

MADE IN GERMANY

# Gear pumps for the chemical industry.



# WITTE gear pumps for the chemical industry



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The chemical industry is one of the most important economic sectors. It is the foundation and engine for new and innovative products and materials. The manufacture of chemical base substances as raw materials for plastic products, food and chemical products calls for the highest standard of precision and care.

WITTE PUMPS & TECHNOLOGY GmbH has been a reliable technological partner to innovation drivers and giants in the chemical industry for years. We always aim to offer our customers the maximum degree of process reliability with our precision gear pumps and, in doing so, comprehensive quality controls take top priority.

Our ChemCore® series pumps have been adapted to the requirements

and needs of the chemical industry. The various different types of materials and sealing systems make this series flexible and versatile.

Applications in the chemical industry are as wide-ranging as our customers' requirements for our products. Pumps are the heart of the plant and keep the process running. Especially at this point, it is crucial to know and observe the process parameters precisely. The material and design requirements change from medium to medium. The often very challenging and critical media can pose a high risk to humans and the environment. Maximum care and maximum safety take absolute priority.

ChemCore® series pumps, like all WITTE pumps, are individually

adapted to the requirements and circumstances of the plant and the process in question. All pumps are always updated to meet the latest safety standards.

With countless design versions, our pumps can even be used in different ATEX zones.

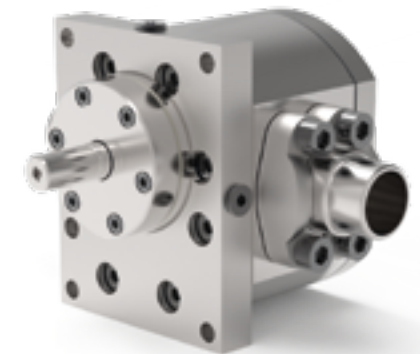
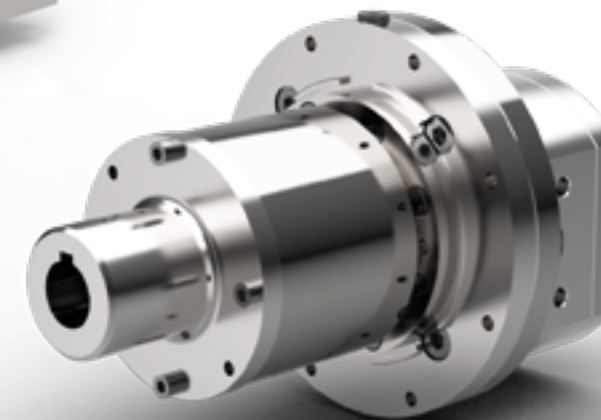
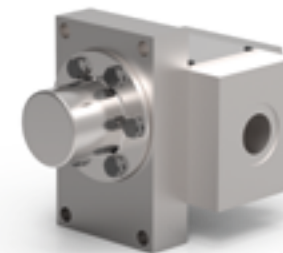
We have built up an extensive network of material experts and manufacturers specifically for the ChemCore® series so we can even offer pumps for use in the most extreme conditions.

## "The best pump for your process"

is not just a slogan to us – it's what drives and inspires us on a daily basis. WITTE PUMPS & TECHNOLOGY GmbH is an international medium-sized machine designer and manufacturer based in Tornesch near Hamburg.

For almost 40 years, WITTE has specialised in developing and manufacturing precision gear pumps. Each pump is precisely tailored to the customer's process and needs. WITTE engineers and designers develop custom gear pumps for use in standard or limit ranges.

WITTE has its own subsidiaries in the USA, China and Malaysia, as well as a number of agents representing it worldwide.

