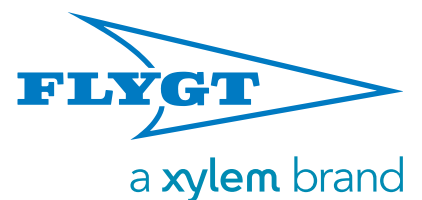




# Liquid Manure Technology

SYSTEM TECHNOLOGY FOR FARMING

Flygt is a trademark of Xylem Inc. or one of its subsidiaries.



# Liquid Manure Technology

Species-appropriate husbandry for farmers requires reliable equipment that can master any technological problems that occur in the most cost effective way possible. In this respect Flygt's liquid manure and biogas technology has been a pioneer for years, offering system solutions for husbandry operations with Flygt submersible pumps and mixers.

## **Liquid manure farming in harmony with nature**

Maintaining and tending to the natural

### **soil - plant - animal - soil**

cycle is part of the farming tradition. It is a tradition to which we as manufacturers are committed. That is why we have developed systems for storing liquid manure in a way that is environmentally appropriate, for homogenizing it and for supplying it in spreadable form.

## **Machines and processes perfectly adjusted to one another**

The different methods match the specific conditions in the individual operations. These Flygt systems have become the standard in modern liquid manure farming. Their development is based on experience and they are produced in accordance with high standards of quality. After all, quality is the key term for cost-conscious management, followed by the profitability factor of "appropriate technology". With both factors Flygt's liquid manure technology satisfies the requirements for reliable and permanent solutions.

This brochure contains information on the benefits of the tried-and-trusted Flygt submersible pumps and mixers and exemplary ways of using them in various processes. The choice is yours. With our customer-oriented organization we are close to your farm to assist you - from consulting, project planning and construction of the system, all the way to technical support and maintenance.





# Submersible Chopper Pumps

Flygt submersible chopper pumps are specifically designed for pumping liquid manure with fibrous material. Whether it is a simple or a demanding pumping job, Xylem always offers the right solution for the entire range of tasks. The chopper impellers of Flygt's F series are particularly powerful and dependable. In combination with the clog-free N hydraulics, they make for great operating reliability and reduce annoying and costly interruptions to a minimum. At the same time the F pumps offer a significantly wider range of applications, both with respect to output quantity and pressure head (water column up to 70 m / 230 ft, capacity up to 9 m<sup>3</sup> /min /2300 usgpm, engine power up to 26 kW/ 35 hp). Depending on the duty point, the special efficiency of the F series saves an average of 30 % of energy. Flygt submersible chopper pumps are specifically built for pumping liquid manure with fibrous material.

- Compact construction
- Adaptable modular system
- Large number of applications with different chopper impellers
- High efficiency
- Cast-iron and Hard-Iron™ design
- Surface treatment for all parts which come in contact with the medium

- Available in standard and explosion proof motors
- Motors for all standard power networks (special voltages and frequencies on request)
- Thermal monitoring protection in all pumps with standard and explosion protection



F 3085



F 3102

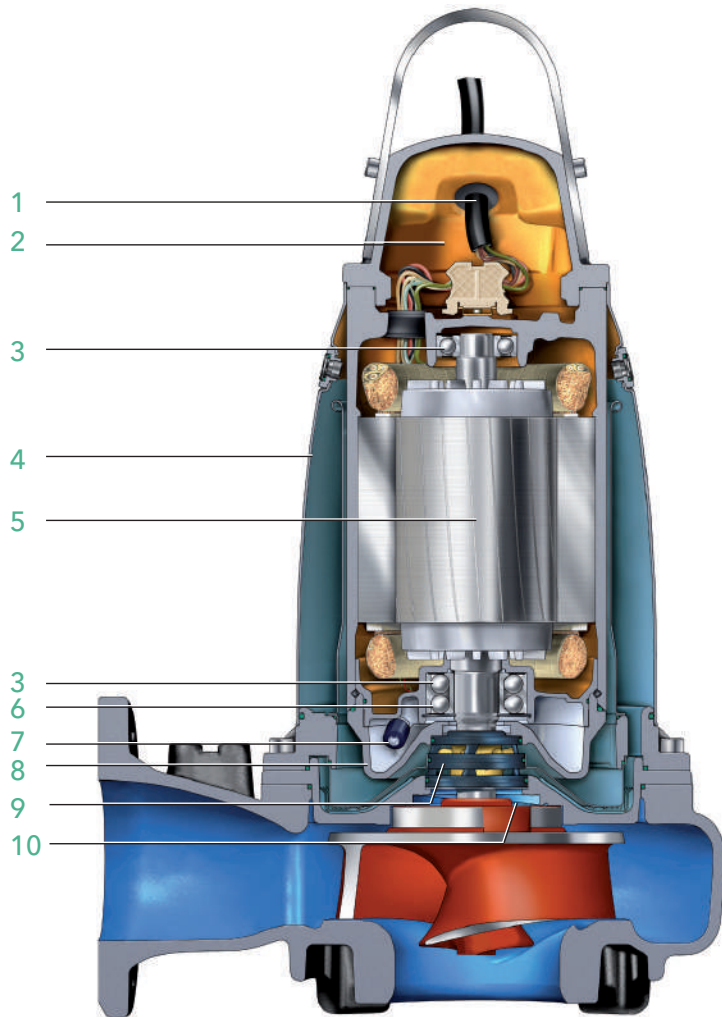


F 3127



F 3153





### 1 Cable entry

Designed with sealing and strain relief functions.

