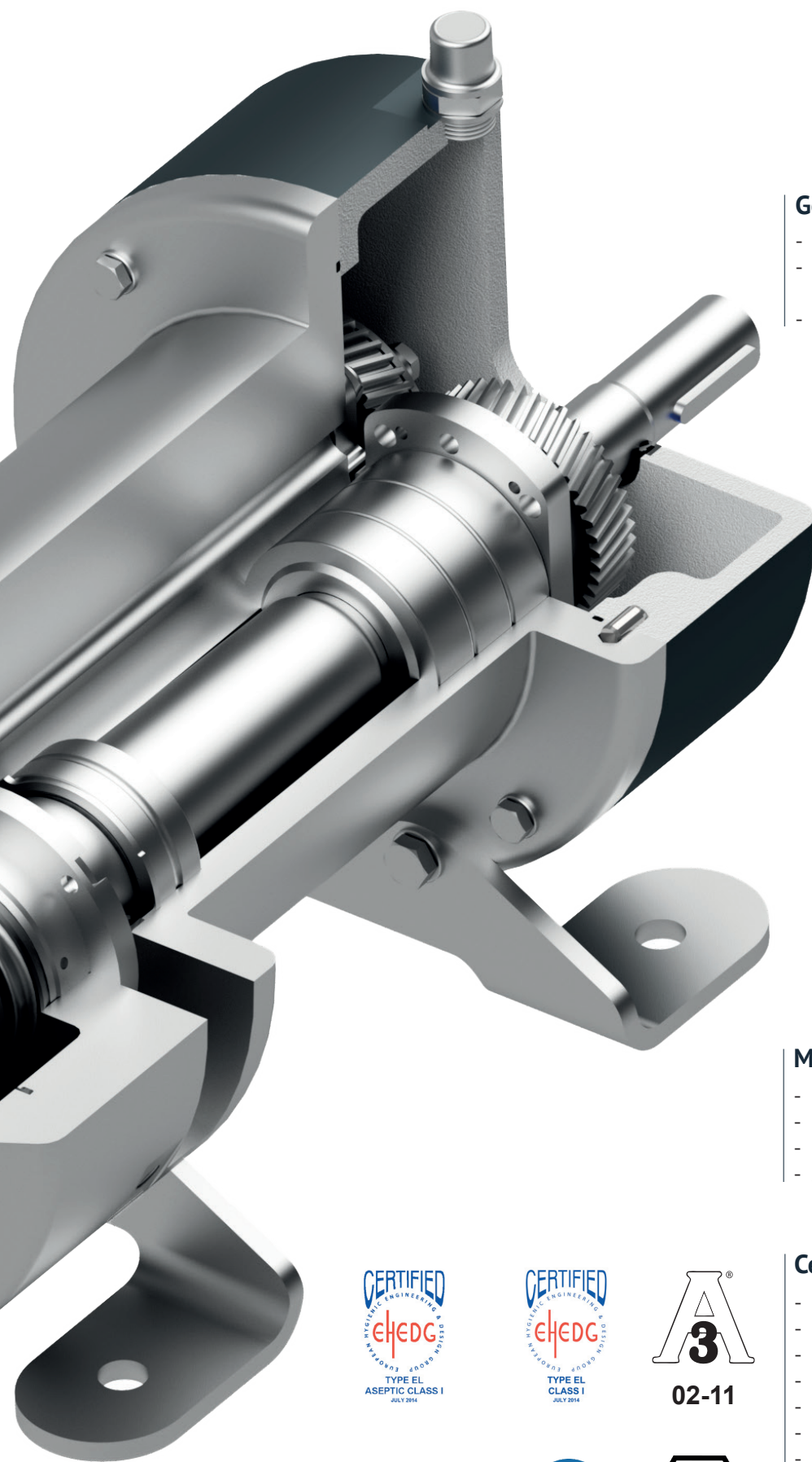
## Mechanical Seals

- Hygienic Single or Double Acting Design
- Dead-End-Free, Completely Flushed
- Semi-Cartridge Design for Easy Maintenance
- Lip-Form-Rings for Hygienic Sealing

## Three Part Design (Suction, Pump Casing, Discharge)

- Fast & Easy Maintenance
- Optimized Spare Parts Logistics
- Self-Draining





### Gear & Bearing Unit

- 25 bar Design Pressure
- Optimized Oil Circulation for advanced heat dissipation
- Simple Synchronization of Timing Gears

### Machine Feet, Baseplate & Accessoires

- Easy Height Adjustment by Pump Feet
- Horizontal & Vertical Installation
- Hygienic Pipe Frame available
- Stainless Steel Motor Cover



### Certificates

- EHEDG EL Class I
- EHEDG EL Aseptic Class I
- 3-A Doc. No. 02-11
- FDA Certified Elastomers
- NSF H1 Registered lubricants
- Optional Atex Execution
- Equipment in accordance to:  
Regulation Nr. 1935 / 2004  
Regulation Nr. 2023 / 2006  
Regulation Nr. 10 / 2011

# Bornemann Hygienic Pumps



SLH-4G/V/S/E

SLH-4U

## All advantages in one pump!

### SLH-4G - The Premium Pump

Hygienic Twin Screw Pump with a lot of customized features and options.

### SLH-4V - The Vertical Pump

Vertical Pump installation with motor on top or even at the bottom with engineered bearing unit.

### SLH-4U - The Universal Pump

The Hygienic Twin Screw Pump in standardized design.

### SLH-4S - The Versatile Pump

The 4S Series with extended screw design for the widest range of operating parameters.

