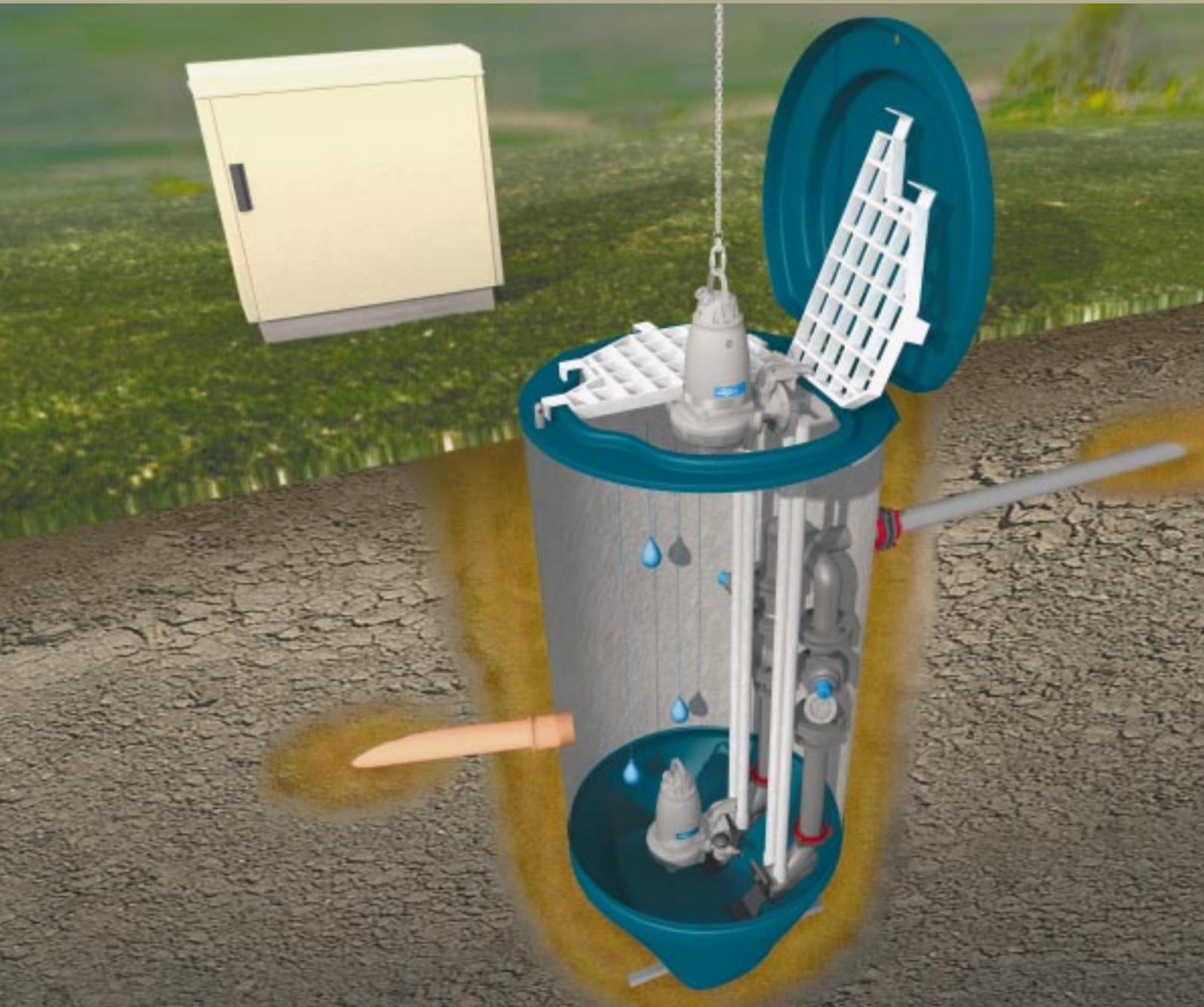




# TOP 50, 65, 80, 100, 150

Turnkey pump stations



Flygt



ITT Industries  
*Engineered for life*

# TOP choice for reliability, safety and efficiency

## Pre-assembled turnkey solutions

ITT Flygt offers turnkey wastewater pump station solutions to meet your requirements – TOP. We take full responsibility for dimensioning your pump station and completing your order, which reduces your costs for project planning and installation. TOP's modular, flexible design comes in a range of sizes to suit depths between 1.5 and 6 meters, and capacities between 4 and 95 litres per second.