### 2 Terminal housing

Fully sealed inside and out.

### 3 Long life bearings

The bearings on all Flygt pumps are designed to have a service life of at least 100,000 hours.

### 4 Cooling system

The motor is cooled by the surrounding liquid. A cooling jacket is available for dry-installed pumps and other applications.

### 5 Motor

Can reach a maximum operating temperature of (149 °C, 284 °F). Wound stator in insulation class H (180 °C, 356 °F), trickle impregnation.

### 6 Deflection resistant shaft

A short overhang of the shaft virtually eliminates shaft deflection. This results in low vibrations, long seal and bearing life plus quiet operation.

### 7 Monitoring

Thermal switches embedded in the stator winding protect against overheating. The inspection chamber is equipped with a leak detector.

### 8 Inspections chamber

A separate inspection chamber, below the bearings, further increases operational reliability. The built-in sensor gives an early alert of any fluid build-up and allows for simple checking and maintenance. The sensor can be connected as an option.

### 9 Seals

The Plug-in™ seal unit provides a perfect fit and faster, simpler replacement. The design also protects the seal surfaces during disassembly and mounting.

### 10 Seal wear protection

Spin-Out™ is a patented design that protects the outer seal by expelling abrasive particles from the seal chamber.

### International standards approval

Each pump is tested and approved in accordance with national and international standards (IEC 34-1, HI, CSA) They are also available in explosion-proof versions for use in hazardous locations approved by Factory Mutual and European Norm (FM and EM).

# The N-Impeller

## An alternative to the chopper system

If the risk of blockages during pumping of liquid manure is to be reduced to a minimum, Flygt pumps with N-impeller technology are the best choice. The patented hydraulic system is self-cleaning and constantly achieves high efficiency of over 80 percent.

At the core of the N-pump is the patented N-impeller, tried and tested in practical use. The unique semi-open construction of the impeller, combined with a relief groove in the pump housing, reduces the risk of blockages and ensures that the pump maintains its constantly high efficiency. This reduces the overall energy consumption and dramatically cuts the life cycle costs of the pump, making the N-pump series the ideal solution for liquid manure.

The innovative impeller:

- more efficient pumping
- pioneering work by Xylem
- pressure head up to 100 m (320 ft)
- capacity up to 10 m<sup>3</sup>/min (2500 usgpm)
- engine power up to 26 kW (35 hp)
- standard und explosion-proof motor construction
- self-cleaning impeller and pump housing with a relief groove



N 3153 with cooling jacket

# The Strong Little Ones

Xylem provides handy pumps for a diverse range of applications, taking care of the “little” pumping jobs in farming. Despite their size, these Flygt chopper impellers and wastewater pumps range between 0.55 kW (0,75 hp) and 2.4 kW (3,2 hp), offering delivery heads of up to 13 metres (42 ft) or a rate of 1m<sup>3</sup>/min (300 usgpm). Some of the Flygt pumps are equipped with float switches so they can be automatically turned on and off. This protects the pump against dry runs and at the same time regulates the liquid level.

- Compact design
- Light weight
- Easy handling
- Flexible applications

- Liquid manure with straw components
- Milking parlor draining
- Wastewater

- Liquid manure
- Silage effluents
- Cellar drainage
- Wastewater
- Sewage

- Cellar drainage
- Wastewater



F 3068



D 3057



DXVM 35-5  
DXVM 50-11



SXM 5  
SXM 7  
SXM 11



SXM 2  
SXM 3

# Submersible Mixer

The 4600 series from Flygt can be installed quickly and easily with low capital investment since there is no need for costly catwalks, external transmission, or concrete motor supports. Thanks to the wide range of components and materials and the modular structure of the 4600 mixers, there is a vast range of mixer powers and configurations to choose from. The body is made of stainless steel for corrosion resistance and long life. Propellers are made of high chrome, duplex or stainless steel.

- high mixing performance with low energy consumption
- solid direct drive
- standard and explosion-proof motor construction
- motors suitable for different temperatures: 40 °C, 70 °C, 90 °C / 104 °F, 158 °F, 194 °F
- explosion proof up to 90 °C / 194 °F, approved by Factory Mutual (FM)
- wide range from 3.3 kW (4,5 hp) to 30 kW (40 hp) units
- new propellers for optimized jet generation



Flygt submersible mixer 4600 series with support assembly



### 1 Cable entry

Compressible bushing and strain relief on the cable prevent leakage into the motor, providing a reliable installation.

### 2 Oil housing

Large barrier fluid volume lubricates and cools the seal and thereby prolongs service life.

### 3 Monitoring

Thermal sensors embedded in the stator windings prevent overheating. Leakage sensors are available as options.

### 4 Bearings

Securely supports the shaft by means of one main bearing at the propeller end and a double bearing at the rear end.

### 5 Motor

High-performance, squirrel-cage induction Class H motor provides thermal overload protection and extra long service life.

### 6 Propeller

Available with different blade angles, thin double-curved propeller optimizes mixing efficiency. Wide-hub design deflects fibrous material.

