ITT

Water & Wastewater

Flygt N-pumps
3231, 3306, 3312, 3356, 3400

The large wastewater pumps that cut operating costs

Engineered for life

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Cut energy bills. Cut service costs.

They revolutionized the market for small and midrange wastewater pumps. And now they are going to do the same for large pumps.

Flygt N-pumps cut costs in two ways. First, they slash energy bills, in some cases by up to 50 percent. Second, they radically reduce the number of service call-outs.

This is why –

- Flygt N-pumps are the market's most efficient submersibles for pumping contaminated water.
- Flygt N-pumps maintain incredible efficiency month after month because fibrous material cannot build up on the impeller. We call it sustained efficiency.
- Flygt N-pumps have excellent non-clogging properties, practically eliminating the risk of blockages.

Higher efficiency *plus* non-clogging performance may sound too good to be true. But after nearly 10 years, small and mid-range Flygt N-pumps continue to win market share. And the outlook is similar, if not better, for large Flygt N-pumps.

How it works

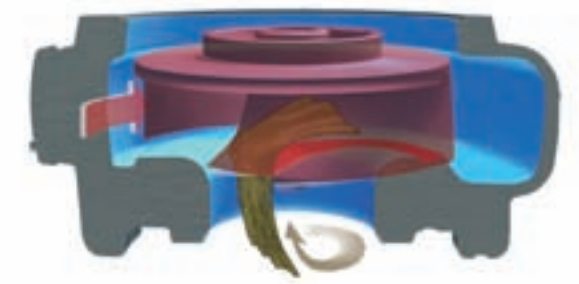
The secret behind the award-winning N-technique is the combination of a swept-back leading edge and a relief groove in the volute.

Nothing to get hooked on

The leading edge on most impellers is axial. This is the ideal shape for rags and other long stringy material to wrap themselves around. To avoid this problem, we flattened and swept back the leading edges of the impeller.

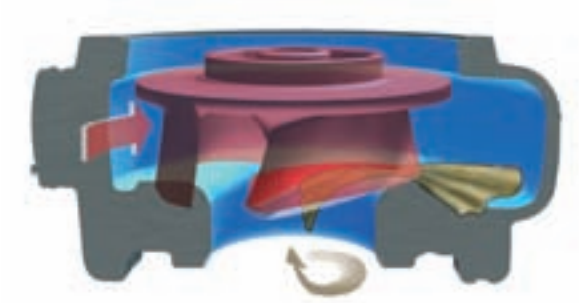
Relief groove

To help really stubborn material pass through the impeller, we developed a "relief groove". As the impeller turns, rags are forced into this spiral-shaped groove. The combined action helps to tug material from the impeller into the volute where it is free to be pumped away.



The two-stage action is designed to prevent rags and other fibrous material from accumulating on the impeller.

Stage one: the leading edge is swept back, so there's nothing rags can get caught on.



Stage two: rags get fed into the relief groove as the impeller turns, pulling them from the impeller and forcing them into the volute where they get pumped away.

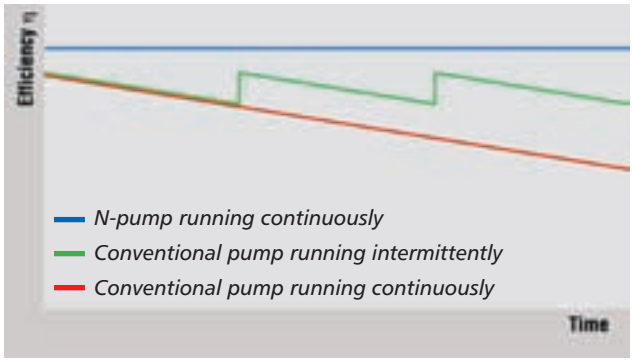
Cuts energy costs by up to 50 percent

Large savings can be made when pumping contaminated water. This is because Flygt N-pumps give you high efficiency, day after day, week after week – we call it sustained efficiency.