TOP comprises a series of standardised, prefabricated modules that simplify the construction and assembly of a complete pump station. Your TOP pump station is delivered pre-assembled with your configuration of valves, discharge piping, inlet and outlet connections, and is easily transportable to even remote locations. Once in the ground, the pumps and monitoring and control equipment are fitted, the piping, power and control cables are connected, and the station is ready to start up in minimal time.

## Designed to clean itself

The use of submersible pumps may have reduced the cost of constructing pump stations, but the flat shape of a conventional sump floor still promotes the build-up of sludge, requiring regular cleaning and costly maintenance to unclog the pump. This is not only time-consuming and expensive, it also represents real health and safety hazards to personnel, and the presence of noxious gasses generated by the sludge makes the working environment far from ideal.

But with ITT Flygt's revolutionary TOP pump sump, you can forget regular, costly maintenance to remove sludge from your pump stations. Designed to be self-cleaning, the geometry of the TOP sump floor has been hydraulically optimised to increase turbulence during pumping, re-suspending settled solids so that they can be pumped away, consistently leaving a minimum of residue beneath the pumps.



## Fit it and forget it

Because of its self-cleaning design, you can fit a TOP pump station and then virtually forget it. The station is made of Glass fiber Reinforced Polymer (GRP) – a strong, lightweight material with superior resistance to corrosion, guaranteeing your pump station a long useful life. Combined with the unique Flygt flush valve and other Flygt devices to improve performance, and monitored and controlled with one of ITT Flygt's control panels, your TOP pump station will rarely require maintenance. Quite simply, it's the TOP choice for cost-effective, trouble-free pumping.

### TOP performance

Just how effective is the patented TOP sump geometry when compared with older sump designs? An extensive series of tests were conducted to arrive at the sump design, investigating a wide range of parameters. Factors such as floor clearances and the spacing between adjacent pumps were also evaluated before the self-cleaning sump design was finalised.

Then, in a series of performance tests conducted under laboratory conditions, sumps with different diameters and floor configurations were tested to gauge their ability to prevent sludge build-up and efficiency in transporting solids.

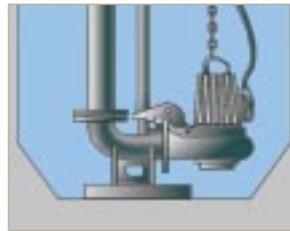
### Back-to-back testing

As part of these performance tests, two dual-pump sump designs (a conventional 1600 mm sump and a TOP 100 sump) were tested 'back to back'. This meant that the two sumps were interconnected, filled with 800 liters of water, and 49 kg of solids were put into each sump. The water was then pumped back and forth between the two sumps a total of ten times. The stop level in each instance was the top of the volute.

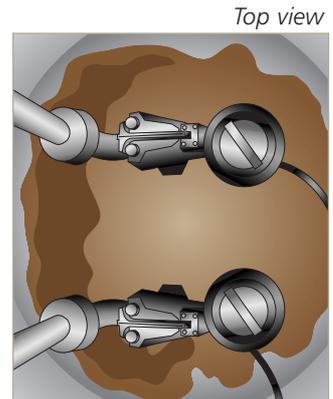
The result? 94 kg of solids in the 1600 mm conventional sump, compared to 4 kg in the TOP 100 sump.

Even when the pumps in the conventional sump were fitted with Flygt's automatic sump desludging flush valve, the TOP sump showed superior efficiency in solids transport.

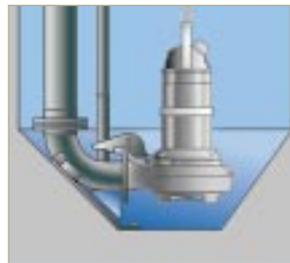
What initial testing showed is now evident in the many TOP pumping stations already installed around the world, from which ITT Flygt continues to gather experience.



