

**seepex.com**  
all things flow

Your Pump Solution  
for Environmental Technology.



# Clean solutions.

Due to increasing global demand, environmental technology has become one of the world's most important industries. The technologies used play a major role in preserving our habitats. This sector therefore represents a great challenge for pump technologies in general and, more specifically, for progressive cavity pumps in particular. Economically and ecologically-sensible technologies can make a significant contribution to both your pumping process and our environment.

Treatment of municipal and industrial waste water is particularly important. What began with first sludge treatment technologies in densely populated industrial countries has now become a waste water industry which must deal with complex chemical, biological and mechanical processes and find solutions for them.

As an international leading provider of products and services for pumping and treating liquids, seepex makes a valuable contribution to this. We enjoy responding to this challenge using state-of-the-art technology and offering full services, while taking strict environmental guidelines into consideration and guaranteeing great reliability as well as easy maintenance.

The modular system consisting of 8 products groups and 27 ranges allows us to offer the optimal technical and financial solution for virtually every application. For example, customised pump solutions for sludge treatment, sludge dewatering, dewatered sludge treatment, sludge drying and incineration, as well as metering chemical additives. Each pump is selected to the specific requirements of your sector, your company, your installation location and of course the application.

330 of the over 520 employees worldwide work at our headquarters in Bottrop to make sure this is the case. They develop, manufacture and market your pump solution – whether progressive cavity pumps, macerators or control systems.

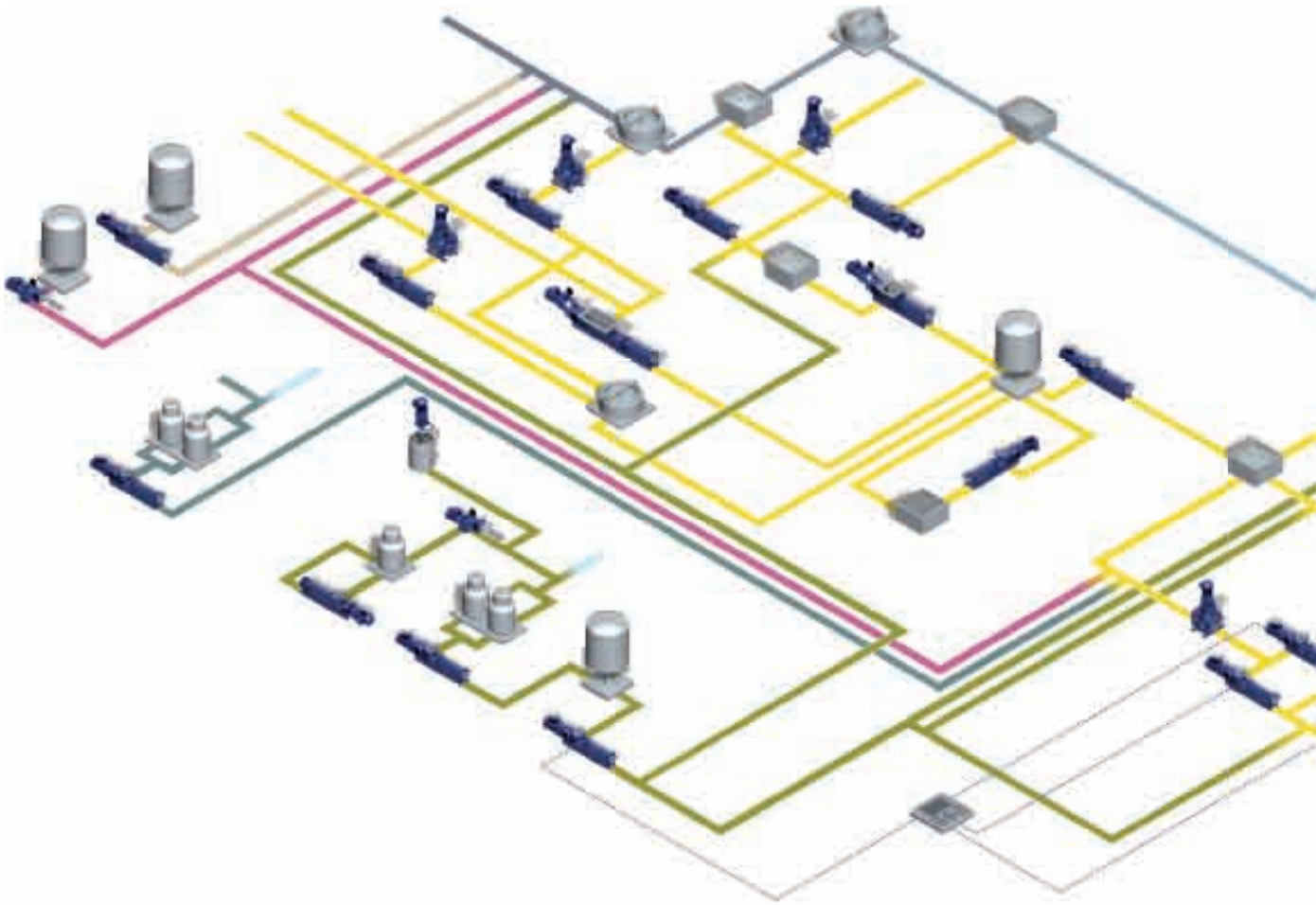
Our pumps offer maximum reliability, which can also be maximized with our comprehensive range of services at all stages of the service life of a pump. This allows us to provide not only technically but also financially optimal solutions for a wide range of applications.

No wonder environmental technology without our pumps is inconceivable.



