



ITT

Water & Wastewater

# Wastewater Treatment Pumping

*Engineered for life*



# We're at the heart of pumping

Did you know that it is possible to pump 10% dry solids sludge with a centrifugal pump?

Our expertise in every detail of the various pumping tasks is invaluable when selecting just the right pump and design for a particular installation, or when redefining your existing installation.

We have the right pump for every situation and need. And when faced with new challenges, the accumulated experience of our scientists and engineers is at hand to innovate and create the best design for the job.

We have spent years studying and analyzing wastewater and sludge, breaking down suspended particles until we have understood aspects like stress, strain and suspension rheology. As well as issues around the consequences in friction loss and its effects within the total pumping head.

## PASSION AND EXPERTISE

We have the experience, together with the resources, to understand your daily challenges. From balancing robust performance with energy efficiency. To handling

every type of wastewater, sludge and various combinations of capacities and solids contents. To ensuring the selection and availability of components.

We know every pumping function throughout the wastewater treatment process inside out – from inlet pumping right through to dewatered sludge pumping. The fact of the matter is that regardless of the circumstances, chances are you'll find us at the very heart of pumping, because therein lies our passion and expertise.

## OUR BRAND HERITAGE

We launched the world's first submersible pump for contaminated water as early as 1947. Since then, we have gone from strength to strength, and Flygt is today the number-one product brand, driving key innovations within wastewater and sludge pumping. There has been no stopping the chain of ground-breaking innovations, like the N-impeller.

Today, we offer both dry and submersible installed pumps. ITT Water & Wastewater has a worldwide base of over 1 million installations.

## TIMELINE OF INNOVATIONS

1947	1982	1983	1987	1990
Submersible	Neva-clog	Grinder	Sub-cab	Flush valve



1992

Level switch

1994

Spin-out

1997

N-technology

2000

Internal pump cooling  
integrated in mechanical  
seal system



# The expertise behind every function

What is it ITT Water & Wastewater offers you that nobody else can within pumping? The deepest expertise together with a burning desire to deliver the best within wastewater and sludge treatment.

To us, it has all to do with functions. We look at a function as the specific pumping task that a particular product needs to perform at each particular stage of the treatment process.

Our emphasis on functions demands that we look beyond products, to an entire treatment plant, together with its operational challenges and goals. We make sure that the right functions are in place because this is key to smooth, cost-effective operations and trouble-free maintenance. And we set our focus on performance attributes.

After years of working closely with you, it stands to reason we have the expertise to think how you work.

## ALL THE SUPPORT YOU NEED, ALWAYS

Our expertise in every detail of various pumping functions enables us to account for total solids content, heads, flows, abrasive particles and much more. This is invaluable in our ability to select just the right pump and design for a particular installation.

We have the technology, the innovative devices and the expertise to conduct onsite tests of wastewater and sludge. We use rheology meters and have developed innovative devices and procedures for onsite testing. These include instant rheology meters, sludge pumping test rigs and software for liquid characterization.

It all means we can provide highly effective support, identifying and solving potential issues quickly. We optimize installation design, reduce the need for maintenance and minimize energy consumption.







# Pumping expertise in action

"ITT Water & Wastewater solved a significant problem for our city. And they did it with big expertise and small pumps. We get a large influx of tourists in the summer, and our existing pumps just weren't up to the job. We were replacing bearings and packings almost every week, and struggling to keep up. Thanks to ITT's expertise, we could replace the existing units with smaller, more economical and quieter pumps that deliver exceptional reliability and efficiency."

George Reese, Water and Sewer Utilities Manager, City of Tybee Island, Georgia, USA

"We were having major problems with our digester recirculation pumping. The three centrifugal sludge pumps were clogging after as little as two hours of operation. We were forced to change the recirculation setup over the digesters and heat exchangers to make the pumps work at all. We called in ITT Water & Wastewater. Thanks to their N-pump technology and in-depth knowledge of the digester recirculation function, we were able to get trouble-free operation even with the original recirculation setup."

Ola Toftdahl, Adm. Dir. / Managing Director, Bekkelaget vann AS, Norway

"The maintenance costs on the pumps we had been using were much too high and kept rising over time. We turned to ITT Water & Wastewater, since they have such a good reputation. It was very encouraging to begin by discussing all the details around our situation and exploring various alternatives. In the end, we decided on the N-Pump. I must say, it's the best decision we have made! Maintenance is at a minimum and costs are down substantially. ITT is a great working partner. They're always available when needed. We find their service and support invaluable to our operations."

Ulrich Brauer, Maintenance Director, Syvab, Grödinge, Sweden



# Pumping for every need

Our centrifugal, propeller and progressive cavity pumping technologies combined cover every possible pumping need, and deliver on any requirement regarding pressure head, flow rate and solids content.

