

MADE IN GERMANY

Gear pump product range

Products | Services | Expertise



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Dr. Sven Wieczorek
Owner and CEO, WITTE PUMPS & TECHNOLOGY GmbH

Motivation

The challenge of constantly discovering and developing new things drives us. We have been supporting our customers from a wide range of sectors with our expert knowledge for over 35 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 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.

Gear pumps from the specialists

Our expertise for your success!

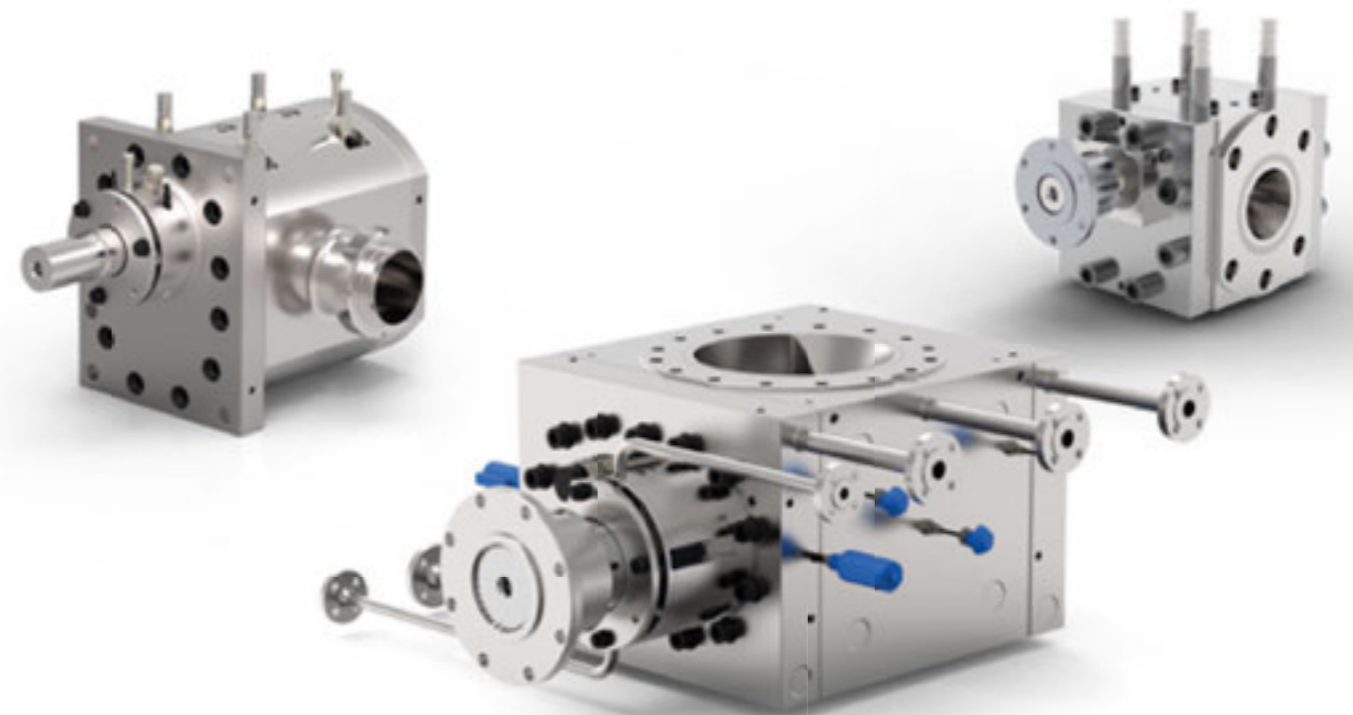
For over 35 years, WITTE PUMPS & TECHNOLOGY GmbH has been developing ultra-precision gear pumps. It's our passion to provide innovative solutions. Whether for standard applications or limit ranges, each pump is precisely tailored to the application and process in question. That makes us one of a kind!

We work with renowned companies and innovative drivers from the industry with great success. WITTE is not just a manufacturer and a supplier, but also a technology and development partner to its customers. As such, the WITTE project and development team takes you through the entire process, from prototypes to series production.