Eliminates build-up and efficiency loss

The problem with conventional impellers is the gradual build-up of stringy material. Over time, the passage in the impeller narrows, reducing the amount of water it can pump. So, as the impeller gradually clogs up, efficiency drops. As you can see in the table below, the N-technique sustains efficiency at its original rated level month after month.

Sustained efficiency with Flygt N-pumps



- *The red line shows how efficiency decreases when a conventional wastewater pump clogs during continuous operation.*
- *The green line illustrates how a conventional wastewater pump running intermittently also suffers from low efficiency due to clogging. Temporary efficiency gains may be achieved through back-flushing.*
- *The blue line shows the sustained efficiency of the Flygt N-pump.*

A wide range of applications

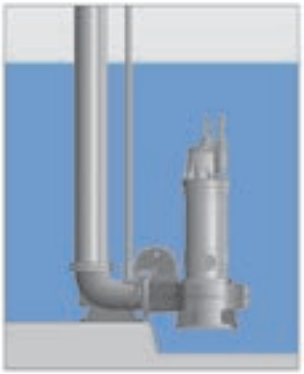
By combining increased pumping capacity with the self-cleaning properties of the N-technique, ITT Water & Wastewater have opened up new possibilities for cost-effective operation in all kinds of applications:

- Wastewater pumping
- Raw water pumping
- Cooling water
- Sludge handling
- Storm water handling
- Industrial effluent handling
- Irrigation
- Process water

Get it right from the start. Use WebFLYPS, our proprietary pump selection software, to specify the right pump and SECAD to optimise pump station design.

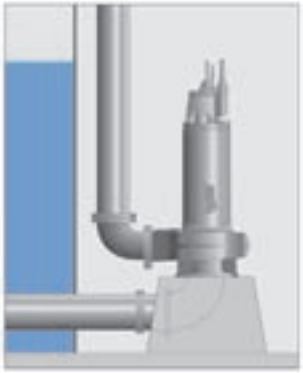
Flygt submersibles operate directly in the pumped liquid. This means low construction costs because Flygt pumps don't require a special housing or a superstructure. Operating submerged also means that our pumps take up very little space, are quiet and do not need extra cooling.

Flygt submersibles are smaller than non-submersible pumps because motor and hydraulics are integrated in one compact unit. That's why pump stations for submersibles are smaller and less complex to build.

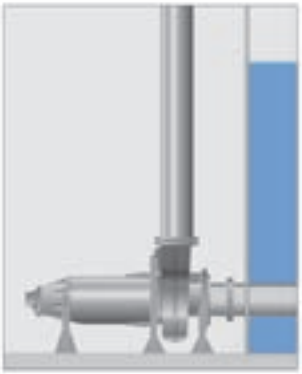


NP – For semi-permanent wet well installations: the pump is installed with twin guide bars and a discharge connection.

NS – This installation makes the pump easy to move around with either a flange that connects to a discharge pipe or a hose coupling.