### 7 Plug-in seal with the Active Seal™ system

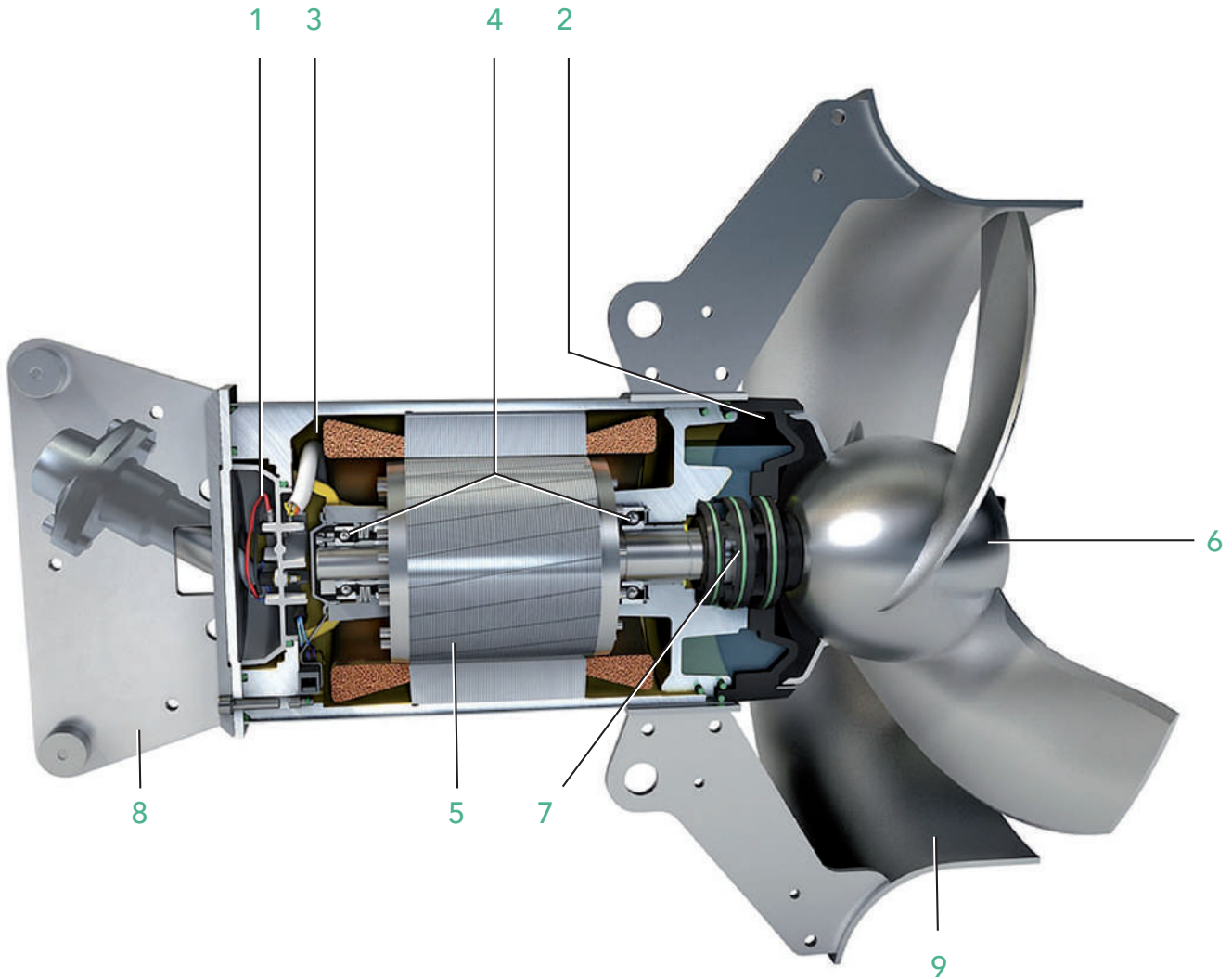
Offers increased sealing reliability and zero leakage into the motor, thereby reducing the risk of bearing and stator failure.

### 8 Materials

All external parts manufactured for excellent corrosion-resistance. Major parts in stainless steel.

### 9 Jet ring

Optional jet ring increases hydraulic efficiency thereby reducing power consumption.