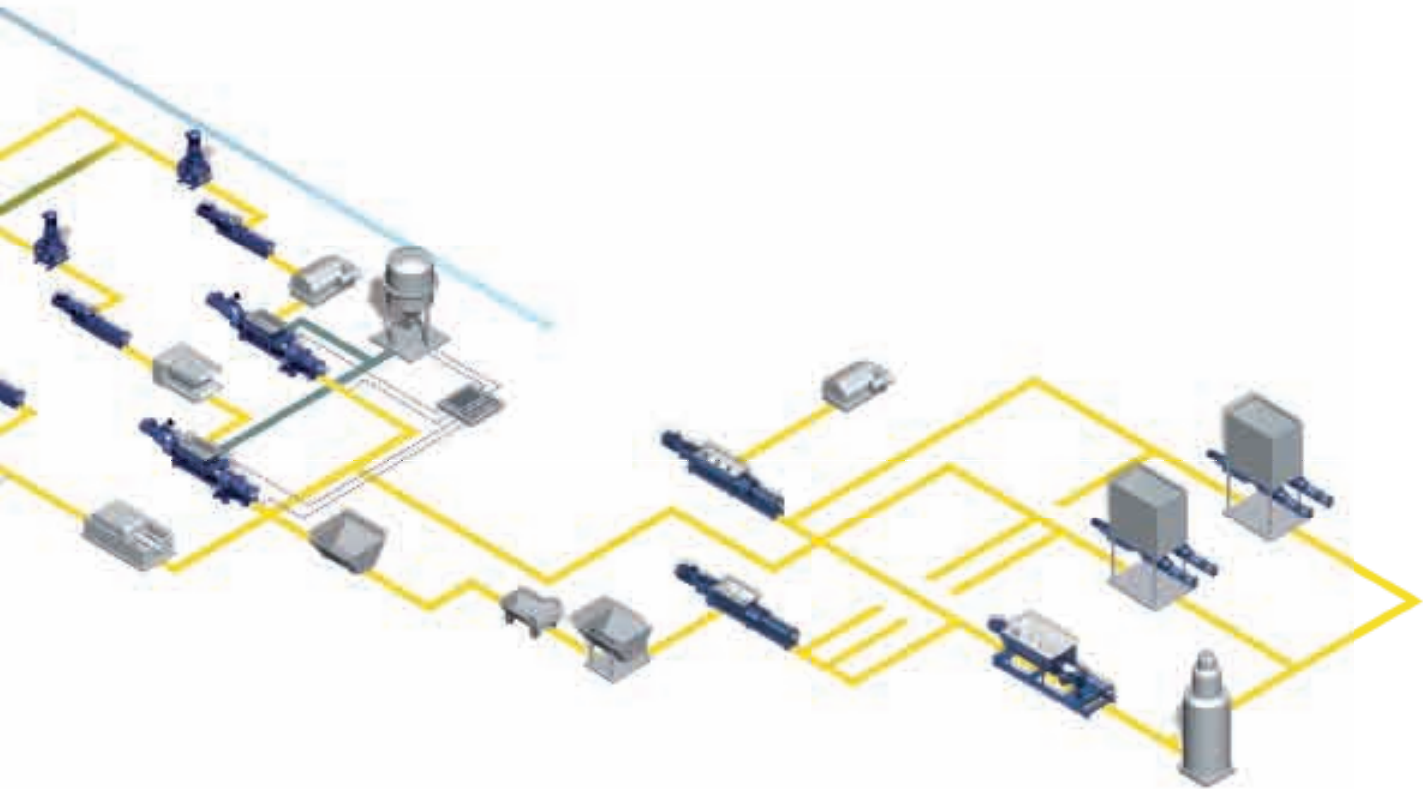
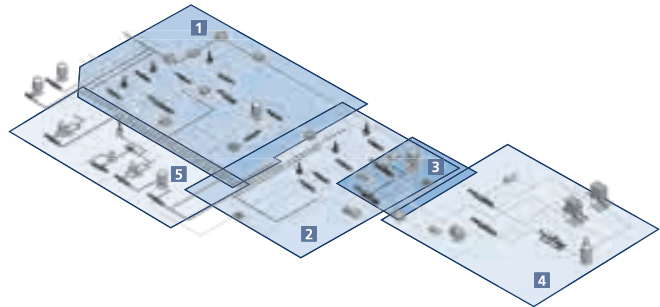
For years, four pumps of range N 300-36T have been pumping 173 m<sup>3</sup> of digested sludge with 5 % ds content every hour to a treatment plant 16 km away. They do this at max. 25 bars with a drive capacity of 210 kW per pump, whereas the drives each have their own oil cooling systems. For this enormous output, a separate building was built for the pumps.

# Sewage treatment plant installation.



Waste water is transported to treatment plants for processing. In these systems, our progressive cavity pumps, macerators and control systems can support virtually all your processes. They assist you in neutralising, filtering, reducing the organic nitrogen and phosphate levels right through to pumping deatered sludge to silos or containers. See this process diagram to find out all the areas in which our pump solutions are used.

Several sectors of a clarifying process



**1 Sludge treatment**

Pumping of:

- Primary sludge
- Flootation sludge
- Surplus activated sludge
- Slurry
- Digested sludge
- Sludge circulation

**2 Sludge dewatering**

Pumping of:

- Sludge from mechanical dewatering up to approx. 35 % ds
- Sludge feed pumps

**3 Dewatered sludge treatment**

Pumping and conditioning of:

- Dewatered sludge with quick lime up to approx. 45 % ds for utilisation in the agricultural industry.

**4 Sludge drying and incineration**

Pumping of:

- Dewatered sludge with approx. 25–45 % ds

**5 Metering chemical additives**

Pumping of:

- Lime milk
- Ferric chloride
- Ferric and aluminium sulphate
- Polyelectrolytes as a concentrate
- Solution polyelectrolytes

# Pumping solutions for sludge treatment.

In waste water treatment sludge is initially settled in primary settlement tanks where the sludge is allowed to settle under gravity. This sludge is periodically draw off and then mechanically thickened prior to digestion.