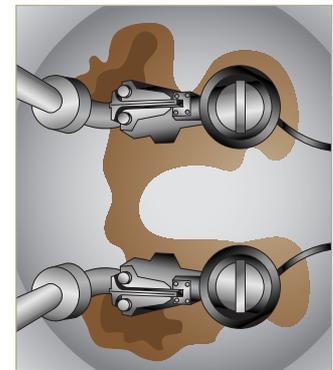
*The standard pump sump design for 30 years. Its flat sump floor generates stagnant regions where solids build up.*



*Deposits in the 1600 mm conventional sump. Solids have been deposited across the entire sump floor.*



*The TOP sump design with integrated discharge connection. Its sloping sides result in high flow velocities, creating turbulence that re-suspends solids, dramatically improving solids transport.*

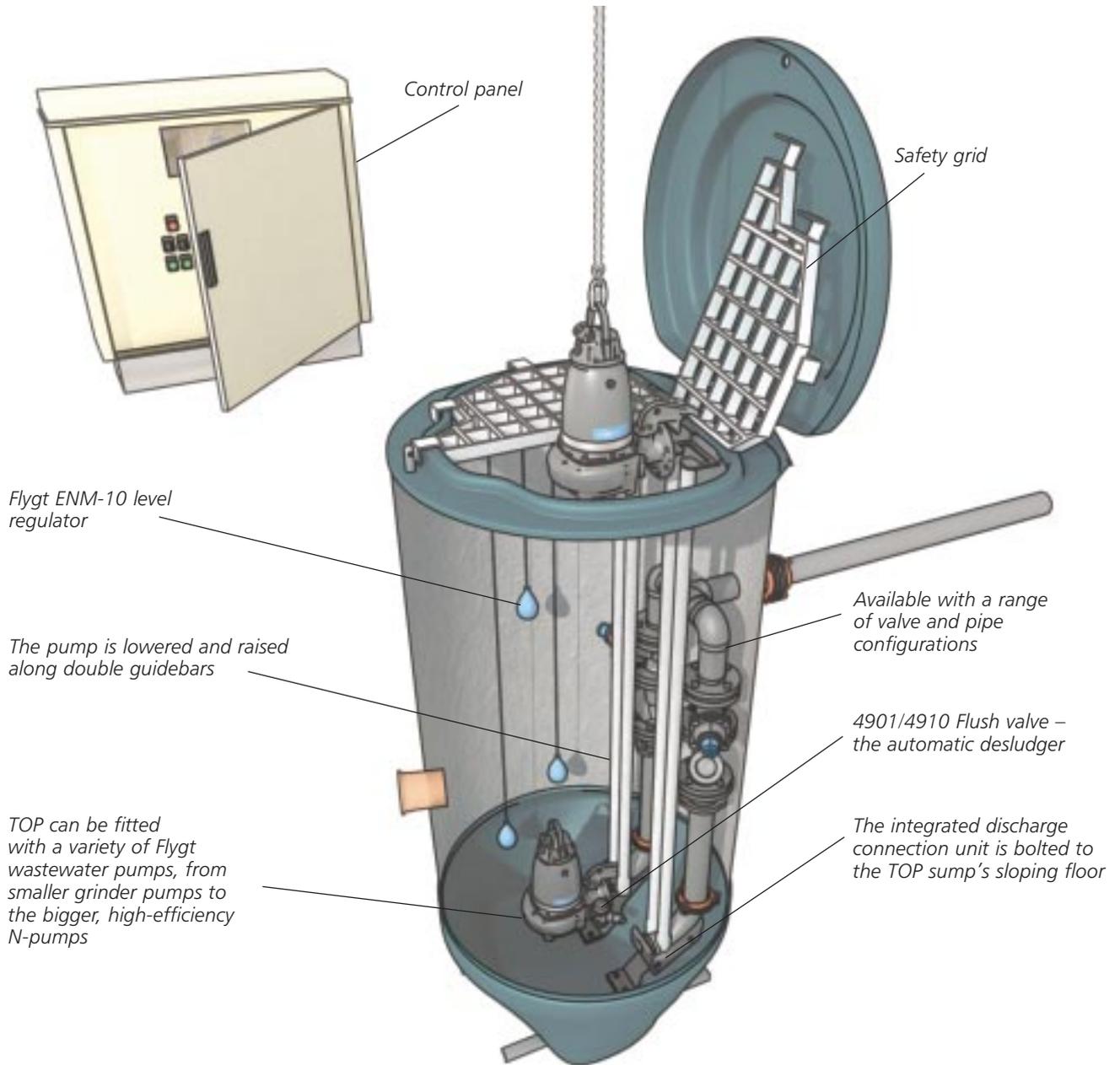


*Deposits in the TOP 100 sump. The small amount of remaining solids are collected close to the discharge connections.*