# System Technology

## Cattle Production

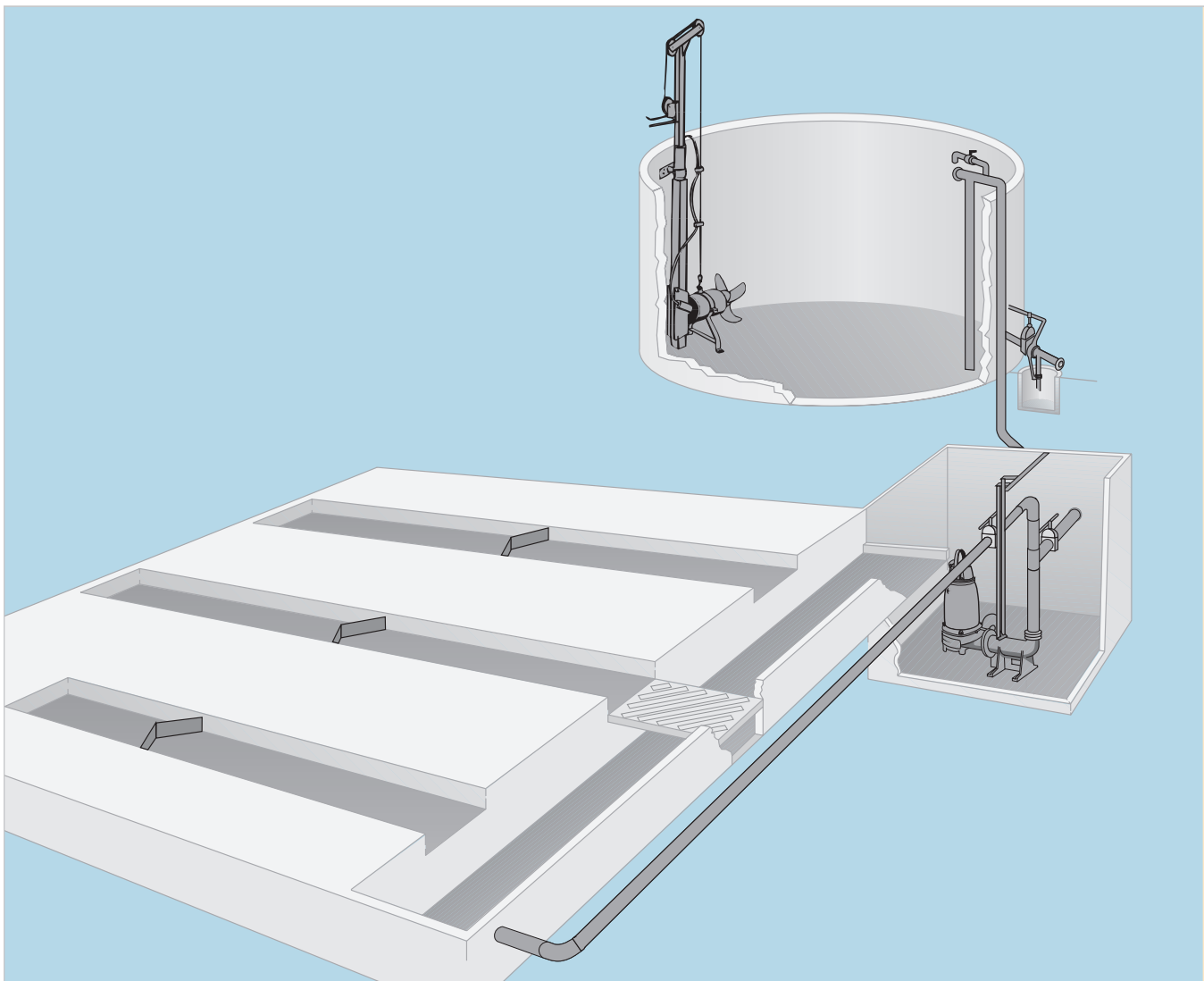
### Flushing method with slider

Slider systems with folding or tilting sliders are best combined with transverse channel flushing.

The liquid manure does not get "old".

- Flushing the transverse channel
- Mixing the liquid manure
- Pumping homogeneous liquid manure to the elevated tank

- Reduced odors in the stable



# Flushing method

The flushing method is ideal for shallow liquid manure channels.

- Flushing and mixing the liquid manure
- Pumping to the storage tank

The liquid manure does not get "old".

- Reduced odors in the stable



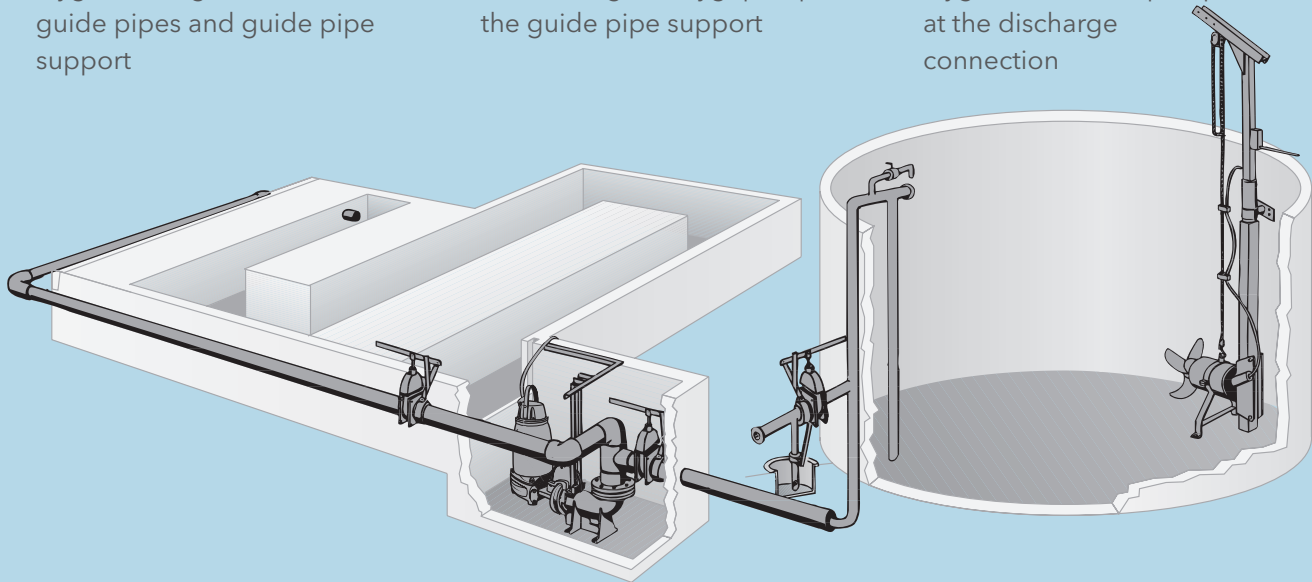
Flygt discharge connection with guide pipes and guide pipe support