In the digestors, the organic components of the sludge are converted to inorganic material in an anaerobic environment and at a constant temperature of approx. 35 °C or higher in advanced digestion processes. Then it is chemically and physically stabilised so that it is low in odours. Fermentation is beneficial for further utilisation of the sludge.

## Applications

- 1 BN range pumps pump primary sludge from the clarifier to the thickener or for mixing with dewatered primary sludge
- 2 BN range pumps pump surplus sludge from the secondary or final treatment in the aeration tank or to the thickener
- 3 BN, BTQ and BT ranges pumps pump thickened surplus sludge into the digester
- 4 BT range pumps for backmixing the imported, dewatered sludges with primary sludge, then pumping into the digester
- 5 BN range pumps pump imported sludge into the thickener
- 6 BN range pumps pump thickened primary sludge into the digester
- 7 BN range pumps for continuous circulation of digested sludges
- 8 BN range pumps for pumping digested sludge into sludge storage tanks, secondary thickener or directly to dewatering
- 9 M group macerators for grind solids and fibrous material in various types of sludge

## Features

- Compact pump
- Low maintenance requirement
- Lower operating costs



### Pumps of range N 300-36T

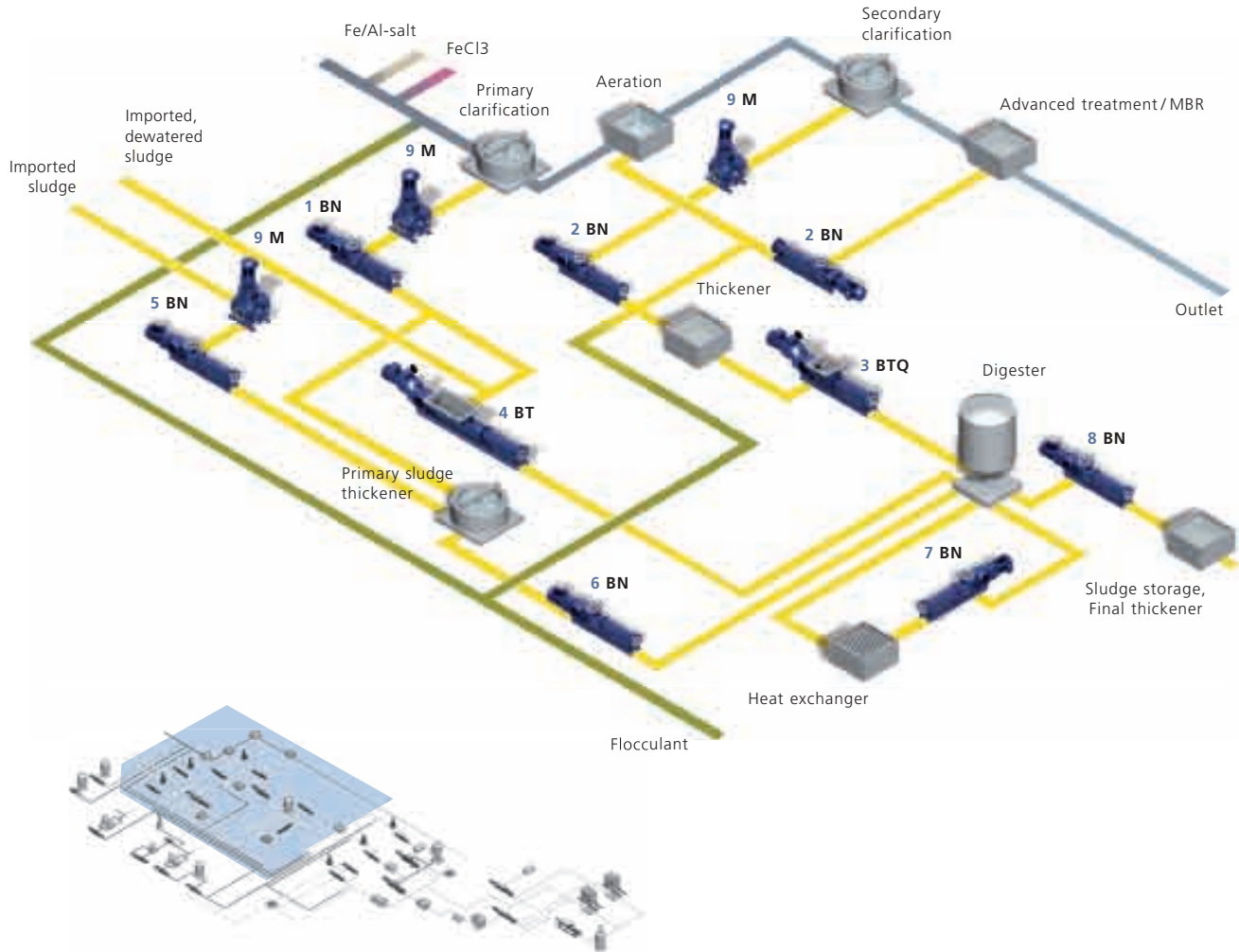
Conveying product: Digested sludge with a ds content of 5 %  
Conveying capacity: 173 m<sup>3</sup>/h (761 GPM) • Pressure: 25 bar (375 psi)  
Temperature: 5–20 °C (41–68 °F)



### Pumps of range BN 75-6LT and Macerator 110U

Conveying product: Surplus activated sludge  
Conveying capacity: 15–65 m<sup>3</sup>/h (66–286 GPM) • Pressure: 2.5 bar (37.5 psi)  
Temperature: 20 °C (68 °F)

Systematic flow chart



**Pumps of range BE 70-12**  
 Conveying product: Primary sludge  
 Conveying capacity: 21 m<sup>3</sup>/h (92 GPM) • Pressure: 3 bar (45 psi)  
 Temperature: 20 °C (68 °F)



**Pumps of range BT 35-24**  
 Conveying product: thickened sludge  
 Conveying capacity: 3–15 m<sup>3</sup>/h (13–66 GPM) • Pressure: 15 bar (225 psi)  
 Temperature: 20 °C (68 °F)

# Pumping solutions for sludge dewatering.

After sludge treatment, the volume of the sludge is reduced by dewatering. Decanter centrifuges, belt presses, chamber and membrane filter presses, vacuum belt and rotating filters as well as other dewatering machines enable sludge to be dewatered to a dry solids (ds) content of 20 to 45%.