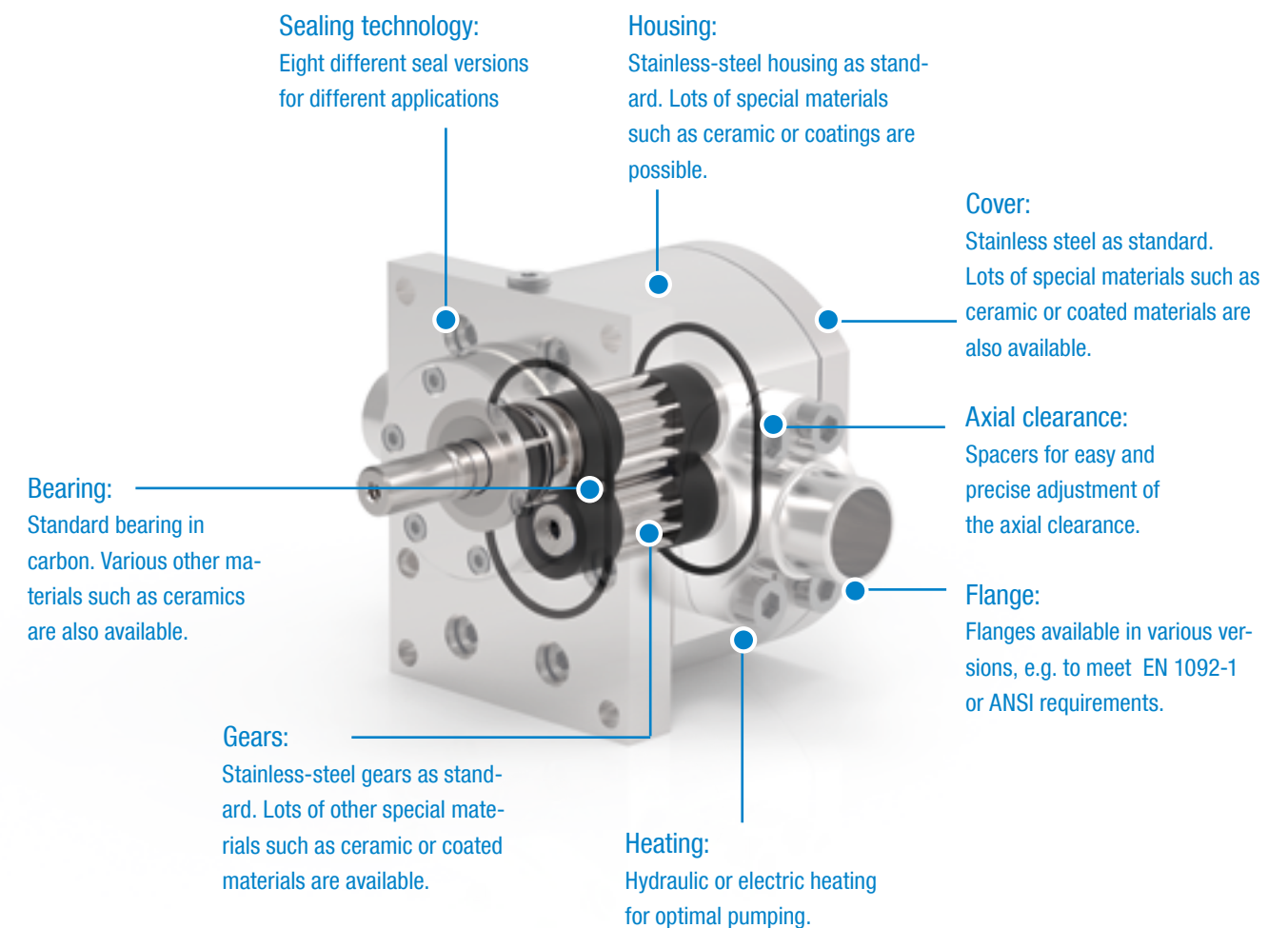


# Best Practice ChemCore®

ChemCore® series chemical pumps come as standard with stainless-steel components, or there are special versions with coated or ceramic materials.

The ChemCore® series was developed for easy maintenance. Separate pump covers make quick inspection of the interior possible from both sides of the pump. To adjust the axial clearance we use spacers that can be varied depending on the process parameters.

There are two temperature control options – electric and hydraulic – to get the pump to the process temperature or keep it there. The hydraulic temperature control option can be fitted with additional heating channels for especially sensitive applications.





# Product overview

ChemCore® series chemical pumps are predominately used as metering or transfer pumps. Different designs are available based on the requirements and application.

Every day brings something new. The chemical industry is constantly changing. Continuous research and development in this sector creates a constant flow of new products, materials and possibilities. The wide range of applications, processes and materials is ever growing. And new processes are always placing high demands on people and machinery.

The chemical industry supplies the basis and raw materials for semi-finished and end products across a wide range of sectors. All industries – be they agricultural, pharmaceutical, food or plastics – use chemical products.

For over 35 years, we have successfully dedicated ourselves to improving existing processes, implementing new processes and making plants more efficient through state-of-the-art pump technology.

The challenge of new things is what drives us: to create new solutions that only then make new processes possible.

## Das WITTE Chemieportfolio, die ChemCore® Baureihe



### Standard chemical pump

Stainless-steel chemical pumps for standard applications and demanding tasks.

Pages 8-9



### Chemical pump for fine metering

Mini chemical pumps for precise fine metering.

Pages 10-11



### ChemCore® LZ: Drop-in-Replacement

Replacement solution from WITTE for your Hermetic LZ gear pump.

Pages 12-13



### Custom OEM solutions

Custom gear pumps. Precisely adapted to your application.

Pages 14-15



### Metering systems

Metering pumps in different designs.

Pages 16-17



### WITTE Core Command®

Pump control for your gear pump.

Pages 18-19

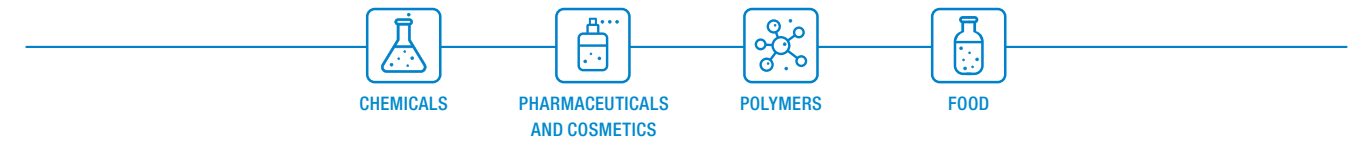
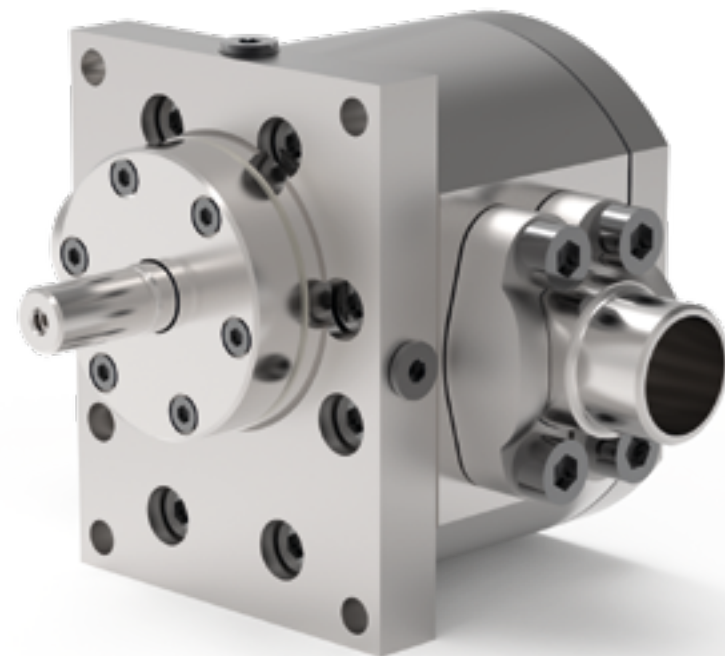
# Standard chemical pump



The ChemCore® gear pump series was specially developed for the requirements of the chemical industry. This series is used to pump and transfer low-to-medium viscous media and takes care of metering and transfer tasks.

The versatile spectrum of use for these pumps ranges from organic and inorganic chemicals and food-grade lubricants to polymers and pharmaceutical products.

An extensive modular system provides optimal material pairings for corrosive or abrasive media.



## Technical designs

### HOUSING

Stainless steel · tantalum · titanium · Hastelloy® · ceramic

### GEARS

Stainless steel, Ferralium®, Ferro-Titanit®, Hastelloy®, etc. optionally available with coating · spur gearing

### FRICTION BEARINGS

Carbon · NiAg (nickel silver) · silicon carbide · zirconia · tool steel · alum. bronze · optionally available with coating

### SHAFT SEALS

Single internal, single external or double mechanical seal · stuffing box · magnetic coupling

### HEATING

Steam · water · heat transfer oil · electric

## Operating parameters

### VISCOSITY

0.5 to 1,000,000 mPa s

### TEMPERATURE

Up to 350°C · higher temperatures upon request

### SUCTION PRESSURE

From vacuum to max. 15 bar, higher with magnetic drive

### DISCHARGE/DIFFERENTIAL PRESSURE

Up to 120 bar

*The values listed are maximum values and must not coincide under certain circumstances.*

### PUMP SIZES

From 0.2 ccm/rev. to 24,000 ccm/rev.