## THE N-TECHNOLOGY

The N-technology delivers efficient, trouble-free pumping over long duty periods. It has been proven to reduce the risk of clogging and maintain pumping efficiency in the toughest of conditions. N-technology can have a dramatic effect on the total lifecycle cost of your installation and deliver outstanding energy efficiency.



### CENTRIFUGAL PUMPS

Our centrifugal pumps offer a broad range of options for your specific needs regarding duty point and subsequently achieve the best and highest efficiency point. They are delivered with

different impellers such as channel or vortex. Our channel impeller pumps with different number of vanes operate at high efficiency levels. With N-technology these pumps are constructed to handle wastewater and sludge with up to 10% dry solid content.



### PROGRESSIVE CAVITY PUMPS

Our extensive range of progressive cavity pumps is based on a modular system to cover virtually any application. The pump design and material can be selected

to suit your need, and the pumps can be installed horizontally or vertically. These pumps are recommended for use in dewatered sludge and small flow rates. Our largest progressive cavity pumps use hollow rotors, which greatly increase the life of the pump and reduce maintenance.



### CHOPPER PUMPS

Unmatchable performance in different demanding functions as well as in breaking down of rags and fibers can be achieved by adding the chopper function to the well proven Flygt N-pump.

These pumps are essential for smooth, uninterrupted flow throughout the system.



### PROPELLER PUMPS

Our easy-to-install propeller pumps deliver high flow rates at low or ultra-low head. This works just as well whether at an intake lift station, for return activated sludge

or mixed liquor recirculation. The N-technology ensures uninterrupted operation at sustained efficiency.





## Pumping functions

### Inlet pumping

Feeding and control of incoming wastewater.

### Grit removal pumping

Withdrawal of grit from grit chamber.

### Primary sludge pumping

Primary sludge withdrawal from primary sedimentation.

### SBR waste activated sludge withdrawal

Withdrawal of settled waste activated sludge.

### Conventional aeration sludge treatment mixed liquor recirculation

Aeration in oxic zone to anoxic zone for denitrification.

### Oxidation ditch mixed liquor recirculation

Recirculation of mixed liquor from oxic zone to anoxic zone for denitrification.

### Return activated sludge

**pumping from sedimentation**  
Recirculation of activated sludge to incoming wastewater.

### Waste activated sludge withdrawal from sedimentation

Withdrawal of waste activated sludge to sludge treatment.

### Return activated sludge

**pumping from flotation**  
Recirculation of activated sludge to incoming wastewater.

### Waste activated sludge

**withdrawal from flotation**  
Withdrawal of waste activated sludge to sludge treatment.

### Effluent pumping

Discharge of treated wastewater to recipient.

### Gravity thickening supernatant recirculation pumping

Pumping of supernatant from gravity thickening of sludge to primary treatment.

### Thickened sludge pumping

**from gravity thickening**  
Pumping of thickened sludge from gravity thickener.

### Feeding sludge to mechanical thickener

Feeding and control of sludge to mechanical thickener.

### Mechanical thickening supernatant recirculation pumping

Pumping of supernatant from mechanical thickening to further treatment.

### Thickened sludge pumping

**from mechanical thickening**  
Pumping of thickened sludge from mechanical thickener.

### Digester feeding

Feeding and control of raw sludge to anaerobic digester.

### Digester recirculation

Recirculation of sludge in anaerobic digester through heat exchanger for temperature control.

### Digested sludge withdrawal

Withdrawal of digested sludge from digester.

### Sludge storage feeding

Feeding and control of raw (un-aerated) sludge to sludge storage tank.

### Withdrawal of stored sludge

Withdrawal of sludge from sludge storage tank

### External sludge pumping

Pumping of sludge from other sources outside treatment plant.

### Feeding sludge to dewatering unit

Feeding and control of sludge to dewatering unit.

### Recirculation pumping of dewatering supernatant

Pumping of supernatant from dewatering to further treatment.

### Dewatered sludge pumping

Pumping of dewatered sludge to sludge disposal.



What can ITT Water & Wastewater do for you?

Integrated solutions for fluid handling are offered by ITT Water & Wastewater as a world leader in transport and treatment of wastewater. We provide a complete range of water, wastewater and drainage pumps, equipment for monitoring and control, units for primary and secondary biological treatment, products for filtration and disinfection, and related services. ITT Water & Wastewater, headquartered in Sweden, operates in some 140 countries across the world, with own plants in Europe, China and North and South America. The company is wholly owned by the ITT Corporation of White Plains, New York, supplier of advanced technology products and services.

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



**WEDECO**



ITT Water & Wastewater AB  
SE-174 87 Sundbyberg  
Visiting address:  
Gesällvägen 33  
Tel +46-8-475 60 00  
Fax +46-8-475 69 00

More information available at [www.ITTtreatment.com](http://www.ITTtreatment.com)