#### Test solids

Type	Specific gravity	Description
Floating	<1	Fats and plastics (modeled by beads)
Neutral sanitary	=1	Paper, plastics, most organic and waste (modeled by beads, saw dust, rags and paper)
Sinking	>1	Sand, grit, rags/clothing and heavy organic waste (modeled by sand)

# The complete TOP pump station



TOP	Station diameter	No. of pumps	50	65	80	100	150	Discharge size (mm) Capacity (l/s)
			4-10	6-15	6-30	10-40	30-95	
50	800 mm	1	•					
65	1000 mm	2	•	•				
80	1200 mm	2		•	•			
100 S	1400 mm	2		•	•	•		
100 L	1600 mm	2		•	•	•		
150 S	1600 mm	2			•	•	•	
150 L	1800 mm	2			•	•	•	

# Keep your pump station in TOP trim

As the world's leading manufacturer of submersible pumps and supplier of fluid handling technology, ITT Flygt can supply you with everything you need to construct and operate your pump station.

Although the TOP sump is designed to clean itself, ITT Flygt recommends the following additional products to keep your pump station in top trim.

## **4901/4910 Flush valve – the automatic desludger**

Developed specifically for fitting to the volute of all standard Flygt submersible pumps, the flush valve is a further weapon to reduce the need for manual cleaning and maintenance. It operates completely automatically, controlled by the pressure developed by the pump at the start of each duty cycle.

At the start of each cycle, the valve is open and water is forced through it in a powerful jet stream, causing intense turbulence that re-suspends solids so that they can be pumped away. The valve closes automatically after approximately 30 seconds, and then reopens after the pump stops, ready for the next cycle.



## **N-technique**

The TOP sump design clears sludge and solids from your pump station at the same rate as they enter it. But what happens when certain types of solids or fibrous materials threaten to block the impeller?

Flygt N-pumps maintain a high level of pumping efficiency, even in fluids with a high content of solids and fibrous materials, thanks to the impeller shape in combination with a special relief groove in the volute. With its self-cleaning flow path through the pump, this design greatly reduces the risk of clogging. The result is reduced power consumption, even under the most adverse conditions.



## **Monitoring and control**

ITT Flygt also supplies control panels for your pump station. These range from the simplest electro-mechanical type with start and stop functions activated by a level switch; to highly sophisticated monitoring and control systems using the FMC, which includes sensors and alarms, and provides statistics and trend reports. The FMC can also communicate with a SCADA system, enabling full remote control of your pump station.

In addition, all Flygt control panels can be equipped with a function that runs regular pump-cleaning cycles automatically (APF). All Flygt control panels can be mounted indoors, or in an outdoor enclosure.



# TOP for retrofitting and upgrading

The TOP turnkey concept is the ideal solution for refurbishing old pump stations. Flygt can retrofit your old station with a TOP solution delivered as a kit that can be installed in the existing structure with a minimum of construction work. No added excavation is required.

Retrofitting a TOP station can help you to significantly reduce the costs of service call-outs and maintenance, and to achieve operating cost reductions.

Larger models (with discharge diameters 65–150 mm) are fitted with a MULTI/JOINT®, which takes a wide range of external pipe diameters and piping materials: stainless steel, cast iron, carbon steel, glass fiber and PE. The discharge connection also allows an angular deviation of  $\pm 7^\circ$ , so the pipe end can be simply inserted into it and tightened – no welding or drilling is required – saving installation time.

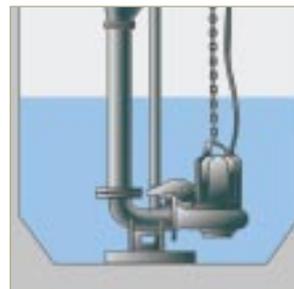
## Upgrade to an N-pump

If you already operate your installation with an old wastewater pump, the N-pump upgrade kits give you an opportunity to further extend the service life of your equipment and benefit from the superior pumping efficiencies of the N-pump range.