## Applications

### ORGANIC AND INORGANIC CHEMICALS

Alcohols · additives · bases · esters · glycerine · resins · hardeners · isocyanates · monomers · oils · phenols · acids · biodiesel · bitumen · tar · hot melt · adhesives · waxes · etc.

### POLYMERS

Cellulose · PA · prepolymers · etc.

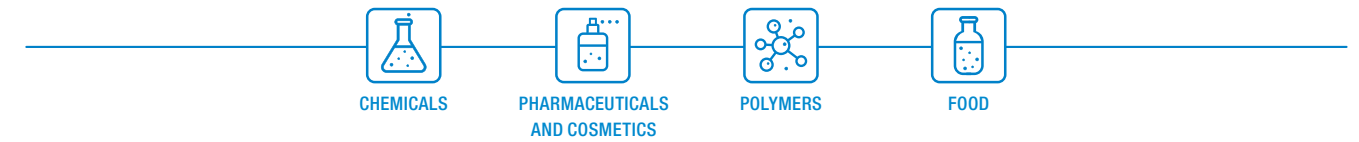
### FOOD

Plant oils · butter · margarine · flavourings · chocolate · fondant · liquorice · chewing gum · vitamins · syrup · gelatine · etc.

### PHARMACEUTICALS AND COSMETICS

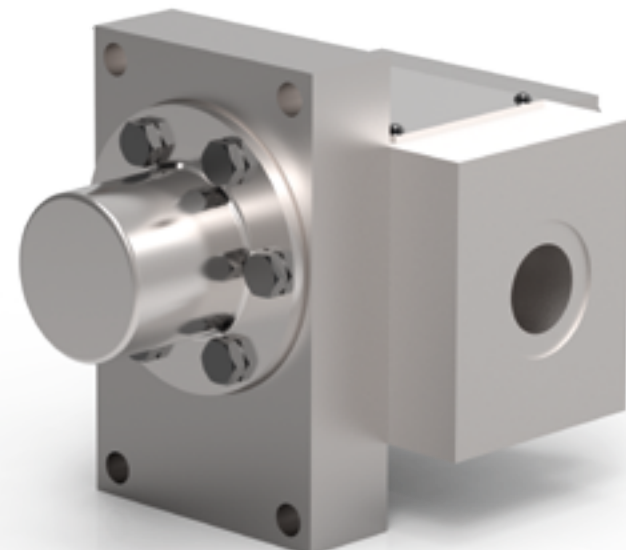
Amino acids · lotion · shampoo · vitamins · etc.

# Chemical pump for fine metering



The Mini series is based on the ChemCore® series and extends the range with pumps for extremely fine metering tasks. Amounts from 0.2 cm<sup>3</sup>/rev. to 2.95 cm<sup>3</sup>/rev. can be pumped.

This pump type excels at maximum metering precision. The pumps are used for metering additives into extruders, among other applications.



## Technical designs

<b>HOUSING</b>
Stainless steel · tantalum · titanium · Hastelloy®
<b>GEARS</b>
1.4112 · and also all other processable ceramic and metal materials, such as 1.4571, Ferralium®, Ferro-Titanit®, Hastelloy®, etc. · optionally available with coating
<b>FRICTION BEARINGS</b>
Carbon · NiAg (nickel silver) · silicon carbide · zirconia · tool steel · alum. bronze · special materials · optionally available with coating
<b>SEALS</b>
Stuffing box · magnetic coupling · radial shaft seal ring
<b>HEATING</b>
Steam · water · heat transfer oil · electric

## Operating parameters

<b>VISCOSITY</b>
0.5 to 1,000,000 mPa s
<b>TEMPERATURE</b>
Up to 350°C · higher temperatures upon request
<b>SUCTION PRESSURE</b>
Up to max. 15 bar, with magnetic drive max. 25 bar
<b>DIFFERENTIAL PRESSURE</b>
Up to max. 120 bar <i>The values listed are maximum values and must not coincide under certain circumstances.</i>
<b>PUMP SIZES</b>
From 0,2 ccm/rev. to 2,95 ccm/rev.

## Applications

<b>ORGANIC AND INORGANIC CHEMICALS</b>
Alcohols · additives · bases · esters · glycerine · resins · hardeners · isocyanates · monomers · oils · phenols · acids · biodiesel · bitumen · tar · hot melt · adhesives · waxes · etc.
<b>PHARMACEUTICALS AND COSMETICS</b>
Amino acids · lotion · shampoo · vitamins · etc.
<b>POLYMERS</b>
PS · PET · PC · PA · PMMA
<b>FOOD</b>
Plant oils · margarine · flavourings · chocolate · fondant · liquorice · chewing gum · vitamins · syrup · gelatine · etc.



**NEW**

# ChemCore® LZ: Drop-in-Replacement

Replacement solution from WITTE for your Hermetic LZ gear pump

WITTE now offers all users and operators of Hermetic-LZ gear pumps an alternative solution - our new ChemCore® LZ series. The LZ series, which was taken out of the Hermetic range in 2018, is still in operation in many plants. However, replacement pumps from the original manufacturer are no longer available.

At WITTE you receive the complete pump including coupling connection with identical dimensions. This is a double advantage for our customers, because the system does not have to be extensively modified and the core components come from the established WITTE modular system.



## Technical designs

### HOUSING

1.4571 · others on request

### GEARS

1.4112 · others on request

### FRICTION BEARINGS

Carbon · NiAg (nickel-silver) · silicon carbide (SiC) · zirconium oxide (ZrO<sub>2</sub>) · alum. bronze

### SEALS

Single or double mechanical seal · others on request

## Operating parameters

### VISCOSITY

0.5 to 5,000,000 mPas

### TEMPERATURE

Up to 350 °C

### PRESSURE

25 bar · 40 bar

### DISCHARGE/DIFFERENTIAL PRESSURE

25 bar · 40 bar

### PUMP SIZES\*

LZ0: approx. 11 ccm/rev. (WITTE size: 16,3-28-45)  
LZ1: approx. 27 ccm/rev. (WITTE size: 25,6-36-36)  
LZ2: approx. 64 ccm/rev. (WITTE size: 72-45-70)  
LZ3: approx. 167 ccm/rev. (WITTE size: 149-56-90)  
LZ4: approx. 267 ccm/rev. (WITTE size: 264-70-105)  
LZ5: approx. 883 ccm/rev. (WITTE size: 716-110-110)

\* In addition to the possibility of a 1:1 exchange, we naturally offer you the option of using a pump optimised on the basis of the actual operating data

## Applications

### ORGANIC AND INORGANIC CHEMICALS

Alcohols · additives · bases · esters · glycerine · resins · hardeners · isocyanates · monomers · oils · phenols · acids · biodiesel · bitumen · tar · hot melt · adhesives · waxes · etc.