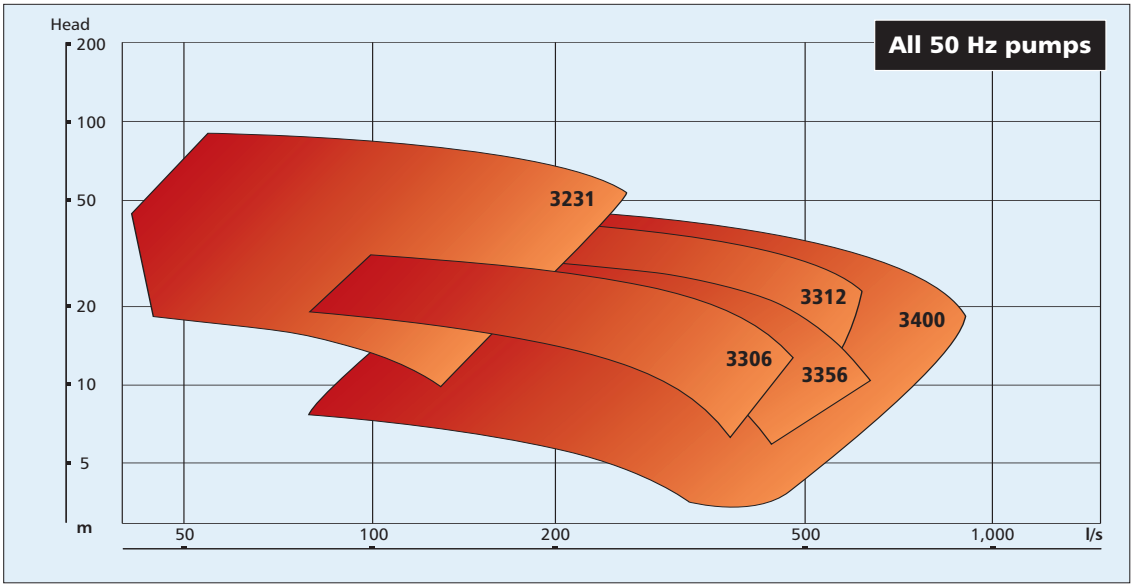


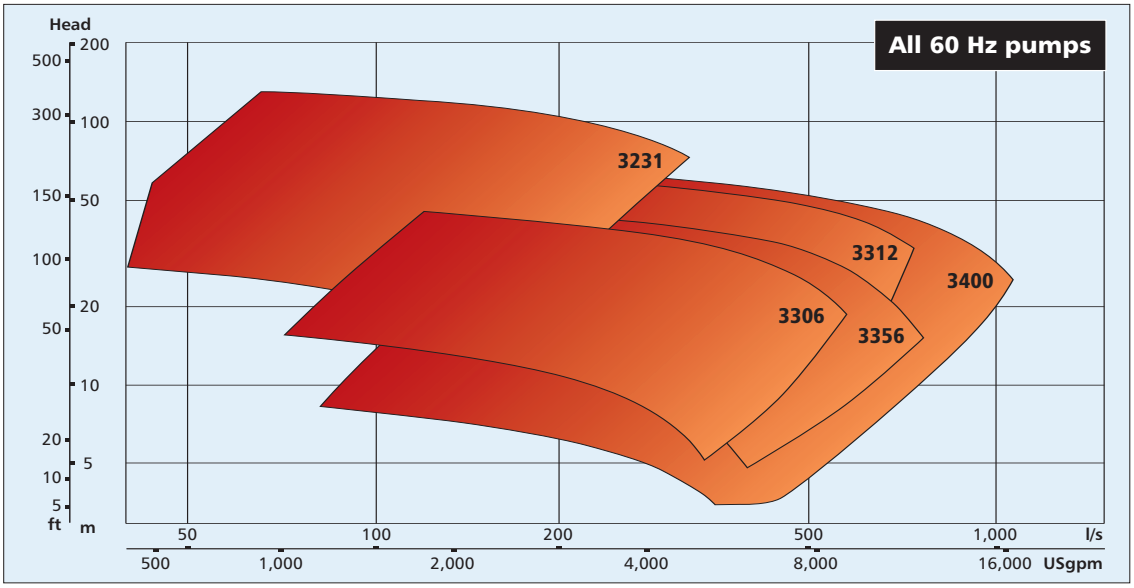
NT – A vertical, dry-pit or in-line installation with flange connections for suction and discharge piping.



NZ – A horizontal, dry-pit or in-line installation with flange connections for suction and discharge piping.

From 50 to 1,000 l/s
500 to 16,000 USgpm





Flygt N-pumps

Model	3231	3306	3312	3356	3400
Rating 50Hz	70 – 215 kW	58 – 100 kW	55 – 250 kW	45 – 140 kW	40 – 310 kW
60Hz	90 – 335 hp	70 – 280 hp	90 – 470 hp	70 – 280 hp	60 – 470 hp
Discharge	200/8"	300/12"	300/12"	350/14"	400/16"





Robust design.
Reliable performance.

Cable entry
The cable entrance features a sealing and strain-relief function.