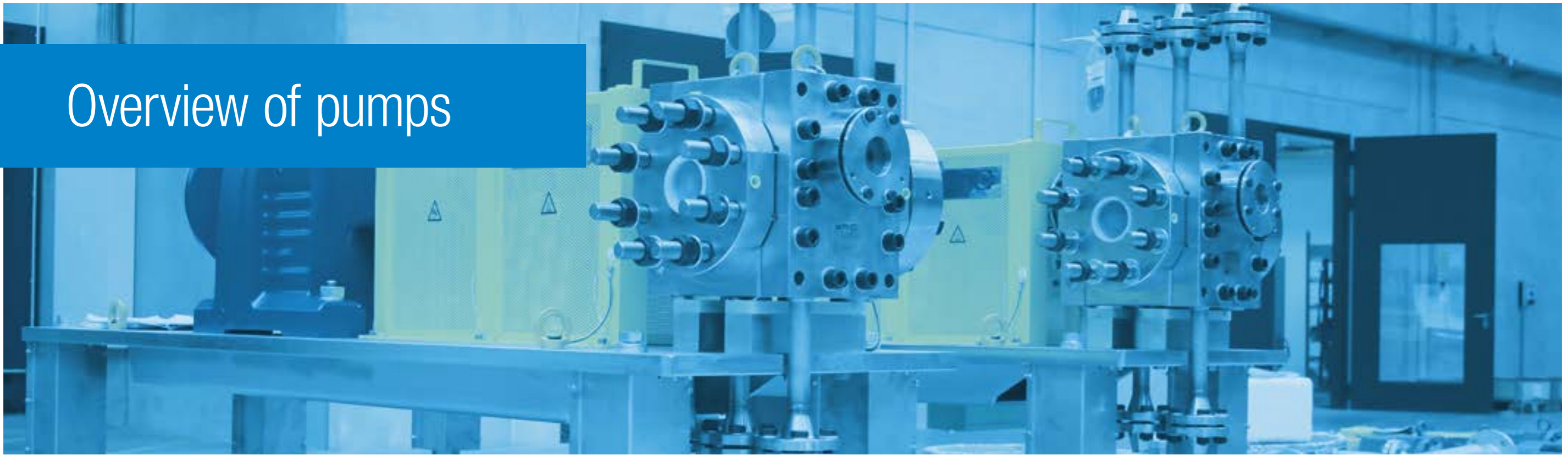
The WITTE portfolio ranges from small metering pumps with 0.2 cm³/rev. displacement volumes (CHEM chemical pumps) to large polymer discharge pumps (POLY discharge pumps) with volumes up to 44,400 cm³/rev.

Depending on the application, stainless steel or special materials can be used. Numerous industry sectors benefit from the use of these precision gear pumps and their excellent performance.

Read on to discover detailed information on the WITTE gear pump range.



Overview of pumps



**Chemical pumps –
CHEM**

Chemical pumps for a wide range of applications. Transfer and metering pumps for standard applications, fibre production and critical processes.

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**Booster pumps –
BOOSTER**

High-pressure pumps for reliable build-up of pressure up to 400 bar. Pump with hydraulic temperature control for pumping thermoplastics, duroplastics and elastomers. Available in different geometries.

Page 10



**Discharge pumps –
POLY**

High-performance discharge pumps for polymer reactors. For use in prepolymers and polymer production. Available in different geometries.

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**Metering systems/
pumps**

Metering pumps and autonomous metering systems for precise volumetric metering of low-to-medium viscous media.

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**Extrusion pumps –
EXTRU**

Efficient extrusion pumps for relieving extruders. Gentle, low-pulsation pumping for best results.

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**Food pumps –
PURO**

Stainless-steel pumps for use in food applications. Low-maintenance, easy-to-clean gear pumps.

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Accessories

Optional accessories for gear pumps, such as motors, gears or base frames. Modules for configuring total assemblies.

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**Modification and
spare parts**

Extensive spare part range for pumps from WITTE and other manufacturers. Standard part warehouses located in Germany, the USA and China.

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Chemical pumps

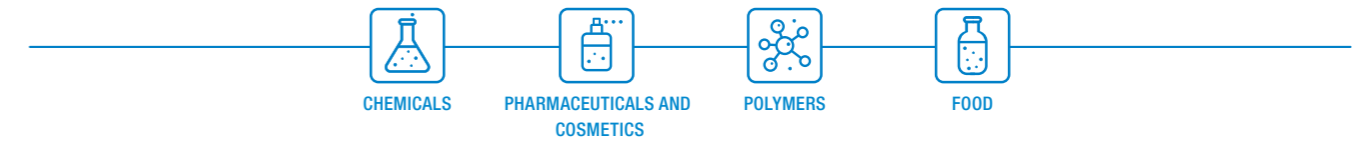
CHEM



CHEM gear pumps for transferring and metering low-to-medium viscous media. The application area ranges from conventional transfer and metering tasks in the chemical and pharmaceutical industries to pumping monomers, oligomers and prepolymers in the production of polymers. Decades of design experience and optimal material selection have optimised these chemical pumps for even the most challenging tasks with impressive reliability and metering accuracy in vacuum as well as high-pressure

applications. The CHEM series is also suitable for pumping fats or plant oils, for example, for the food industry.