This enables the following disposal or utilisation routes to be implemented: landfill, agricultural industry and via drying and incineration.

## Applications

- 1 BN range pumps feed dewatering devices
- 2 M group macerators prevent build up of fibrous matter in digested sludge and homogenize
- 3 BTHE and BTE range pumps pump dewatered sludges from belt presses, centrifuges and vacuum filters to intermediate storage facilities
- 4 Control system FPPU of product group CO for controlling, adjusting and monitoring our pumps while feeding filter presses

## Features

- Decades of experience in pumping dewatered sludge
- Individual solutions available for a wide range of processes and applications
- Economic pumping solutions for transporting dewatered sludge



### Pump of range THE 70-48

Conveying product: dewatered/thickened sludge from the centrifuge with a ds content of 7–28% • Conveying capacity: 3–31 m<sup>3</sup>/h (13–136 GPM) • Pressure: 36 bar (540 psi) • Temperature: 20 °C (68 °F)

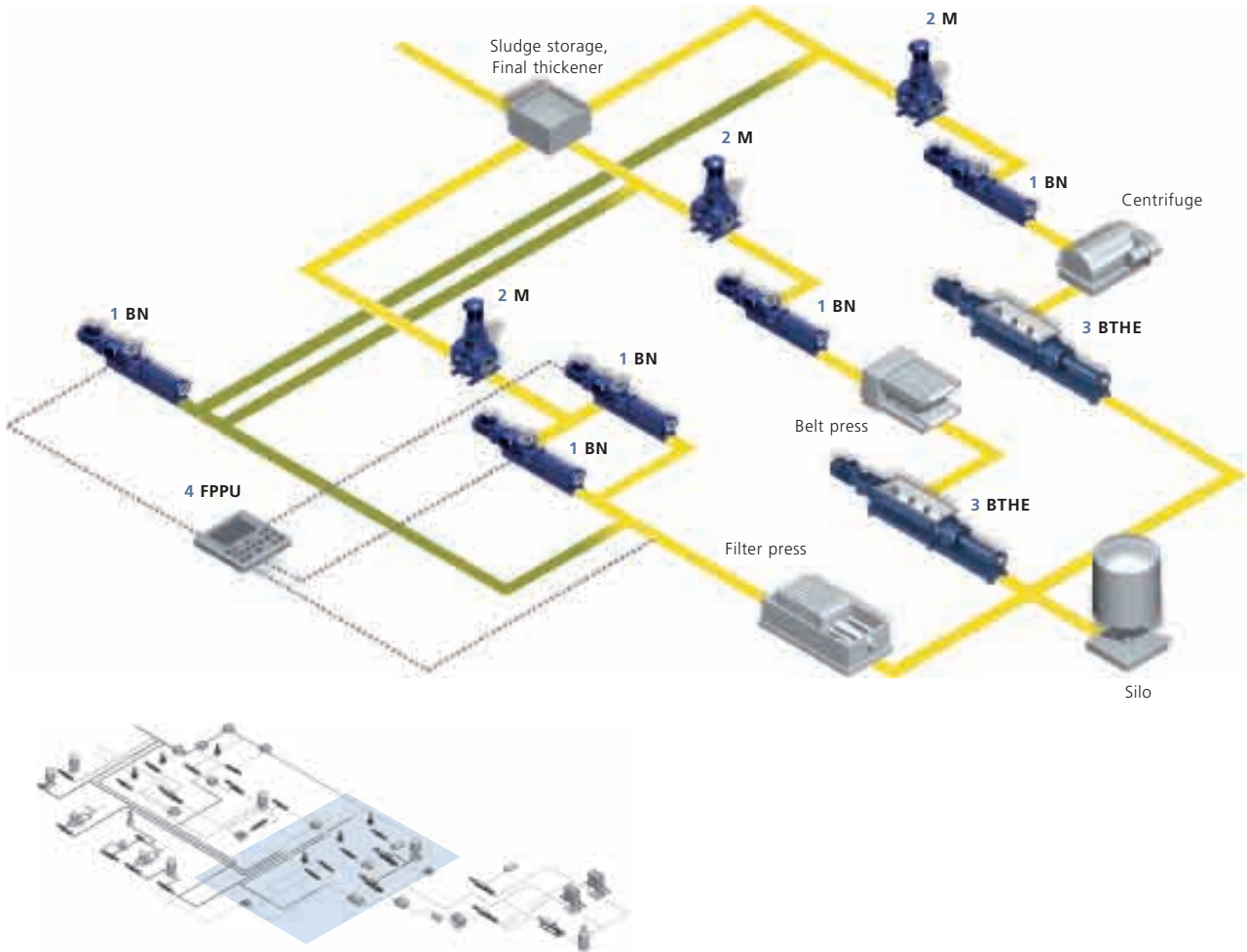


### Pump of range BTI 35-24 incl. boundary injection system

Conveying product: dewatered sludge from the belt press with a ds content of 21–24% • Conveying capacity: 7 m<sup>3</sup>/h (30 GPM) • Pressure: 7 bar (105 psi) (after boundary injection system) • Temperature: 20 °C (68 °F)