Connecting the Flygt pump to the guide pipe support



Flygt submersible pump at the discharge connection





# System Technology for Pig Production

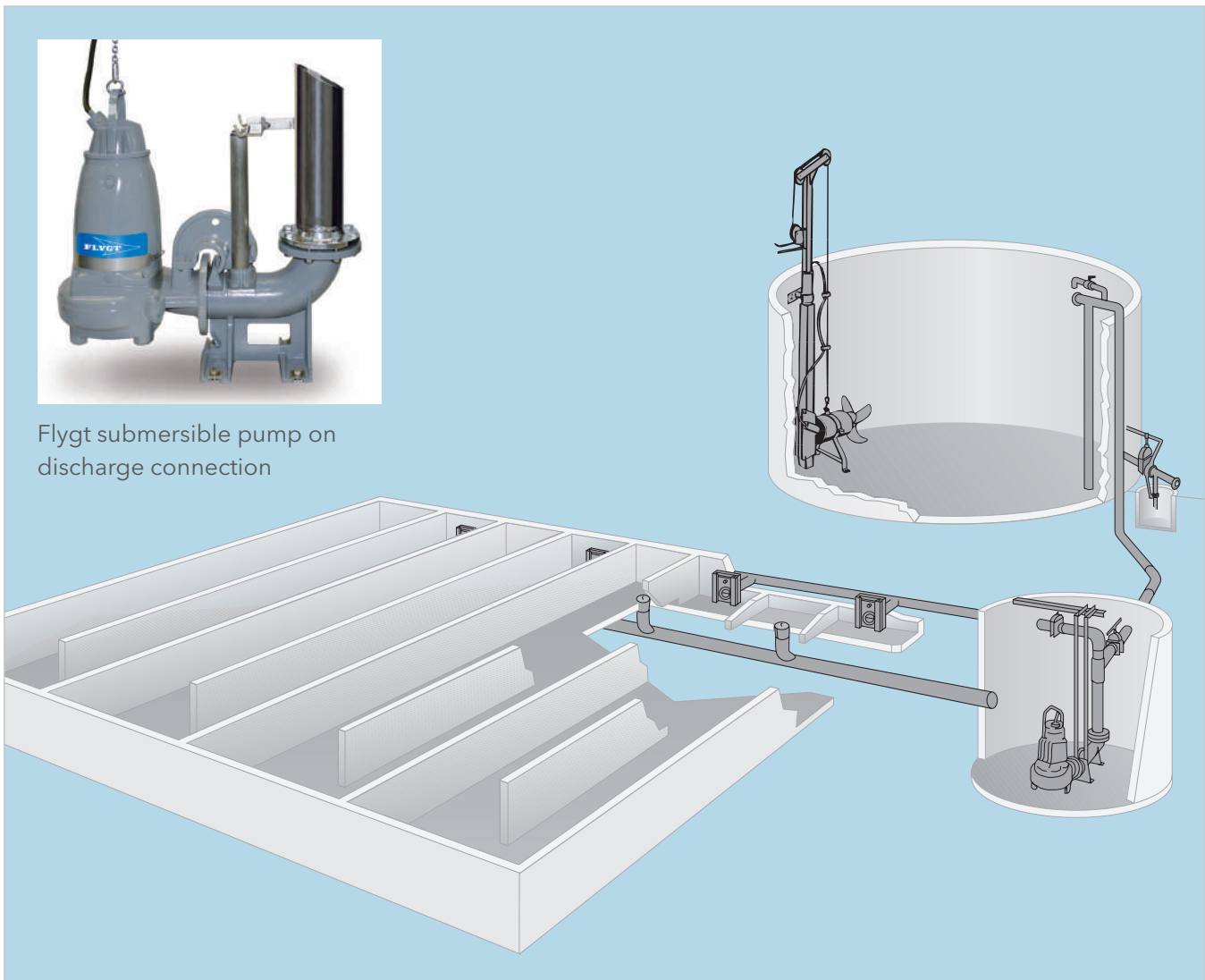
## Plug system with flush

Flygt flush system in the pigsty

- Draining via a flush
- Flushing with own liquid manure
- Pumping into the storage tank
- Mixing up the storage container with submersible motor mixer
- Mixing up the storage container with submersible motor mixer