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

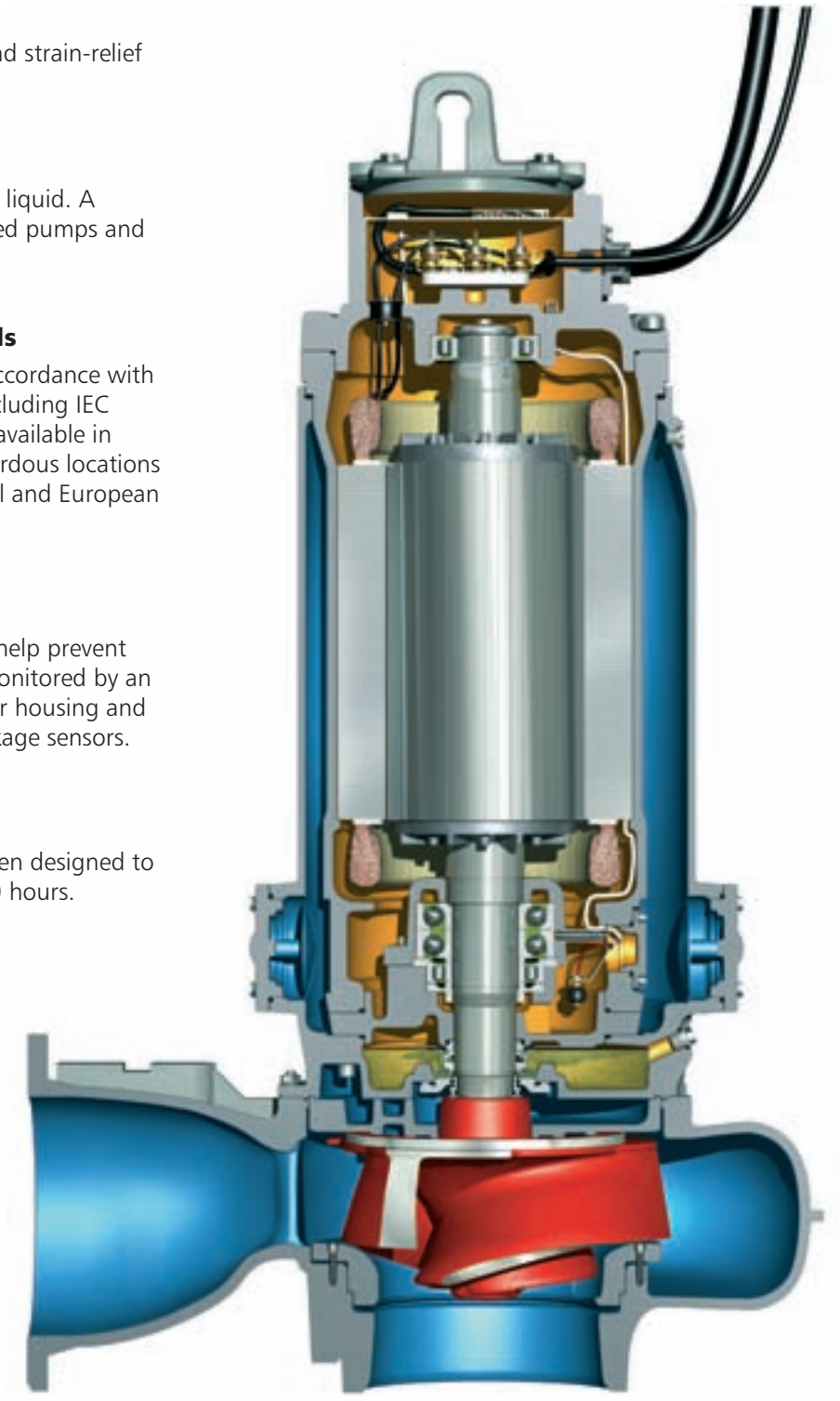
International standards approvals
Each pump is tested and approved in accordance with national and international standards including IEC 34-1, HI plus CSA. The pumps are also available in explosion-proof versions for use in hazardous locations and are approved by the Factory Mutual and European Norm (FM and EN).