Each upgrade kit contains everything you need to upgrade your existing pumps to the N-pump standard. Easy-to-install upgrade kits are available for most old Flygt wastewater pump models.



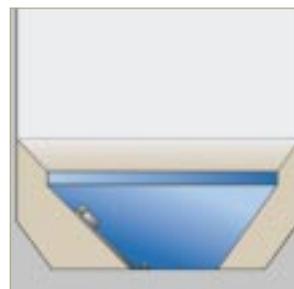
*The integrated discharge design fits easily on the sloping floor of the TOP sump.*



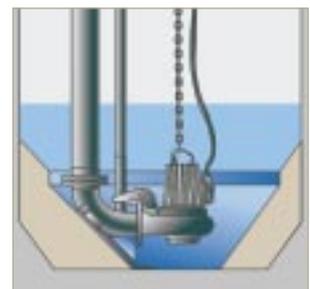
1. Old sump



2. Prefabricated bottom



3. Concrete filling



4. The TOP kit in position



# TOP competence and experience at your service

ITT Flygt's philosophy has always been to make equipment that maximises lifecycle economy, which means designing for long service life and minimum downtime.

But that doesn't mean that once your pump station is installed, we forget about you. As the world's leading manufacturer of submersible pumps and fluid handling technologies, we have top-rated competence and experience to place at your service.

## **Worldwide service network**

No two pump stations and their systems will be alike, and neither will the level of support and maintenance that you require from your service partner. With ITT Flygt, you can choose a support package that precisely matches your needs.

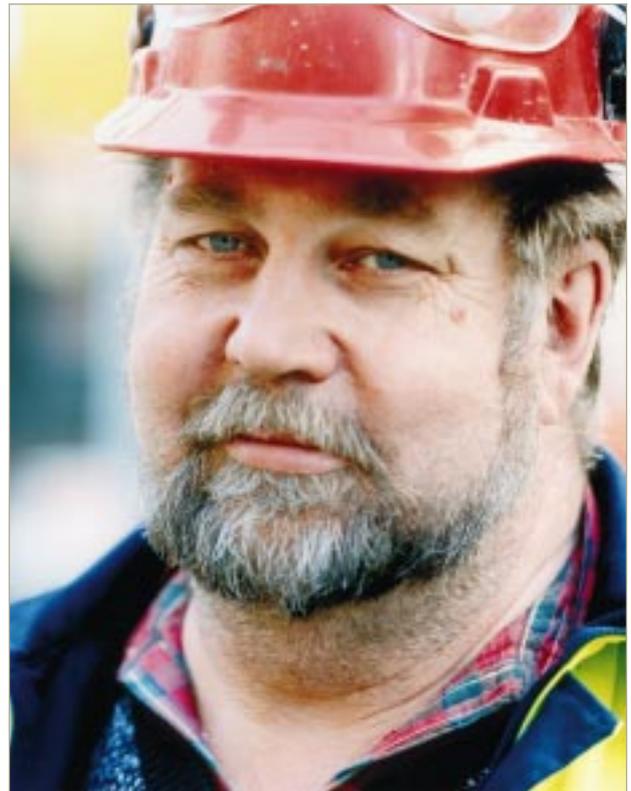
From simply supplying your pump station to your specifications, complete and ready to install, to full service assistance in system planning, design and construction work, installation, commissioning and operation and maintenance, ITT Flygt's total service concept ensures that you get the service you need, on your terms.

You'll find a representative of ITT Flygt's service network near you. Our representatives are all authorised and trained to provide the best possible service on your equipment should the need arise. They can also provide you with genuine Flygt spare parts.

And if you really want to fit and forget your pump station, you can sign a service contract to suit your requirements directly with ITT Flygt.

## **15-year spare parts guarantee**

We guarantee the availability of spare parts for our products for 15 years after we stop production of a pump model or pump station. This is just one of the ways that ITT Flygt keeps its long-term commitment to its customers.



ITT Flygt is the world's leading manufacturer and supplier of submersible pumping and mixing solutions. Flygt submersible pumps, mixers and aeration systems are used in wastewater plants, process industries and numerous other applications.

Our experience is utilised by engineers, planners and consultants to ensure reliable and cost-effective operation. ITT Flygt has service and sales facilities in more than 130 countries.



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