Chemical pumps of this type can be both heated and unheated. The WITTE modular system for friction bearings, gears and shaft seals offers maximum flexibility for the user.



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 cm³/rev. to 24,000 cm³/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 · margarine · flavourings · chocolate · fondant · liquorice · chewing gum · vitamins · syrup · gelatine · etc.

PHARMACEUTICALS AND COSMETICS

Amino acids · lotion · shampoo · vitamins · etc.

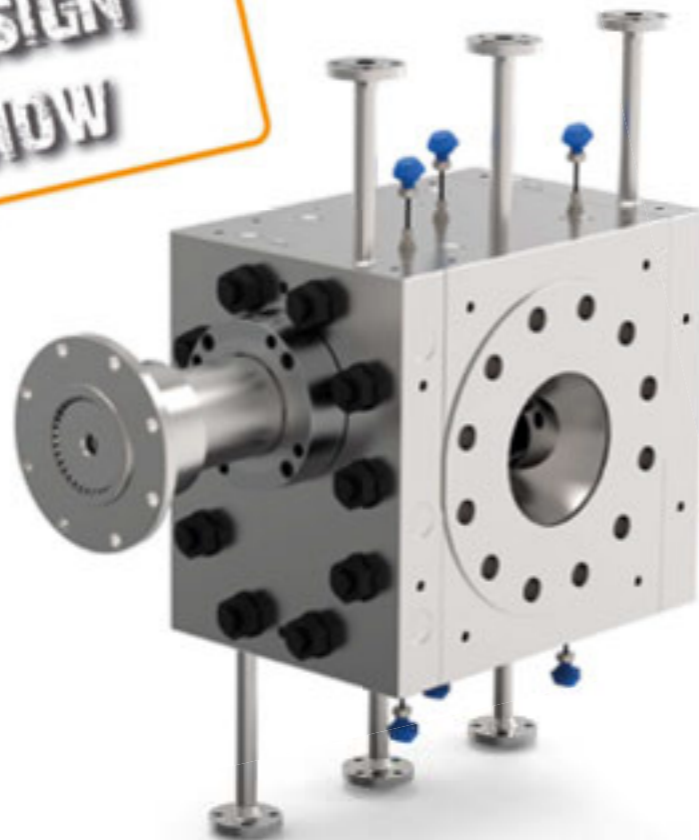
Booster pumps

BOOSTER/BOOSTER-AT



The reliable booster pump for the polymer processes. BOOSTER gear pumps are used in the polymerisation process, among other things, to increase pressure for medium-to-high viscous media. The hydraulically heated booster pump very gently transfers polymers such as PET, PBT, PS, ABS and many others. Heat transfer oil or steam is used for heating. The core components, such as shafts and friction bearings, come from the WITTE modular system.

The pumps from the BOOSTER series are used everywhere where especially high pressure is required for the process. High pressures are needed for granulation, fibre production or to overcome long distances, among other situations. The design of the BOOSTER series can be adapted to meet plant needs and customer requirements.



Technical designs

HOUSING

Heat-resistant carbon steel · stainless steel 1.4313 · optionally available with coating

GEARS

Tool steel · nitrided steel · optionally available with coating · helical gearing · herringbone gearing (for lowest possible pulsation)

FRICTION BEARINGS

Tool steel · NiAg (nickel silver) · alum. bronze · optionally available with coating

SEALS

Viscoseal · stuffing box · (vacuum viscoseal)

HEATING

Steam · water · heat transfer oil

Operating parameters

VISCOSITY

Up to 40,000 Pa s

TEMPERATURE

Up to 400°C · higher temperatures upon request

SUCTION PRESSURE

Up to max. 120 bar

DIFFERENTIAL PRESSURE

Up to max. 250/320 bar

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

PUMP SIZES

From 4.7 cm³/rev. to 21,500 cm³/rev.

Application examples

POLYMERS

PET · PBT · PA · PC · PS · SAN · ABS · HIPS · PP · PE · POM · biopolymers · elastomers

AT design: advantages

- Greater efficiency, resulting in
 - Less temperature transfer to the polymer
 - Energy saving = cost saving
 - Broader viscosity range possible
 - Greater volumetric flow range possible
- Lower bearing temperature, leading to lower strain on the polymer
- Increased protection against shaft breakage due to overload thanks to innovative design
- Standardisation of components, meaning easier storage and improved availability

Discharge pumps

POLY/POLY-AT

Reliable and robust pumps are especially needed in the polymerisation process for emptying reactors and containers. The pumps transfer the melt to downstream process steps. The highly viscous material must be pumped from a reactor that is under vacuum conditions.