Systematic flow chart



**Pump of range BTI 17-12**

Conveying product: dewatered sludge from the centrifuge with a ds content of 25% • Conveying capacity: 2 m<sup>3</sup>/h (9 GPM) • Pressure: 9 bar (135 psi) Temperature: 20 °C (68 °F)

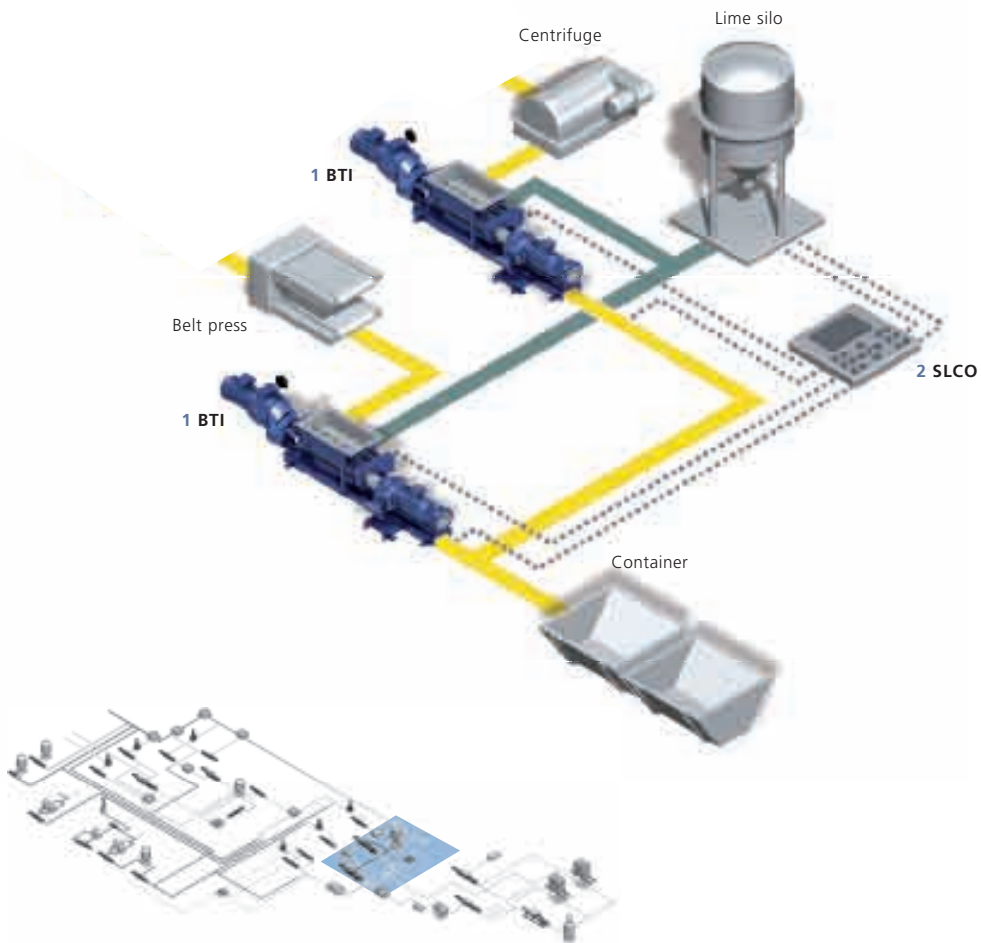


**Belt press**

An optimal charging of belt presses can be reached with our pumps



Systematic flow chart



**Display of control SLCO**  
for monitoring of the complete process



**Homogenized sludge**  
Enhanced sludge structure, almost without infection risk and more acceptable for further use.

# Pumping solutions for sludge drying and incineration.

Ideally sewage sludge should be incinerated without using alternative fuels/additives in order to promote economical and independent operation. In order to ensure that this is successful, additional measures are required to increase the thermal value of the dried sludge. Reduction of the water content via mechanical dewatering and drying are essential for this. The success of mechanical dewatering depends on the selected pumps for conditioning and the type and composition of the sludge.

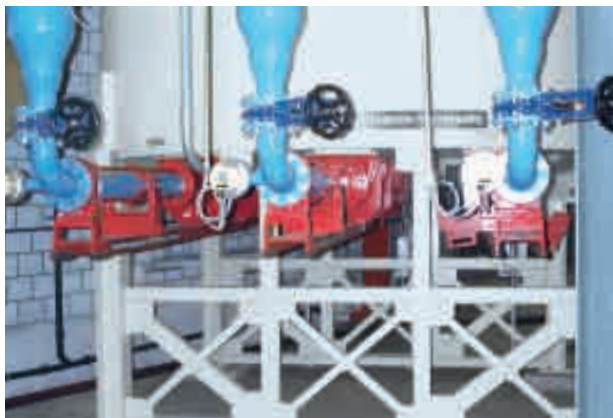
After water withdrawal and volume reduction during thermal drying, the dewatered sludge is compressed into pellets which are incinerated to generate energy or used as fertiliser.