### SLH-4E - The Metering Pump

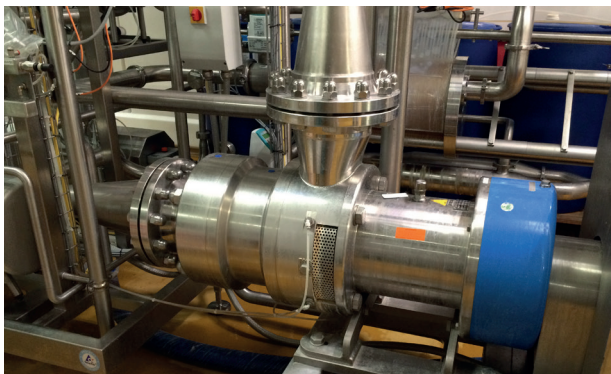
Hygienic Twin Screw Pump with engineered casing designs, which allow low end operating parameters with improved efficiency.

		Capacity		Differential Pressure		Rotating Speed		Viscosity		Max. Product Temperature	
		m <sup>3</sup> /h	gpm	bar	psi	min <sup>-1</sup>	RPM	mm <sup>2</sup> /s	cSt	°C	°F
SLH-4G	Product	up to 300	up to 1,100	up to 25	up to 362	up to 3,000*		up to 1,000,000		up to 180	up to 350
	CIP	up to 360	up to 1,300	up to 25	up to 362	up to 3,000*		1		up to 100	up to 210
	SIP									up to 135	up to 275
SLH-4V	Product	up to 50	up to 180	up to 16	up to 232	up to 1,800		up to 1,000,000		up to 150	up to 300
	CIP	up to 100	up to 360	up to 16	up to 232	up to 2,500		1		up to 100	up to 210
	SIP									up to 135	up to 275
SLH-4U	Product	up to 50	up to 180	up to 16	up to 232	up to 3,000		up to 1,000,000		up to 180	up to 350
	CIP	up to 100	up to 360	up to 16	up to 232	up to 3,000		1		up to 100	up to 210
	SIP									up to 135	up to 275
SLH-4S	Product	up to 400	up to 1,450	up to 10	up to 145	up to 3,000*		up to 1,000,000		up to 180	up to 350
	CIP	up to 450	up to 1,650	up to 10	up to 145	up to 3,000*		1		up to 100	up to 210
	SIP									up to 135	up to 275
SLH-4E	Product	up to 20	up to 70	up to 10	up to 145	up to 1,800		up to 1,000,000		up to 100	up to 210
	CIP	up to 40	up to 140	up to 10	up to 145	up to 2,500		1		up to 100	up to 210
	SIP									up to 135	up to 275

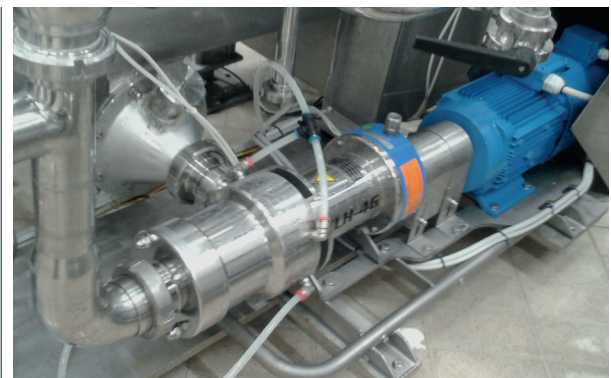
# Markets & Selected Applications

## Markets

• Juices & Concentrates	• Convenience Food	• Personal Care	• Dairy	• Chocolate & Sweets
• Beer Beverages	• Baby Food	• Cosmetics	• Cheese & Whey	• Bakery
• Spirits & Wine	• Ketchup & Sauces	• Pharmaceuticals	• Ice Cream	• Meat & Seafood



SLH-4G 6000 in Dairy Production



SLH-4S 3000 in Juice Production

## Tomato Industry

### User Advantages: Product Integrity

Pump Type:	SLH-4S 6000
Product:	Diced Tomatoes in Juice
Capacity:	25 m <sup>3</sup> /h   110 gpm
Differential Pressure:	10 bar   140 PSI
Viscosity:	7,000 cSt - thixotrope

## Dairy Industry

### User Advantage: Long Service Life

Pump Type:	SLH-S 125
Product:	Hazelnut Cream
Capacity:	2 m <sup>3</sup> /h   10 gpm
Differential Pressure:	7 bar   100 PSI
Viscosity:	200,000 cSt

## Cheese Industry

### User Advantage: Convey & Pump with One Pump Only

Pump Type:	SLH-4E 2000
Product:	Melted Cheese
Capacity:	1 m <sup>3</sup> /h   5 gpm
Differential Pressure:	6 bar   87 PSI
Viscosity:	1,000 cSt

## Beverage Industry

### User Advantage: Product Integrity & Flexibility

Pump Type:	SLH-4G 5000
Product:	Juice Concentrates
Capacity:	40 m <sup>3</sup> /h   175 gpm
Differential Pressure:	15 bar   215 PSI
Viscosity:	8 cSt

## Pharmaceutical Industry

### User Advantage: Hygienic Design

Pump Type:	SLH-4G 1000
Product:	Collagen
Capacity:	2.4 l/h   0.01 gpm
Differential Pressure:	20 bar   290 PSI
Viscosity:	20,000 cSt

## Ice Cream Industry

### User Advantages: Product Integrity

Pump Type:	SLH-4U 1000
Product:	Ice Cream with Fruit Pieces
Capacity:	40 boxes a 0.5 l/min
Differential Pressure:	2 bar   30 PSI
Viscosity:	20,000 cSt



# ITT Bornemann - Worldwide

## Europe, Middle East, Africa

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