### FOOD

Plant oils · margarine · flavourings · chocolate · fondant · liquorice · chewing gum · vitamins · syrup · gelatine · etc.

### PHARMACEUTICALS AND COSMETICS

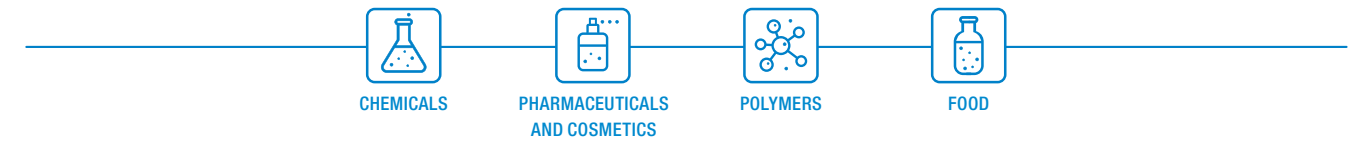
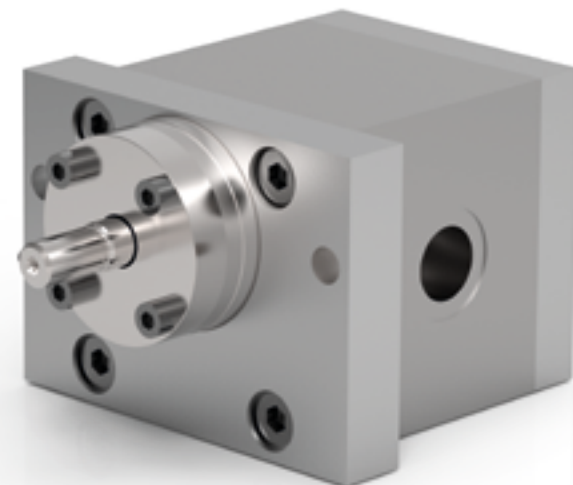
Amino acids · lotion · shampoo · vitamins · etc.

# Custom OEM solutions



WITTE offers modified chemical pumps for OEM customers. These pumps are usually specially tailored to the customer's requirements. WITTE works with the customer to analyse the pumping task and draw up an initial solution. A pump is designed and prototype created depending on the required amount. The customer has ample oppor-

tunity to test this prototype, and then the results are discussed and optimised together. The pumps can also be fitted with the customer's name plate if desired and delivered quickly by order contract.



## Technical designs\*

<b>HOUSING</b>
1.4301
<b>GEARS</b>
1.4301
<b>FRICTION BEARINGS</b>
SiC
<b>SEALS</b>
Single mechanical seal (ED)
<b>HEATING</b>
Unheated

## Operating parameters\*

<b>VISCOSITY</b>
20 to 500 mPas
<b>TEMPERATURE</b>
300°C
<b>SUCTION PRESSURE</b>
1 to 15 bar (a)
<b>DIFFERENTIAL PRESSURE</b>
16 bar
<b>PUMP SIZES</b>
10,2 ccm/rev. 0,15 to 36 l/min

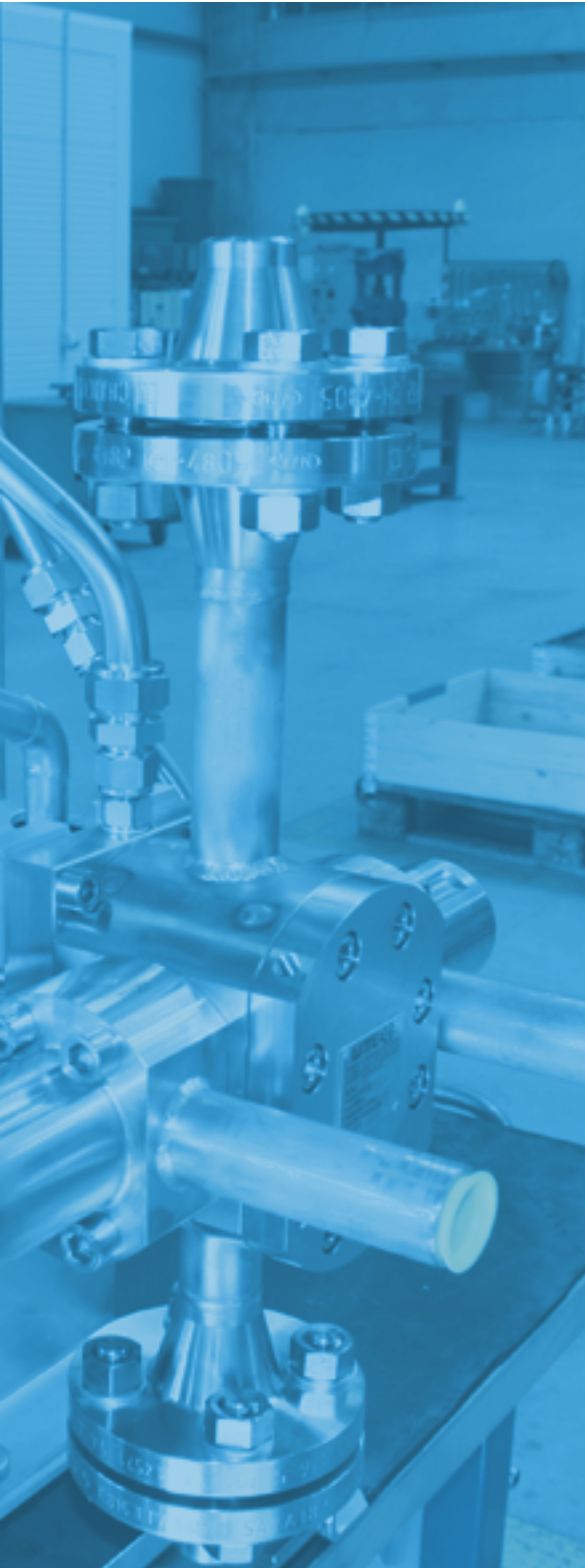
\* Custom design for metering fire extinguishing foam additives into a water jet

## Applications

<b>FIRE EXTINGUISHING FOAM/DISTILLATION/EXTRUSION</b>
A pump for metering foam into a water jet in order to produce fire extinguishing foam on fire engines.