Discharge pumps in the POLY series are precisely adapted to this task. The customer can choose between a standard design or a custom solution that meets requirements exactly. These pumps achieve the best efficiency thanks to optimised shaft and bearing geometries. Energy consumption is kept low so that operating costs are optimised. The POLY gear pump is available

in different versions. Versions with conventional or shortened inlet wedges are just as possible as versions in the LowNPSH design. Pumps with shortened inlets guarantee fast transfer of the melt to the gears.

All POLY discharge pumps have inlet openings that are as large as possible and have optimised flow geometries in order to minimise pressure loss and therefore facilitate a minimal fill level via the pump, which means the shortest possible dwell times for the polymer.

**NEW DESIGN
OUT NOW**



Technical designs

HOUSING
Stainless steel · alloyed steel optionally available with coating
GEARS
Nitrided steel · tool steel · optionally available with coating · helical gearing · herringbone gearing
FRICTION BEARINGS
Tool steel · NiAg (nickel silver) · alum. bronze · optionally available with coating
SHAFT SEALS
(Vacuum) viscoseal with buffered stuffing box · stuffing box · double mechanical seal, locked
HEATING
Heat transfer oil · steam

Operating parameters

VISCOSITY
Up to 40,000 Pa s
TEMPERATURE
Up to 350°C
SUCTION PRESSURE
Vacuum to max. 15 bar
DISCHARGE/DIFFERENTIAL PRESSURE
Up to 250/320 bar <i>The values listed are maximum values and must not coincide under certain circumstances.</i>
PUMP SIZES
From 4.7 cm ³ /rev. to 44,400 cm ³ /rev.

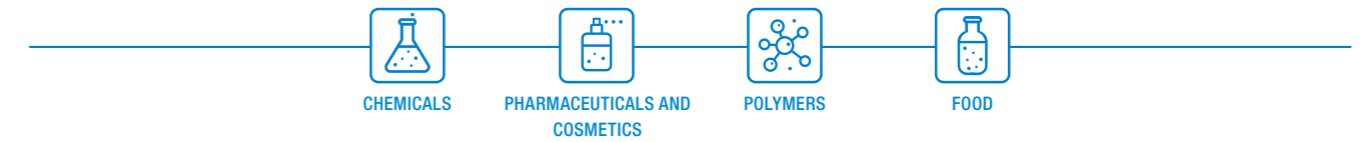
Applications

POLYMER PROCESSING
PET · PBT · PA · PC · PS · SAN · ABS · HIPS · PP · PE · POM

AT design: advantages

- Greater efficiency, resulting in
 - Less temperature transfer to the polymer
 - Energy saving = cost saving
 - Broader viscosity range possible
 - Broader volumetric flow range possible
- Lower bearing temperature, leading to lower strain on the polymer
- Parts in the BOOSTER and POLY series are interchangeable (same size)
- Optimised intake geometry (POLY), leading to minimal pressure loss and therefore minimal dwell times of the polymer in the reactor
- Three different flange types each (EN 1092-1 and ANSI B16.5)
- Three different pressure levels (200 bar, 250 bar, 320 bar)