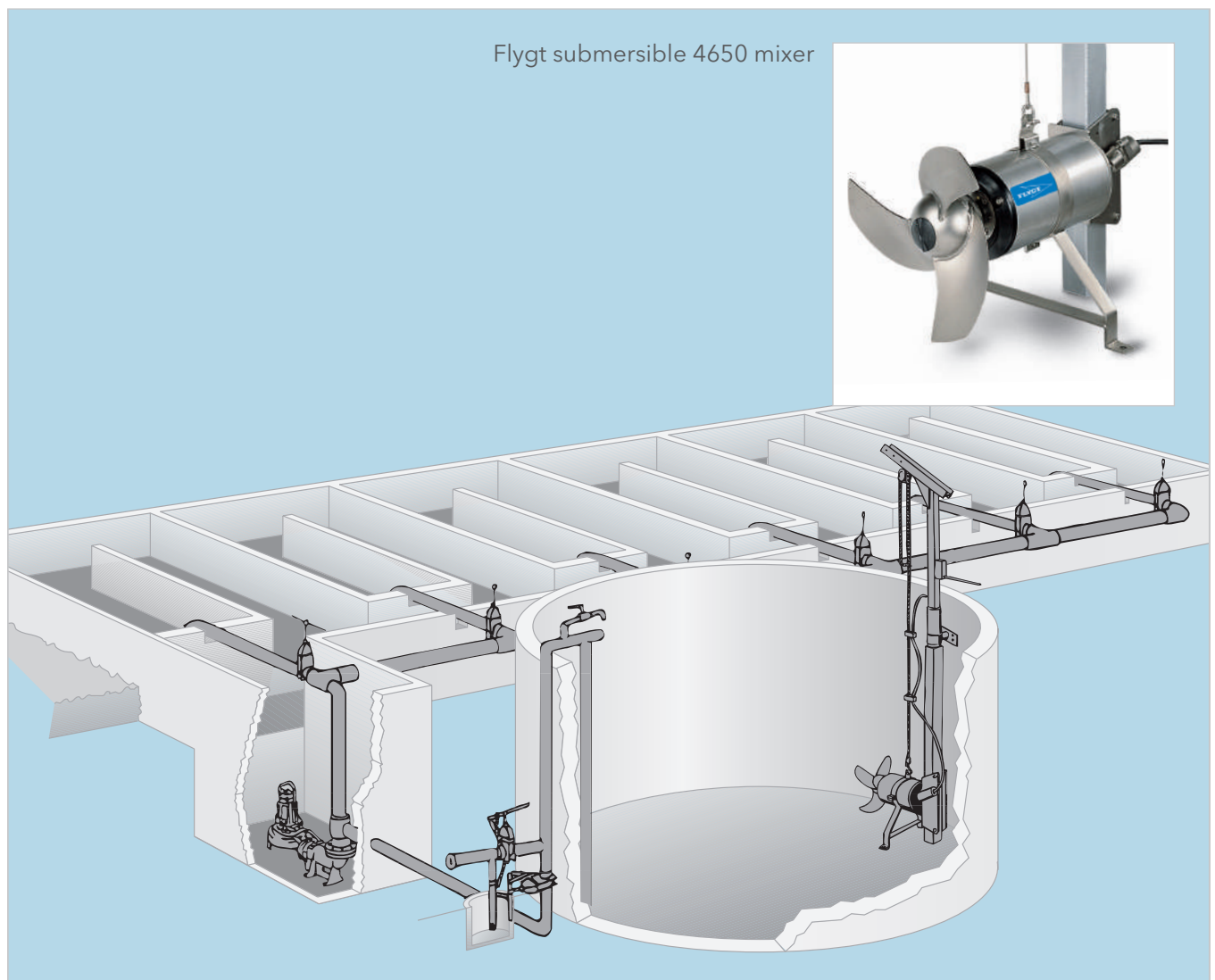
Flygt submersible pump on discharge connection



## Flushing method

Flygt flushing method in the pigsty:

- Draining via a valve
- Rinsing with own liquid manure
- Pumping off into the storage tank
- Mixing up the storage container with submersible motor mixer
- Pumping off to tank truck via a filling and unloading station



# Flexible Technology for Mixing and Pumping

## Two-way mix /pump valve

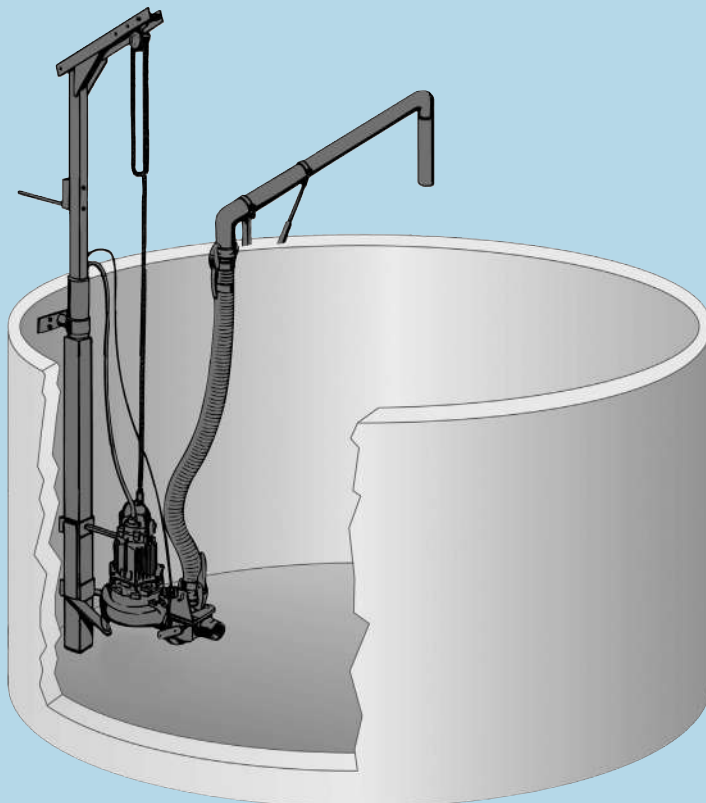
Heavy mixing in the storage container with the mixer jet of the two-way valve or filling the barrel economically with only one submersible motor chopper pump.