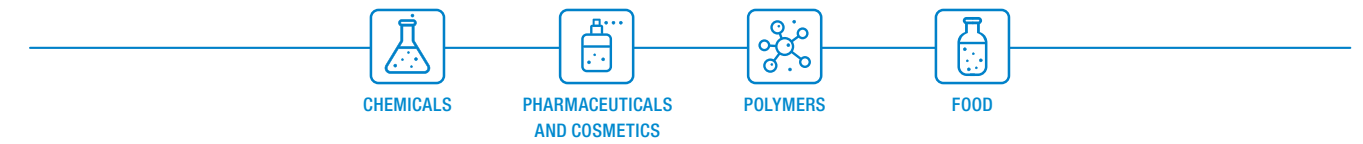


# Metering systems/technology

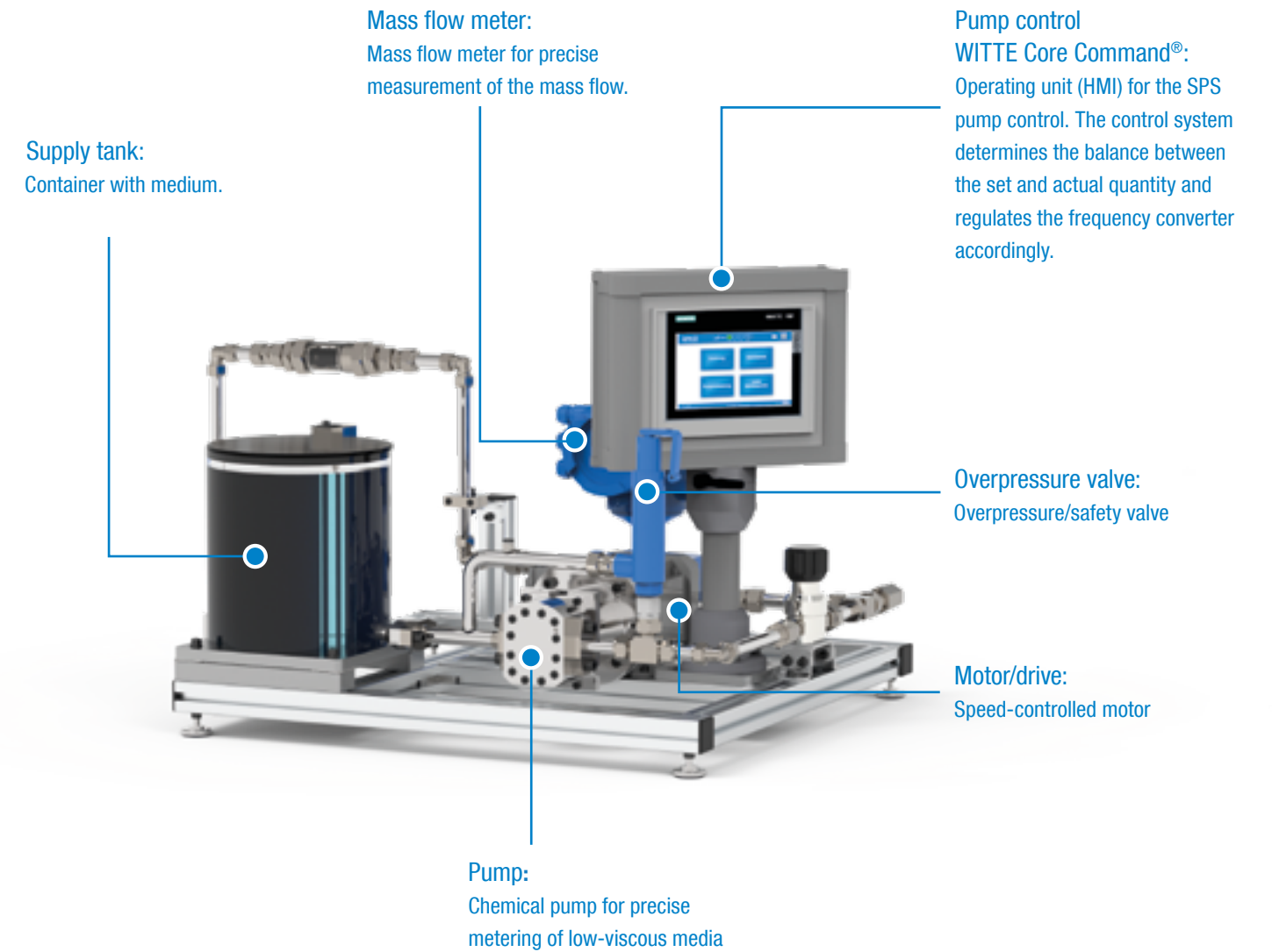


Gear pumps are highly suitable for precise volumetric metering with high reproducibility. When used in combination with a mass flow meter and a control system, a self-regulating, absolutely precise pumping unit is created. A wide range of interfaces can be used to program the mass flow meter.

Once defined, the mass flow meter instantly forwards even the smallest changes in flow to the connected drive unit and regulates the volumetric flow so that it always stays within the tolerance range.



## Sample structure of a metering system



# WITTE Core Command®

## Pump control for your gear pump

WITTE PUMPS & TECHNOLOGY GmbH is not only a manufacturer of gear pumps, but at the same time a system supplier offering complete solutions from a single source.

The pump control WITTE Core Command® serves to expand your gear pump and can be easily integrated into your process.

This type of control is specially adapted for use with WITTE gear pumps, but can also be used with pumps from other manufacturers.

The control system consists of the state-of-the-art components according to the current industry

standards. The system is based on Siemens PLC S7-1200.

It is operated via a touch-sensitive 7-inch panel, which provides sufficient space to read off all the necessary information at a glance and to carry out parameterisation conveniently by finger input.

The control system is housed in a small control cabinet that complies with the current industry standard. Due to its small dimensions, it can be flexibly positioned in the immediate vicinity of the pump.



# Features

### Control to flow with external flow sensor

Precise metering tasks can be realised with volume flow meters.

### Control via PC/software update

Updates or maintenance work can be carried out conveniently via a PC. The controller does not necessarily have to be removed from the operational environment.

### Batch operation

In batch mode, a previously defined quantity is conveyed. Presetting of mass throughput and target quantity. The start is initiated by an external enable signal (TTL 0..5V). Conveying stops when the target quantity is reached. Overrun compensation of the fluid quantity by automated teach-in.

### Autotuning

Tool for automated finding of the correct control parameters.

### Manual operation

Manual speed setting without modulating duty. The pump only delivers at the previously set speed.

### Datalogging

Data logging records pump speed, flow rate, and outlet pressure throughout operation.

### Optional: EX version, connection to industrial bus

The control can also be designed for ATEX zones. Optionally, it can be docked to different industrial bus systems such as Canbus or Profibus.

### Efficiency indicator

Interpretation of the operating condition or the wear condition of the pump. If the efficiency deviates from the ideal line or needs to be readjusted, this is an indicator of incipient wear.