## Applications

- 1 BTHE, BTE and BTI range pumps pump dewatered sludges from dewatering machines respectively imported sludges to intermediate storage facilities
- 2 BTES or BTEI range pumps pump dewatered sludges from silos and intermediate storage facilities to dryer and combustion furnaces

## Features

- Continual charging of the combustion furnace or dryer
- Flexible adjustment of the inlet hopper dimensions to the silo or bunker outlet
- BTEI ranges with a integrated buffer tank replaces separate storage silos and saves space



### Silo pumps of range BTES 17-24

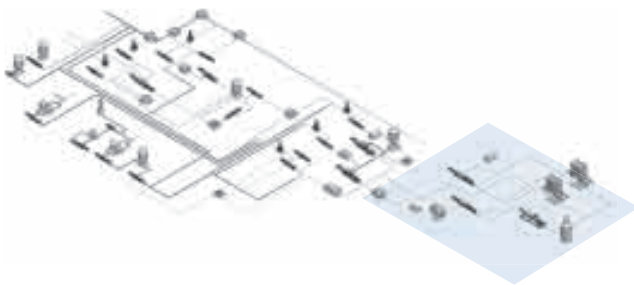
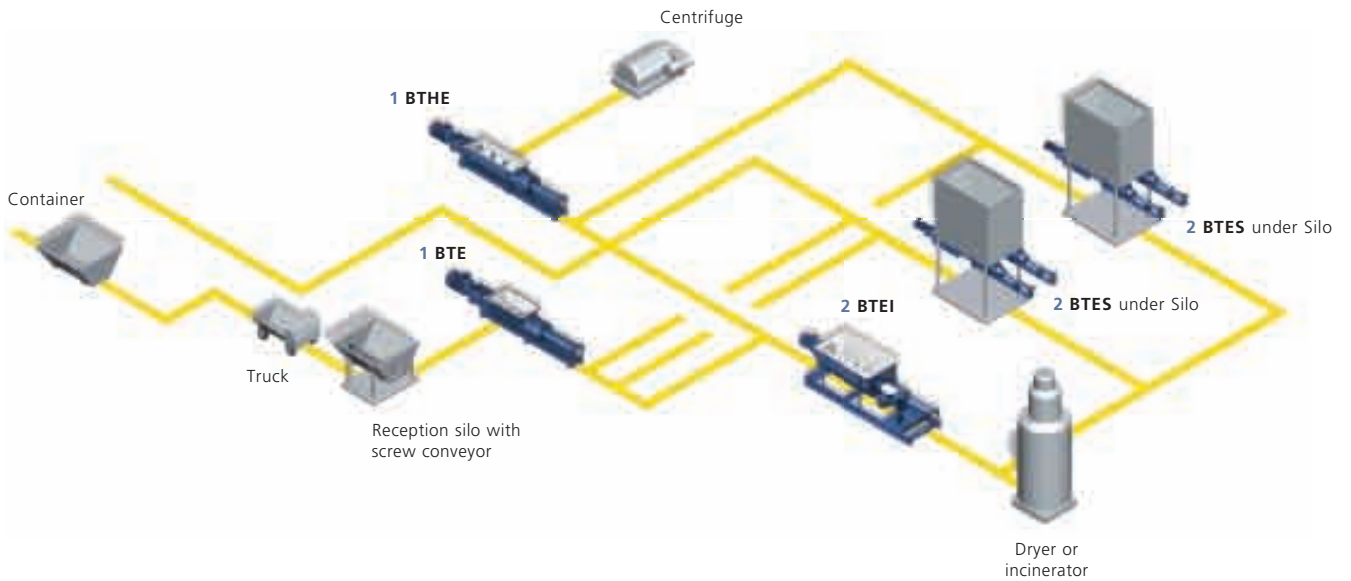
Conveying product: dewatered sludge with a ds content of up to 38%  
Conveying capacity: 2.5 m<sup>3</sup>/h (11 GPM) • Pressure: max. 24 bar (360 psi)  
Temperature: max. 50 °C (122 °F)



### Pumps of range BTEI 17-24, mounted on a common baseplate

Conveying product: dewatered industrial sludge  
Conveying capacity: 4 m<sup>3</sup>/h (17 GPM) • Pressure: 16 bar (240 psi)  
Temperature: max. 5–40 °C (41–104 °F)

Systematic flow chart



**Pump of range BTE 35-48**

Conveying product: dewatered sludge with a ds content of up to 37%  
 Conveying capacity: 6 m<sup>3</sup>/h (26 GPM) • Pressure: 24 bar (360 psi)  
 Temperature: max. 20–30 °C (68–86 °F)



**Pump of range BTI 5-24**

Conveying product: dewatered sludge with a ds content of up to 20%  
 Conveying capacity: 0.3–1 m<sup>3</sup>/h (1.3–4.4 GPM) • Pressure: 10 bar (150 psi)  
 Temperature: 20 °C (68 °F)

# Metering solutions for chemical additives.

Various organic and inorganic process additives are used in sewage treatment plants to support biological and mechanical processes. This area of application requires precise metering and the ability for a pump to handle difficult chemical products – an ideal application for a seepex pump.

Organic process additives, like anionic and cationic polyelectrolytes, synthetic polymers or copolymers flocculants based on acrylamide, are metered into the sewage sludge to aid in the separation process. Inorganic process additives such as aluminum, calcium and iron salts (precipitants/flocculants) are used for chemical phosphate precipitation and sludge conditioning before mechanical dewatering. Lime slurry is used for neutralization and improvement of sludge dewatering in filter presses, belt presses and centrifuges.

Our pumping solutions have demonstrated their capabilities in all aspects of sewage treatment – with flying colors.