Monitoring
Thermal sensors in the stator windings help prevent overheating and the lower bearing is monitored by an analogue temperature sensor. The stator housing and the junction box are equipped with leakage sensors.

Long-life bearings
The bearings in all Flygt pumps have been designed to provide a service life of at least 100,000 hours.

Deflection-resistant shaft
In a Flygt submersible, the shaft's overhang is kept very short to reduce shaft deflection. This results in low vibrations, long seal and bearing life, plus quiet operation.

Demanding tolerances
All pumps are factory-tested and given a performance guarantee. Tests are conducted according to ISO 9906 grade 1 or 2, HI level A or B.



Engineered for a longer life

At ITT Water & Wastewater, we design and manufacture all seals and electrical motors ourselves. It's the best way to ensure the level of reliability and performance our customers expect.

Long-life seals

Seal surfaces must be able to withstand friction under high pressure and poor lubrication for thousands of hours. Only a few materials are able to cope with such conditions without cracking, seizing up or suffering unacceptable levels of wear.

That's why we use, as standard, a tungsten carbide especially designed for ITT Water & Wastewater. It's a material that provides excellent protection against both corrosion and wear. This in turn leads to longer service intervals and safer operation.

Mechanical face seals are normally cooled by the pumped media, but this isn't always the case. To avoid overheating of the outer seal when running dry (Flygt pumps are equipped with double seals), the seal compartment has been designed to dissipate heat quickly and efficiently.

Class H quality

Inside all Flygt N-pumps you'll find a squirrel cage induction motor, made to Class H specifications. Stator windings are trickle impregnated with resin and rated at 180°C (355°F), allowing up to 15 starts per hour.

The maximum temperature rise in a Flygt pump is limited to a NEMA B rise of 80°C (176°F). This ensures a significant increase in the operational life of the motor windings.

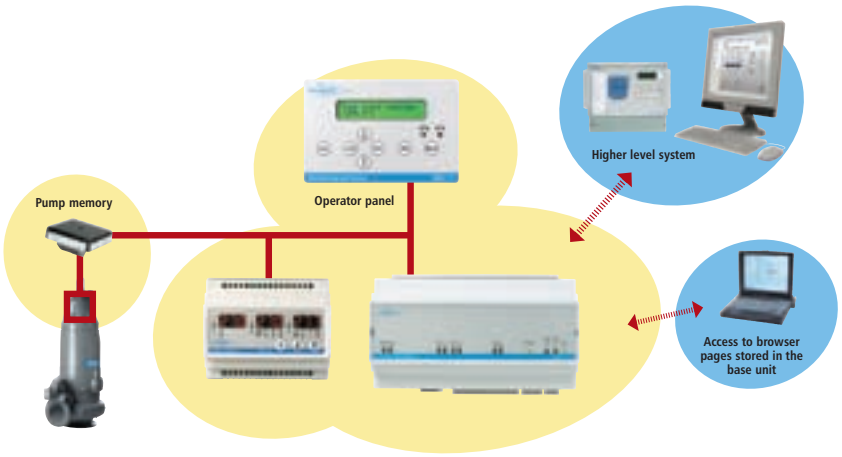
Better heat transfer

In Flygt motors, heat losses are concentrated around the stator which, since it is surrounded by water, is easier to cool than the rotor. Heat transfer is also encouraged because the stator is heat-shrink fitted.

Monitoring that boosts reliability and cuts life cycle costs

When you begin using Flygt N-pumps, you won't be visiting pump stations as often as previously. Flygt MAS 711, which is offered as an option, is a monitoring system that will help you keep an eye on your pumps, wherever you are.

The system consists of a base unit, an operator panel and a memory that's built into the pump. Together they monitor and protect your pump by recording results from sensors and measurement modules.



Wide range of alarms

Flygt MAS 711 keeps track of a wide range of parameters including temperature, leakage, vibration, current and power. When an abnormal event occurs, our MAS stops the pump and triggers an alarm. Alarm event data are stored making it possible for operators to examine the course of events leading up to an alarm.