# Size/pumped amount/dimensions

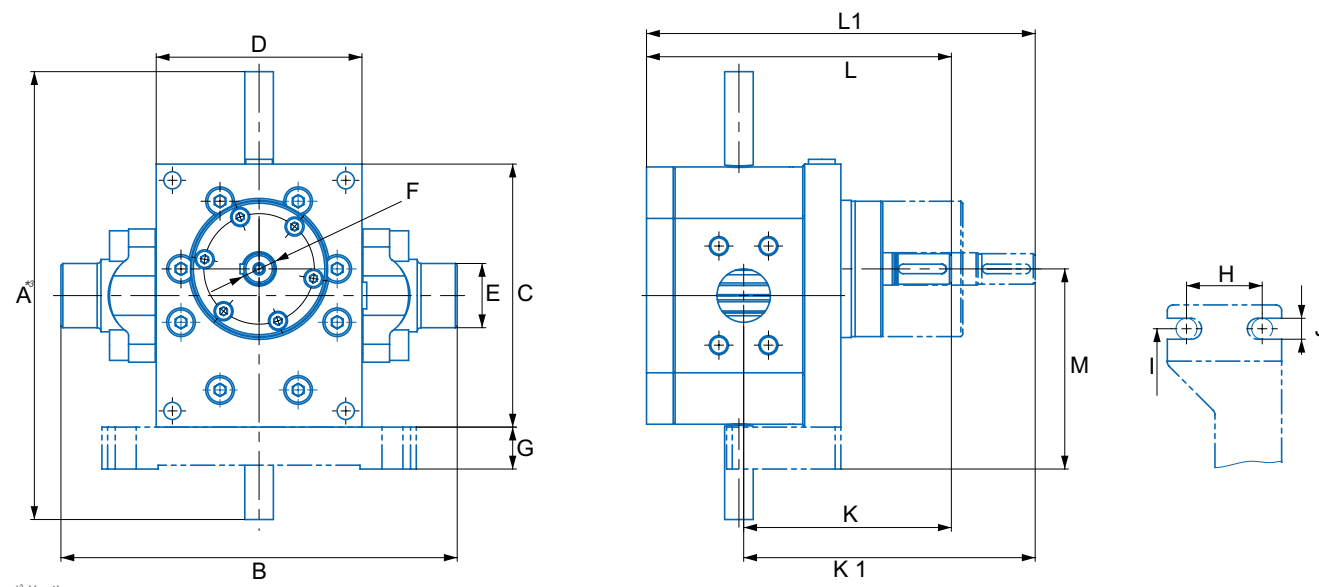
for standard ChemCore® gear pumps

## Pump sizes

PUMP SIZE	SPECIFIC VOLUME (CCM/REV)	FLOW RATE (L/H)*1
ChemCore® 1,28-22-6	1,28	20–200
ChemCore® 2,78-22-13	2,78	40–400
ChemCore® 4,7-22-22	4,7	70–700
ChemCore® 10,2-28-28	10,2	140–1.400
ChemCore® 25,6-36-36	25,6	280–2.800
ChemCore® 46,3-45-45	46,3	410–4.100
ChemCore® 92,6-56-56	92,6	650–6.500

PUMP SIZE	SPECIFIC VOLUME (CCM/REV)	FLOW RATE (L/H)*1
ChemCore® 176-70-70	176	990–9900
ChemCore® 371-90-90	371	1.600–16.200
ChemCore® 716-110-110	716	2.500–25.300
ChemCore® 1.342-140-140	1.342	3.800–37.800
ChemCore® 3.200-180-180	3.200	6.900–69.100
ChemCore® 6.100-224-224*2	6.100	11.000–106.000
ChemCore® 12.000-280-280*2	12.000	17.000–170.000

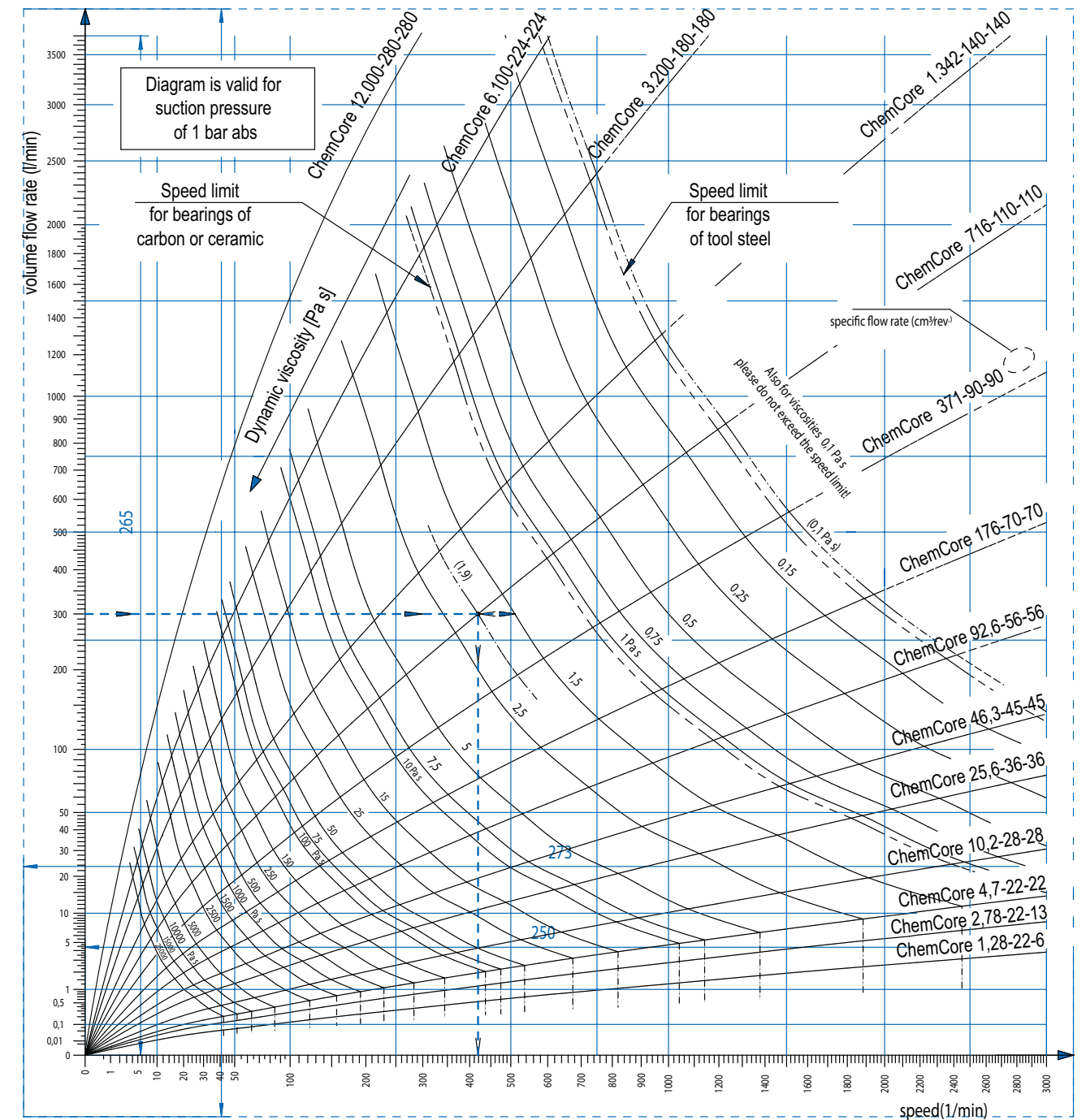
\*1 The pumped amount depends on the product being pumped and the operating conditions.  
\*2 Only available as custom solution