- Pumping off the liquid manure from the storage container

- Mixing in the storage container
- Switching the two-way valve with a cable pull above the edge of the container



Flygt submersible pump on a square mast with the two way mix/pump valve



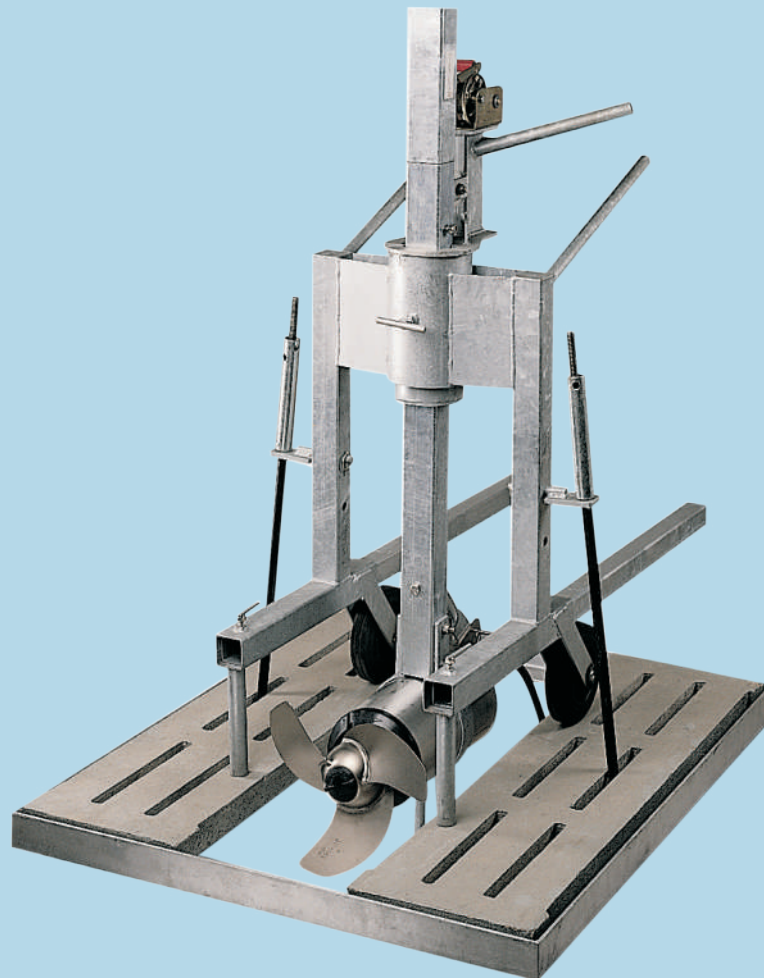


# Submersible mixer for transportable applications

The submersible mixer on the 2-wheel chariot is the ideal solution for companies with several manure tanks or for application in several plants.

Flygt chariots solve the problem of liquid manure storage below slatted floors.

- Flexible application
- Useful in narrow hallways
- Rotatable through 360°
- Continuously height-adjustable



Flygt 4640 submersible mixer

# Pressure Connection System

## Plug system with flush

Mixing the liquid manure and filling the barrel with a Flygt pump:

- Mixing up
- Chopping
- Filling the barrel

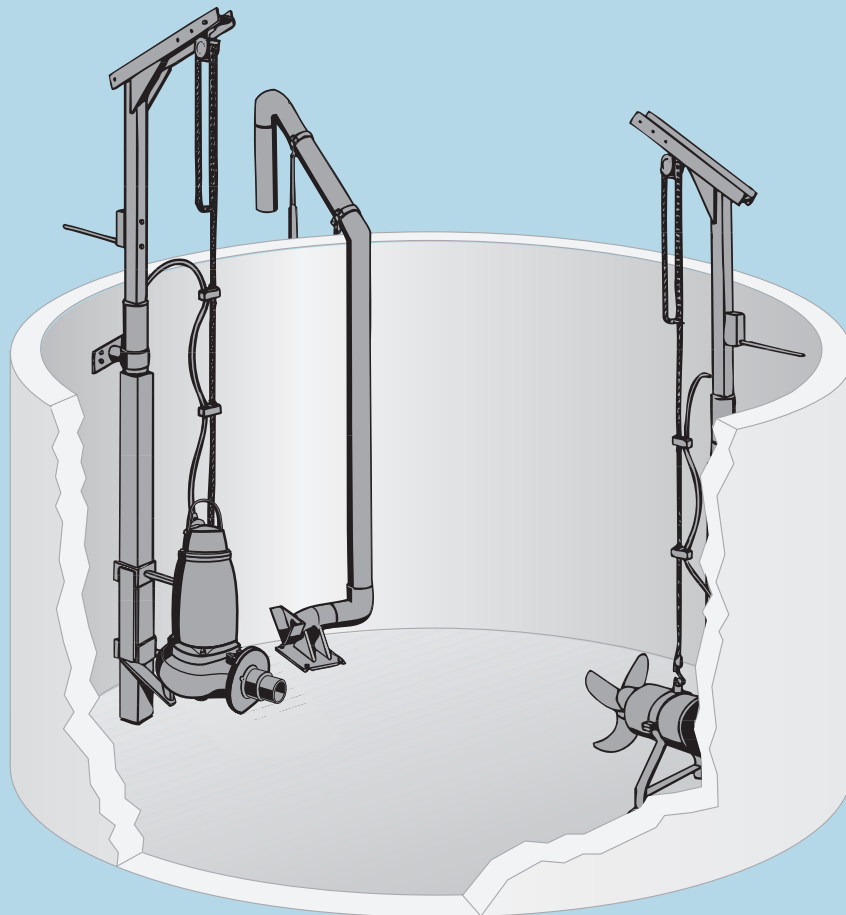
When the containers are fairly large, a Flygt mixer is used in addition.