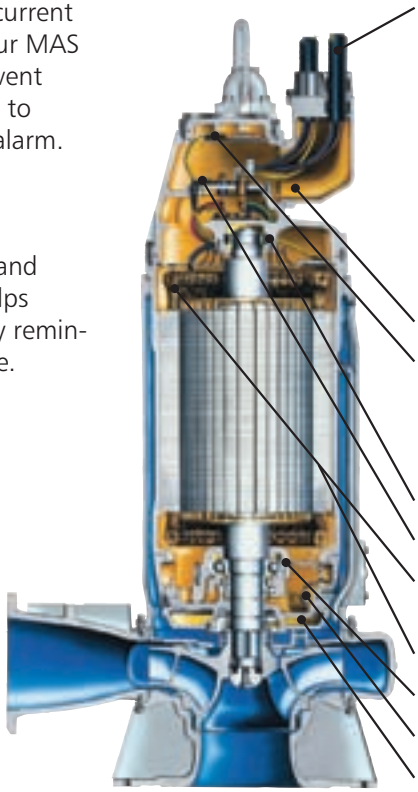
Access data on any PC

Using a standard web browser, you can access and analyse all data from any PC. Flygt MAS 711 helps increase reliability and cut maintenance costs by reminding maintenance engineers when service is due.

Flygt AquaView is a SCADA-based software package that's easy to use and that features an open communication platform.

Flygt Pump controllers – ITT Water & Wastewater offers a complete range of pump controllers with all the functionality you need.

Flygt MAS 711 monitors and records –



Current in one phase
or
PAN311 optional power analyser
- *Active power*
- *Current in all phases*
- *Voltage in all phases*
- *Voltage unbalance*
- *Power factor*
- *Energy consumption*

Leakage into junction box

Pump memory
- *Data plate info*
- *Acc. running time*
- *No. of starts*

*Support bearing temperature**

*Vibration**

Stator winding thermal switches

Stator winding temp. (Pt100)

Main bearing temperature

Leakage into stator housing

*Leakage into oil housing**

* *option*

A faster and safer way to lift large submersible pumps

Retrieving pumps that are completely submerged, or that are located in deep sumps is a difficult business. Dock-Lock™ is a patented lifting device that makes pump retrieval faster and safer.

Faster

Dock-Lock saves time because the operator doesn't have to "fish around" trying to find the shackle. Instead, a line is always left in place looped through the pump's lifting shackle. When it's time to retrieve the pump, you simply attach the line to Dock-Lock. As you lower the device into the sump, it's guided straight to the shackle by the line.

Safer

Dock-Lock increases safety because the lifting hook always gets a firm grip on the pump's lifting shackle. When it reaches the top of the pump, it docks with the shackle. This triggers a spring-loaded mechanism that snaps the lifting hook securely into place. The pump can now safely be winched up.

Convert your Flygt C-pumps into Flygt N-pumps

If you already operate Flygt C-pumps, you can easily turn them into Flygt N-pumps.

There are many reasons to upgrade:

- The N-technique cuts energy bills by up to 50 per-cent – an N-pump is extremely efficient and remains extremely efficient.
- Flygt N-pumps cut the cost of planned and emergency maintenance by reducing the risk of clogging.
- The N-technique improves the return on your original investment.

World-wide service, world-class value

No two pumping stations or systems are alike, so the level of maintenance and support you require will differ from case to case. With ITT Water & Wastewater, you can choose the type of support package that best matches your needs.

At one end, we help in selecting the right pump for a new application. At the other end, we can provide full service assistance that includes everything from system planning and design, through construction and commissioning, to operation and maintenance.

With a world-wide network of authorised service centres, you always get the support you need: whether it's a question of planned maintenance, or express delivery of a part.

At ITT Water & Wastewater, our driving force is always to minimise the life-cycle costs of the equipment and systems we supply.

20-year spare parts guarantee

We guarantee the availability of spare parts for large Flygt N-pumps for 20 years after we stop production of the range. This is just one way in which we demonstrate long-term commitment to our customers.

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FLYGT SANITAIRE® WEDECO LEOPOLD

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