\*3 Heating

## ChemCore® dimensions

PUMP SIZE	A	B	C	D	EØ	FØ	G	H	I	J	K	K1	L	L1	M	WEIGHT
ChemCore® 1,28-22-6	200	116	112	80	20/15	11	18	40	110	9	83	110	120	147	85	6 kg
ChemCore® 2,78-22-13	200	116	112	80	20/15	11	18	40	110	9	86,5	113,5	127	154	85	6 kg
ChemCore® 4,7-22-22	200	180	112	80	21,3	11	18	40	110	9	91	118	136	163	85	6 kg
ChemCore® 10,2-28-28	235	208	138	108	33,7	16	22	40	130	11	109	138	160	189	105	15 kg
ChemCore® 25,6-36-36	250	214	152	114	48,3	19	16	60	140	12	124	157	188	221	110	20 kg
ChemCore® 46,3-45-45	234	244	176	134	60,3	24	25	75	170	14	148	186	226	265	13,5	26 kg
ChemCore® 92,6-56-56	360	264	210	168	60,3	32	27	100	220	20	195,5	239,5	289,5	333,5	160	50 kg
ChemCore® 176-70-70	350	346	258	208	76,1	38	27	115	250	22	225,5	275,5	338,5	388,5	191	125 kg
ChemCore® 371-90-90	498	416	300	269	88,9	48	42	130	310	28	265	329	405	469	237	220 kg
ChemCore® 716-110-110	470	488	380	310	114,3	60	42	180	410	28	319	478	384	543	287	340 kg
ChemCore® 1.342-140-140	600	538	454	340	168,3	70	47	230	430	28	410	457	612	669	344	500 kg
ChemCore® 3.200-180-180	800	*1	590	440	219,1	*2	65	285	520	33	617	617	902	902	450	700 kg



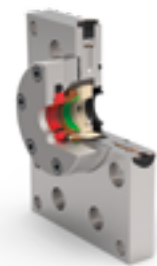


# Seals

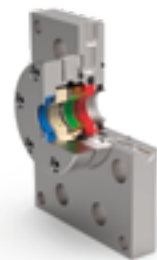


Each rotating pump has a drive shaft that must be sealed somehow. A wide range of systems and seals can be used for this purpose.

Different systems are used depending on the pump type and application area. The selection of seal types is determined by the process parameters. Pressure, temperature and viscosity are crucial factors that affect or limit the seal selection.

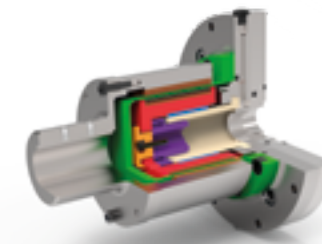


Single mechanical seal (ED)



Vacuum mechanical seal (AD), locked without pressure

<b>PRESSURE SUCTION SIDE</b>	Light vacuum to max. 15 bar(a)	Vacuum to max. 2 bar(a)
<b>VISCOSITY (mPas)</b>	0.5 to 50,000 mPas	0.5 to 1,000,000 mPas
<b>TEMPERATURE (°C)</b>	Max. 300 °C	Max. 250 °C



Synchronous magnetic coupling

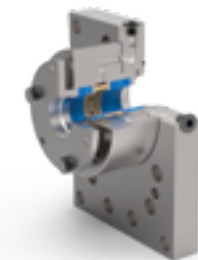


Radial shaft seal ring

<b>PRESSURE SUCTION SIDE</b>	Max. 700 bar(a)	1 max. 3 bar(a)
<b>VISCOSITY (mPas)</b>	1 to 30,000 mPas	1 to 10,000 mPas
<b>TEMPERATURE (°C)</b>	450 °C	Max. 250 °C

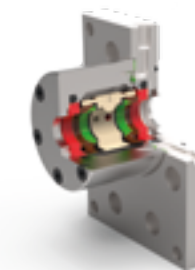


Single stuffing box

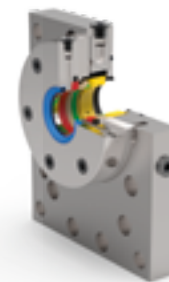


Double stuffing box

<b>PRESSURE SUCTION SIDE</b>	Max. 30 bar(a)	Vacuum to max. 15 bar(a)
<b>VISCOSITY (mPas)</b>	1 to 10,000,000 mPas	1 to 10,000,000 mPas
<b>TEMPERATURE (°C)</b>	Max. 350 °C	Max. 350 °C



Double mechanical seal, locked (DD)



Quenched internal mechanical seal (EDQ)

<b>PRESSURE SUCTION SIDE</b>	Vacuum to max. 15 bar(a)	Light vacuum to max. 15 bar(a)
<b>VISCOSITY (mPas)</b>	0.5 to 1,000,000 mPas	0.5 to 50,000 mPas
<b>TEMPERATURE (°C)</b>	Max. 300 °C	Max. 250 °C

\* In the case of a blocked stuffing box, a corresponding supply or sealing system is required depending on the pump inlet pressure. The pressure of the sealing medium should be at least 1 bar higher than the max. occurring pump inlet pressure.