## Applications

- 1 BN range pumps for circulating base polymer solution
- 2 MD/MDF range pumps pump and meter flocculant concentrate from the supply tote or the base polymer solution to the dilution skid
- 3 BN range pumps pump diluted polymer solutions into a day tank or meter them into various sludge treatment processes

- 4 BN/MD range pumps meter metal salts into the separation and sludge dewatering processes
- 5 BN range pumps meter lime slurry

## Features

- Compact pump
- Low maintenance requirement
- Lower operating costs



### Pumps of range MD 012-24

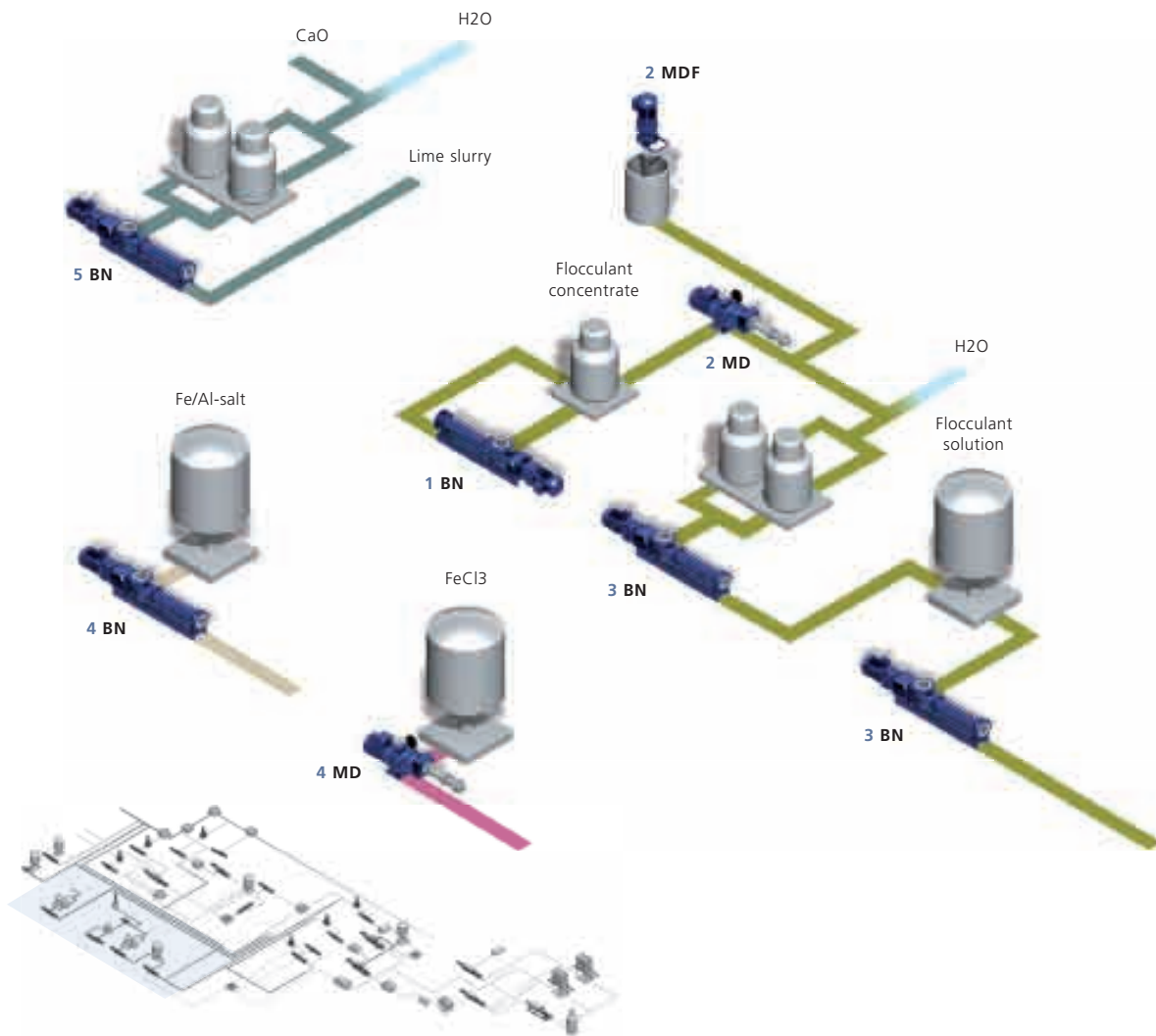
Conveying product: Polymer solution  
Conveying capacity: 30–150 l/h (0.13–0.66 GPM) • Pressure: max. 24 bar (360 psi)  
Temperature: 20 °C (68 °F)



### Pumps of range BN 2-6L

Conveying product: Flocculant solution  
Conveying capacity: 300–1500 l/h (1.3–3.3 GPM) • Pressure: 2 bar (360 psi)  
Temperature: 20–30 °C (68–86 °F)

Systematic flow chart



**Pumps of range BN 2-6L**  
 Conveying product: Polymer solution  
 Conveying capacity: 500–2500 l/h (2.2–11 GPM) • Pressure: 2 bar (30 psi)  
 Temperature: 5–40 °C (41–104 °F)



**Pumps of range BN 5-6L**  
 Conveying product: Polymer solution  
 Conveying capacity: 4500 l/h (20 GPM) • Pressure: 4.5 bar (67.5 psi)  
 Temperature: 20 °C (68 °F)

# System solutions.

Our control and monitoring systems are designed for specific applications. Standardised safety modules (measurement and safety equipment) are available for a wide range of applications and to protect the pumps against over pressure or dry running.

The components of a control unit can be sold individually, as well as being integrated within a complete control panel and supplied as a complete package.

Additionally we offer you qualified support for commissioning pumps and control systems.

## Dosing control

This control unit can be used to perform a wide range of metering tasks. This is based on a freely programmable control unit with an integrated display and operating unit. The modular structure allows simple and cost-effective adaptation to the metering task you need to perform. Prescribed metering quantities are an example of a simple task. The control unit calculates the quantity theoretically required and stops the pump when this quantity is reached.

Metering various media in a freely configurable ratio is a more demanding metering task. If optimal mixing of these media is required, this can be done using the BTI or BTH hopper pumps, for example.