Metering systems/pumps



Metering systems

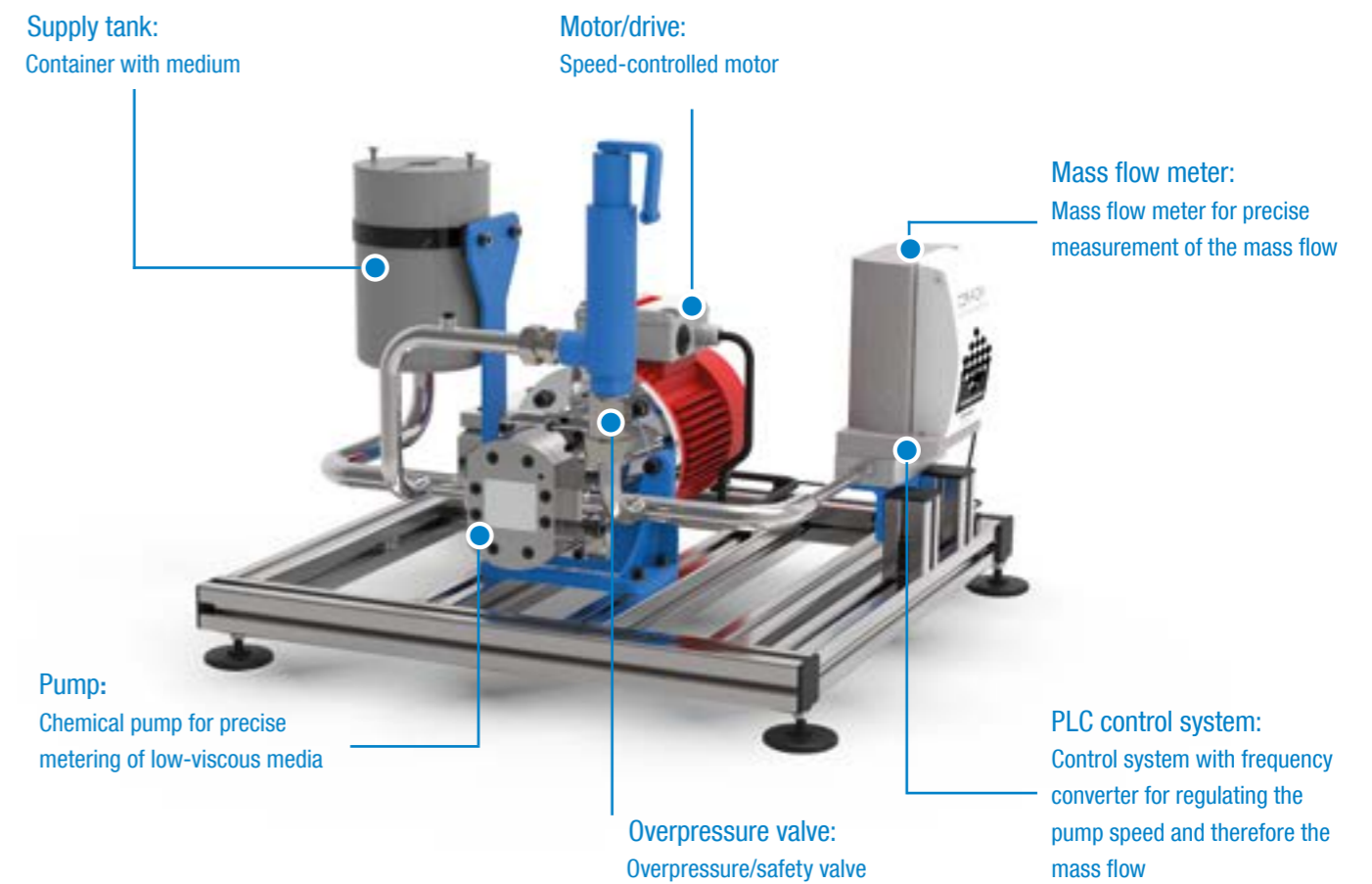
In many fields, special processes call for special solutions. WITTE offers its customers custom metering systems in addition to a wide range of standard metering and chemical pumps.

These systems are based on chemical pumps. Different measurement and control systems are available depending on requirements.

Metering pumps for the production of chemical fibres

Synthetic chemical fibres are becoming increasingly important. They are needed for many different applications such as textiles, linen, brushes, etc. WITTE metering pumps ensure that the polymer melt is transferred evenly and reliably to the corresponding points. To guarantee consistent quality, it is absolutely crucial that the pumped amount remains constant.

Sample structure of a metering system



Extrusion pumps

EXTRU



The extrusion gear pump is used for melt in connection with extruders or mixers. It reduces the intrinsic pulsation and uneven transfer especially from single-screw extruders. The pump builds up the necessary discharge pressure needed for downstream equipment. The pressure build-up is significantly more efficient in the gear pump than in the extruder, which means there is less temperature transfer to the polymer. This relieves the extruder and allows for increased output. The extrusion pump therefore helps transfer the product as gently as possible. The robust design and pumping properties make the EXTRU indispensable in the pro-

duction of precise foils or microgranulate in the extrusion process. Different custom designs also allow them to be used to pump elastomers.

The WITTE QCC design is available especially for masterbatch applications with frequently changing colours.

To prevent impermissible excessive axial forces with high pressure on the suction side (discharge pressure of the extruder), the load must be taken off of the drive shaft. The drive shaft protrudes from both sides of the housing and is sealed so that there is atmospheric pressure on both sides of the shaft.