Flygt submersible pump with mixer jet - tilted out for mixing the container contents



Flygt submersible pump in the pressure connection for pumping off the liquid manure or filling the barrel

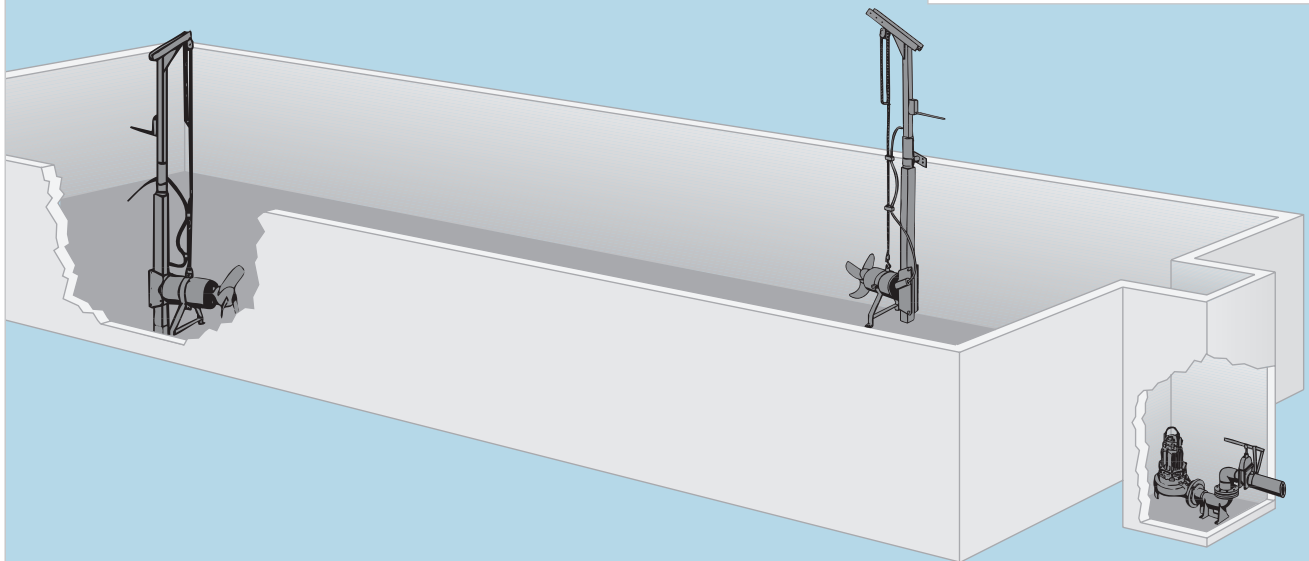


# Pumps and Mixers

## in a rectangular tank

- Mixing up the liquid manure with Flygt submersible mixers
- The mixed-up liquid manure is pumped off with a Flygt submersible motor pump on the Flygt discharge connection system

Flygt submersible mixer on a square pipe





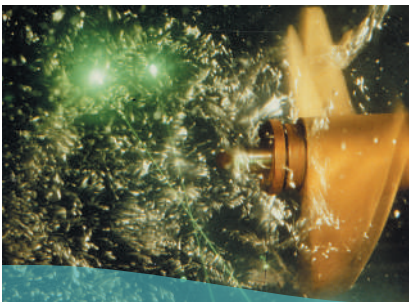
# Xylem Water Solutions

## A partner with vast experience.

Every sector demands special know how from its partners. Our agricultural engineers are ready to help you with all of your challenges. They speak your language and quickly understand you. The more clearly a company expresses its professional competence, the more appreciable is the focus on the concerns of the customer. Our focus is on the Flygt submersible pumps and mixers for liquid manure systems and biogas plants.

Our vast international support network and intensive exchange of expertise within an entire group of companies constantly flows into research, development and production.

Here, as in nearly all sectors, demands on the products and the systems can change through economic and environmental changes. New product development, that offers new and better technology and innovation enable us to effectively meet the changing needs of customers.



Innovative product development



Qualified piece production



Sewage pumps



Pressure drainage plants



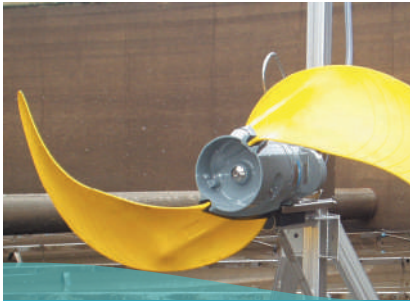
Building site pumps



Groundwater-lowering

Teamwork and knowledge integration expand the basis for quality. In this way we more quickly find new ground-breaking solutions. On this foundation, synergies for systems and products arise, and not just for agriculture. Many of the submersible systems used worldwide are branded Flygt. They are brought to use in local authority districts, in industry, in the building sector, in mining, in shipping and offshore technology as well as agriculture. Xylem is internationally recognized in all these sectors for commercial products of the highest quality. Flygt pumps and mixers conform to the highest standards of production worldwide. As the founder of submersible technology in 1948

and overall with more than 100 years of experience, Xylem engineers are equipped with a vast technological know-how in development of products and complete systems. Again and again they prove to be the most economical and reliable solution.



Flow production



Liquid manure mixers



Liquid manure pumps



Biogas technology



Industrial pumps



Close customer service

# What can Xylem do for you?

From supply and extraction through to the treatment of water, sewage and other fluids and abrasive media, our solutions are helping our customers operate safely and cost-effectively - in key sectors such as construction and mining, municipal and private water supply and disposal, industry and agriculture.

As a leading manufacturer, we offer innovative products and complete systems, not to mention a comprehensive range of services. With a wealth of experience and expertise, we handle our customers' needs in everything from installation through to maintenance and repair.

We have more than 144 distributors all over the world and are represented in over 150 countries.

[www.xylemwatersolutions.com](http://www.xylemwatersolutions.com)



WEDECO



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