## Level control

This controller can be used in a variety of applications. This is based on a compact control unit with a programmable memory and an integrated display and operating unit. The product level is measured using ultrasonic or load cells, for example. The level is controlled using a PID controller which changes the pump speed in accordance with the level.

If the PID controller cannot maintain a constant level due to an insufficient or excessive product supply, or due to a process malfunction, the control unit triggers actions which prevent damage in the system and can stop the entire process if necessary.

## Pressure control

This control is used when process requires a constant pressure to be maintained. This control unit has a programmable memory and an integrated display and operating unit. The operating pressure within the system is measured using a pressure transmitter. The system pressure is maintained at a constant prescribed value by an integrated PID controller by changing the pump speed. If the pressure increases above the set value, an error message is triggered and the process is shut down.

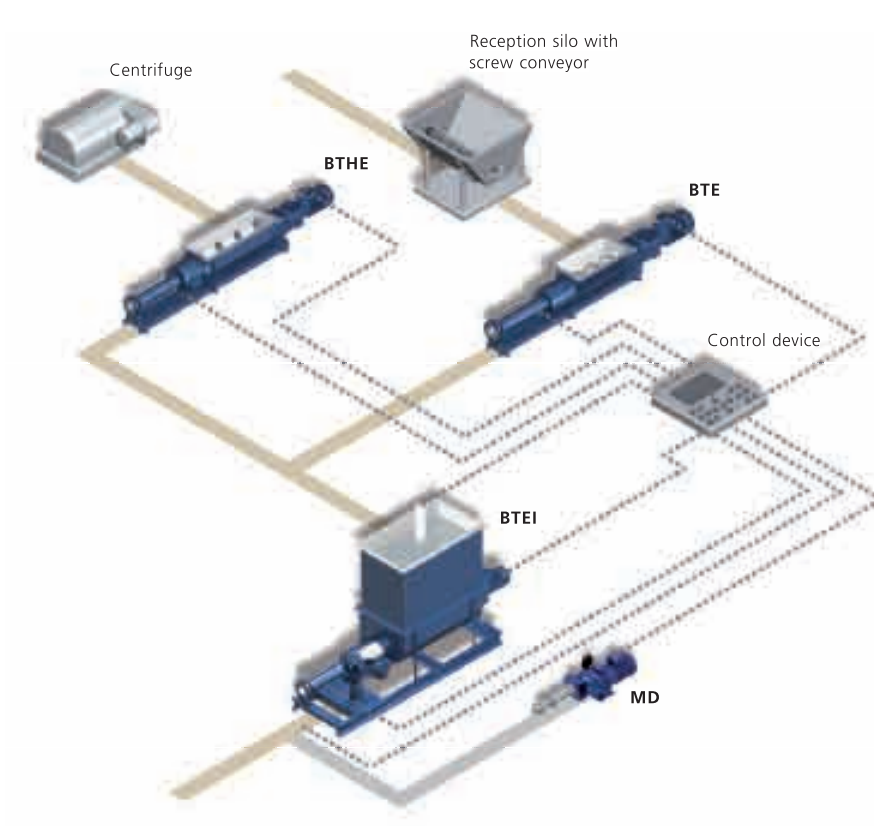
All protective functions are integrated in this control unit.



**System solution with a BTI range pump** with additional storage hopper and integrated level control, dry run protection (TSE) and boundary injection system



Systematic flow chart of a control process



# Your pump solutions at a glance.

seepex pumps transport thin to high-viscosity products with and without solids and low and high-temperature products, gently, with low pulsations and a low shear action. They also feature with excellent metering accuracy and can easily pump media such as dewatered sludge and chemical additives.

Product group N pumps with 2 ranges are used in virtually all industry sectors to convey thin to high viscosity materials with or without solids for up to 8% ds. They are also used in metering applications e.g. to meter lime water, milk and flocculation.

- > Conveying capacity: 30 l/h–500 m<sup>3</sup>/h (0.13 GPM–2200 GPM),  
Pressure: up to 48 bar (720 psi)

9 ranges of product group T open hopper pumps are available. They are used to handle highly viscous non flowable products. T pumps incorporate an open hopper and variants of auger feed screws are available to suite specific applications. They are therefore ideal for pumping thickened pre-dewatered sludge with up to 18% ds and dewatered sludge with and without quick lime up to 45% ds.

- > Conveying capacity: 50 l/h–500 m<sup>3</sup>/h (0.22 GPM–2200 GPM),  
Pressure: up to 36 bar (540 psi)

Product group D metering pumps are available in 6 different ranges for pumping and dosing small quantities in virtually all industry sectors. They are especially suited for low pulsation metering of low to high viscosity media containing solids and chemically aggressive media with a high accuracy. Typical products handled are flocculants and coagulants.

- > Conveying capacity: 0.2 l/h–1000 l/h (up to 380 GPH),  
Pressure: up to 24 bar (360 psi)

## Range BN

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## Range BTHE

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## Range MD

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Product group W wobble pumps in block design transport liquids of any viscosity, even with high proportions of solids. The simple design features brings economical benefits for pumping applications that require a simple solution.

- > Conveying capacity: up to 10 m<sup>3</sup>/h (45 GPM),  
Pressure: up to 4 bar (60 psi)

#### Range BW

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seepex macerators are available in 2 ranges, these are mainly used in municipal and industrial waste water applications to reduce the size of solids and fibres in the pumped product to increase the reliability of the pump and downstream equipment. They are available as inline designs with integrated solid separators and universal versions for direct installation in a pipeline or with a supply container with a direct connection to one of our pumps.

#### Range I

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See our "Product groups and ranges" brochure for further solutions for a wide range of applications.

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all things flow

And what can we get flowing for you? Your nearest contact:

Or visit [www.seepex.com](http://www.seepex.com)

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