POLYMERS



FOOD

Technical designs

HOUSING

Heat-resistant carbon steel · stainless steel · optionally available with coating

GEARS

Tool steel · nitrided steel · optionally available with coating · helical gearing · herringbone gearing (for very low pulsation during pumping)

FRICTION BEARINGS

Tool steel · NiAg (nickel silver) · alum. bronze
optionally available with coating

SHAFT SEALS

Viscoseal · stuffing box

HEATING

Electric · optionally available with cover heating

Operating parameters

VISCOSITY

Up to 40,000 Pa s

TEMPERATURE

Up to 400°C

SUCTION PRESSURE

Up to max. 120 bar

DIFFERENTIAL PRESSURE

Up to 250 bar · custom designs for higher differential pressures also available

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

PUMP SIZES

From 2.78 cm³/rev. to 12,000 cm³/rev.
Intermediate sizes with more narrow gears for higher differential pressures are possible, e.g. 140/90 (690 cm³/rev.)

Application examples

POLYMERS

PS · PET · PVC · PC · PMMA · HDPE · LDPE · LLDPE · PP · PEEK · polysulphone

FOOD

Liquorice · chewing gum

Design versions



Food pumps

PURO



Easy to clean and customisable

Stainless-steel gear pump for transferring and metering low-to-medium viscous media. Decades of design experience and optimal material selection have optimised this pump type for even the most challenging tasks with impressive reliability and metering accuracy in vacuum as well as high-pressure applications.

Typical application areas for this pump type are situations where conventional food pumps such as rotary piston pumps hit their limits.

Pumps of this type can be both heated (hydraulically or electrically) and unheated. The WITTE modular system for friction bearings, gears and shaft seals offers maximum flexibility for the user.

The pump has various rinsing connections for better cleaning. The design of this pump focuses on minimising dead space; eliminating dead space completely is not possible due to the operating principle.



Portfolio brochure for WITTE gear pumps



Technical designs

HOUSING

Stainless steel · tantalum · titanium · Hastelloy®

GEARS

Stainless steel · Ferralium® · Ferro-Titanit® · Hastelloy® · ceramic materials · etc. · optionally available with coating

FRICTION BEARINGS

NiAg (nickel silver) · silicon carbide · zirconia · other materials available upon request

SHAFT SEALS

Single and double mechanical seal · radial shaft seal ring · magnetic coupling · optionally available with seals from other manufacturers (all materials meet FDA/EN 1935 requirements)

HEATING

Hydraulic · electric

Operating parameters

VISCOSITY

Up to 500,000 mPa s

TEMPERATURE

Up to 200°C

SUCTION PRESSURE

From vacuum to max. 15 bar

DIFFERENTIAL PRESSURE

Up to 120 bar

DISCHARGE PRESSURE

Up to max. 135 bar

PUMP SIZES

From 1.78 cm³/rev. to 3200 cm³/rev.

Applications

FOOD

Plant oils · margarine · flavourings · fondant · liquorice · chewing gum · vitamins · syrup · gelatine · mustard · ketchup · sugar solutions · etc.

Pump accessories



Pressure sensors

Pressure sensors provide information about the prevalent pressure ratios in the pump and process. In the event of fluctuations, the pressure can then be regulated accordingly.



Couplings

The coupling ensures the safe transfer of force to the pump. We only use couplings from well-established manufacturers. A wide range of versions is used depending on the existing parameters and conditions.



Gears

We offer various gear versions from renowned manufacturers to match the motors and process in question. All gears are designed and adapted by our engineers in collaboration with the manufacturers.



Frequency converters

WITTE offers another optional accessory: frequency converters that are precisely adapted to the motor.



Base frames

WITTE is both a manufacturer and a system supplier. Upon request we offer complete assemblies consisting of pumps and accessories for effective operation. Complete solutions from one place.

Pump assemblies consisting of pump, drive and control system are often mounted on base frames. The modular design allows for the complete base frame, that is the entire assembly, to be lifted quickly and easily from the process environment.



Universal shafts

Universal shafts allow for maximum freedom with the installed pumps. This is necessary, for example, if the position of the pump changes due to the thermal expansion of the plant. It also significantly simplifies the alignment of the pump and drive.



Buffer fluid systems

Depending on the process, it may be necessary to use a shut-off unit to seal the shaft. The systems reliably seal the shaft and therefore guarantee the leak and emission-free operation of the pumps.



Drive technology

As an international company, we have a global network of suppliers. As a result, we are able to address local requirements for the motor design and implement these in accordance with customer requests.