# ChemCore<sup>®</sup> with magnetic coupling

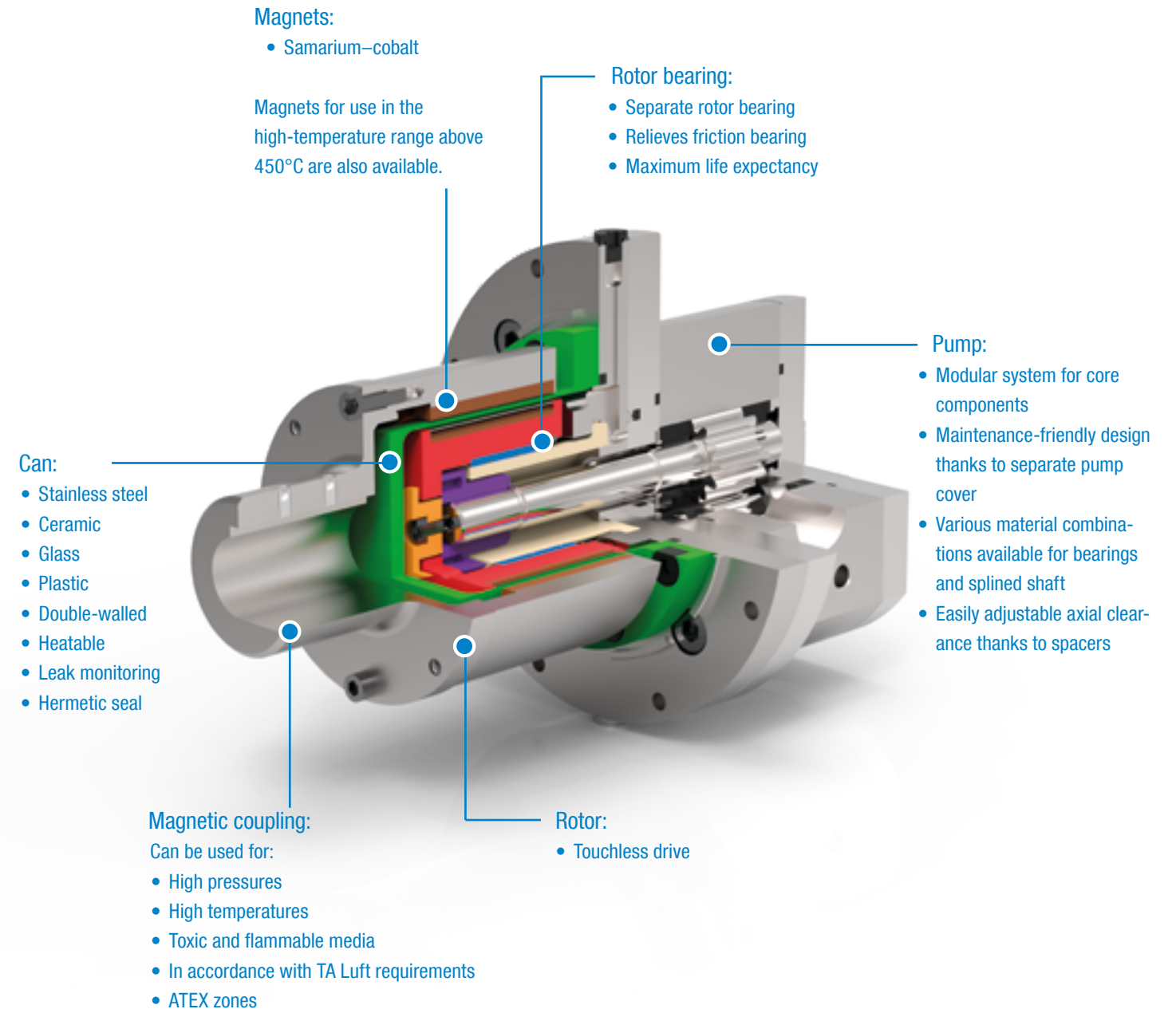
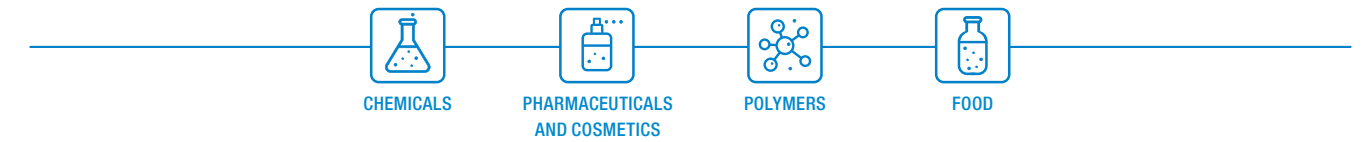


Special situations call for special solutions. Our magnetic coupling is safe, reliable and flexible to use.

We offer a wide range of versions of this seal type. The seal is a combination of a hermetic seal at the pump and a touchless drive. In contrast to conventional magnetic couplings, our version has a separate rotor bearing that transfers only the torque to the drive shaft. There is therefore no additional load on the pump bearings by the weight of the internal rotor.

The result:  
No wear, maximum life expectancy and increased operational safety.

A modular system ensures that individual components of the seal that come into contact with the medium can be easily replaced and tailored to the properties of the medium.





# What drives us

The challenge of constantly discovering and developing new things drives us. We have been supporting our industry customers and plant engineers with our expert knowledge for almost 40 years. Our employees bring their passion and commitment every day to develop the optimal pump solution.

Whether your process is standard or has special requirements, we develop and manufacture gear pumps for a number of applications. We always keep all of the requirements in mind and work with customers and partners to develop the best solution together for every single pump. Often what starts as a custom solution becomes a new standard product.

The chemical industry is constantly changing. New methods, processes and basic materials always pose new challenges. Our expertise and experience ensure that plants can be implemented with WITTE gear pumps and processes run optimally.

# Quality management

Quality plays a crucial role at WITTE and runs through every area of the company. It is reflected not only on our company's products but also in its processes and in the work itself. That's why WITTE PUMPS & TECHNOLOGY GmbH is certified under the current DIN ISO 9001 standard. Regular internal and external audits ensure continuous improvement. The principles of modern business operations are assured by a code of conduct.

#### Certificates:

- DIN EN ISO 9001
- AEO
- EAC
- TA Luft

Working with and pumping chemicals and critical media calls for maximum care. All of the core components of our pumps are therefore tested in modern 3D and optical measurement processes for dimensional stability, clearance classes and quality criteria. Compliance with our quality standards is the most important consideration when it comes to our gear pumps.

Methods and processes are under constant audit and improvement, which is also reflected in our

DIN ISO 9001 certification. We inspect not only ourselves but also all of our partners and suppliers to ensure that quality standards are met.


In addition to technical solutions for process requirements, WITTE also sees maximum safety for humans and the environment as a top priority.

ChemCore® pumps can be used in EX zones and can also be designed in accordance with TA Luft directives upon request.





# WITTE WORLDWIDE



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Alle unsere Vertriebspartner finden Sie unter  
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