Sealing systems

We have a wide range of seals available for WITTE pumps. These seals can be used flexibly as needed for the application in question. Combinations of different versions of seal are also possible. Seals even from other manufacturers can be installed upon request.



Temperature sensors

Temperature sensors can be used at various positions to monitor the temperature of the medium. The sensors are used for process monitoring and provide information about the pump temperature and the additional heat load caused by friction, for example.



Flowmeters

Flowmeters can be used for liquids to determine either the volumetric flow or the mass flow. The flowmeter is adapted to the gear pump and application in question. Use of brand-name manufacturers ensures maximum accuracy.

Modifications

Spare parts

WITTE offers a comprehensive service, even for gear pumps from other manufacturers

Our specialists will also assess your plant on site upon request and analyse the conditions and the process, and identify potential areas of optimisation. Often the plant does not need to be overhauled to increase throughput. We achieve this by installing a specially developed pump that suits the existing installation space.

Upgrade

Gear pumps from other manufacturers can be upgraded and modified with high-quality WITTE components, increasing efficiency and achieving longer availability. The core components are manufactured to original dimensions and drawings and can even be delivered in special materials such as coated steels or ceramic materials. Maintenance and repair costs can be reduced and downtime avoided.

Replacement

This makes it possible to increase pumping capacities by up to 200%. Where pumping output is increased, often the complete plant structure has to be overhauled. We can work around this with a special pump adapted to your plant. The plant does not need to be overhauled and throughput can still be increased.

Repair

In addition to modifying and replacing gear pumps from other manufacturers, we also repair them. The pumps are carefully dismantled and analysed. It is usually cheaper and faster to repair a pump than to replace it entirely. Customers often find it more efficient to have us do the repairs rather than the original manufacturer. All wear parts are measured by us on 3D measurement machines. This ensures compliance with tolerances.

Wear and spare parts for pumps from WITTE and other manufacturers

Gear pumps are often exposed to extreme conditions due to the medium, application or environment. Wear parts and parts that come into contact with the medium, such as shafts, bearings or seal parts, can be under extreme loads and should therefore be inspected on a regular basis and replaced if necessary.

WITTE gear pumps as well as gear pumps from other manufacturers can be modified and equipped with spare parts of the highest grade and quality. Core components such as shafts, bearings and seals can be adapted and replaced.



WITTE services



Engineering

Development of custom gear pumps. We develop custom gear pumps for our customers based on their wishes and requirements. In doing so, we walk them through the entire process from the idea to the prototype and series production. WITTE is not just a manufacturer and supplier of gear pumps; it is also a valued development and technology partner.



Service

- Technical clarification on site
- Start-up service/commissioning
- Installation
- Expertise for gear pumps in process
- Troubleshooting
- Spare part service
- On-site analysis



Training

- Theoretical knowledge
- Practical application
- Seminars for customers/external parties

Trained personnel is essential to ensure fast and flexible plant maintenance. WITTE offers its customers training on general and special gear pump topics. Depending on the team size, training can take place at Witte's premises or on site at the customer's own plant/workshop.



OEM customers

Best practice:

A manufacturer of machines for producing fire extinguishing foam needed a gear pump for introducing the foaming agent. The liquid is highly corrosive and tends to crystallise. Only special materials for friction bearings, gears and seals could ensure safe operation. In the course of the project, additional process parameters were adapted and optimised. The result was a custom product that complied with specifications and met all technical and commercial requirements.

As a special service for OEM customers, WITTE offers custom gear pumps that are specially tailored to requirements.

Working with the customer, the pumping task is analysed, discussed throughout the project, and an initial solution is developed. A pump is designed and prototype created depending on the required amount.

The customer has ample opportunity to test this prototype, and then the results are discussed together. If changes are desired, these are incorporated into the design. The pumps can also be fitted with the customer's name plate if desired and delivered quickly by order contract.

When can we work with you to develop a gear pump tailored to your process?

Design

All installed components of the gear pumps are individually adapted to the process. This not only involves their design but also the selection of the materials. Both parameters are closely connected and are influenced by a wide range of factors.

The properties of the medium, the temperature of the medium or the ambient temperature directly influences the material selection and the design of the components. Specific design programs, years of experience and close communication with the customer are employed to design the pumps to suit their use precisely.

Quality management

ISO 9001 certificate

The quality must be right. That's why WITTE PUMPS & TECHNOLOGY GmbH is certified under DIN EN ISO 9001. Regular internal and external audits ensure continuous improvement. The principles of modern business operations are assured by a code of conduct and compliance directive.

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

We focus on quality. This is the only way our pumps can achieve the best efficiency and reliable performance. We are certified under DIN EN ISO 9001 in order to constantly improve quality and customer satisfaction. All of our processes and our service are regularly audited and optimised. We also perform regular audits and assessments of our suppliers to guarantee reliability and consistently high product quality. Employees and partners of the company are involved in continuous improvement processes to encourage commitment to the cause and team cohesion.

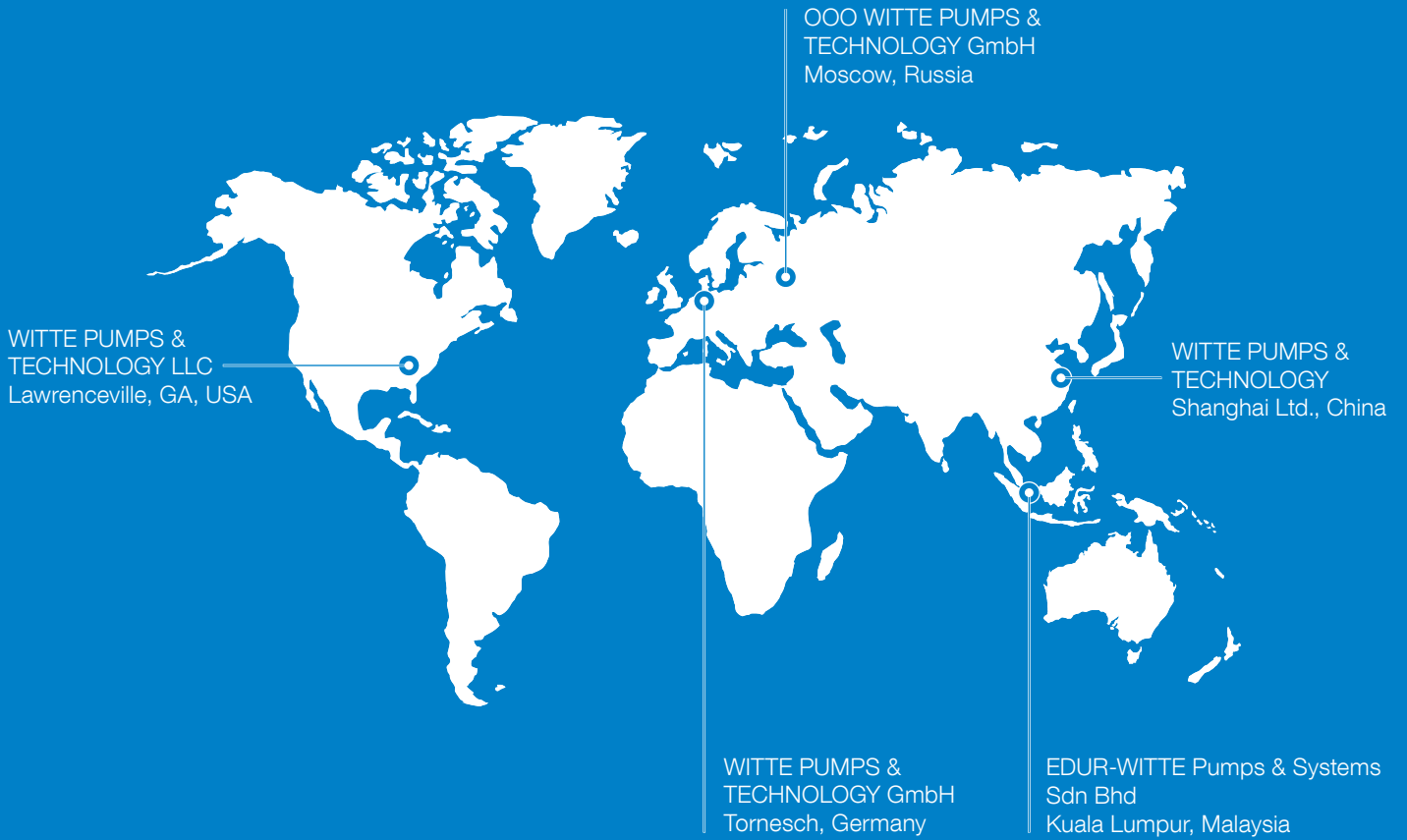
AEO certificate

As an 'Authorised Economic Operator', we guarantee a consistently secure supply chain for our products. This means that everyone involved from the customs office have been certified for reliability.

Our customers benefit from this status because we are able to deliver quickly and reliably thanks to accelerated approval processes and simplified customs procedures.





WITTE WORLDWIDE



All of our sales partners can be found at www.witte-pumps.com

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