

Water and wastewater products

Solutions from Flygt



Flygt



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Water is life

On average, every human being consumes a couple of hundred litres of water a day. For drinking, cooking, washing, doing the dishes and flushing the toilet. Whilst in giant process industries, tens of thousands of litres of water are used every second. And it takes almost 2,000 litres of water to grow just one kilogram of rice. A large amount of this water is transported by pumps and systems supplied by Flygt.

We are the world's leading supplier of submersible products, solutions and services for liquid handling. In this brochure we have compiled a list of our products with a general description for each range. These are used everyday, in all corners of the world, to contribute to a better quality of life for people and the environment.

Water is our element. We are dedicated to making the best possible use of it.



Leading development, outstanding support

Ever since our formation, Flygt has been at the leading edge of technology. In 1948 we launched the world's first submersible pump designed for pumping contaminated water.

Since then the company has gone from strength to strength, continuously introducing new products to the market and providing unbeatable pre and after sales service to all our customers.

The level of maintenance and support that you require from your local service partner will differ according to your situation. With Flygt you can choose the type of support package that precisely meets your needs.

From simply supplying pumps to your specifications, to full service assistance on system planning, design, construction, implementation, operation or maintenance: Flygt's total service offering means that you get the service you need, on your terms.

Simultaneously we have expanded our presence around the world. Today we have 40 sales companies and are represented in over 130 countries.

But it is not just our high quality products and dedication to customers that have enabled us to achieve this. Our success in the market is also largely due to the creative way in which we combine Flygt submersible products and our knowledge and experience with selected complementary products to create complete solutions.

Our ability to provide purpose-designed, cost effective solutions of this kind is part of our everyday work. This goes for everything from a minor installation to a huge plant with a complex array of equipment.

The aim is always to reduce costs and increase operational efficiency for our customers.

Construction





Mining





Wastewater





Industry





Industry





Portable drainage pumps

Ready drainage pumps are ideal for contractors, industrial plants, utility companies, fire departments and companies in the rental business, to name just a few.

Made out of composite materials, to reduce the weight, and stainless steel, for strength and durability, Ready pumps are considerably lighter than comparable pumps of the same size and power capacity.

The pumps are made from composite materials and stainless steel, enabling operation in pH 3–9 and providing high impact resistance.

This, together with Flygt's unique motor, hydraulics, wear-resistant polyurethane linings and double sealing system, makes Ready pumps an excellent choice for handling abrasive and corrosive liquids.

Available in two sizes, Ready pumps offer high performance value in a cost-effective package, and they can be purchased straight off the shelf and put to work immediately. Weighing just 9 kg and 11.5 kg, the pumps are light enough to be carried, and as they are slim, compact and lightweight, Ready pumps can be lowered into tight, cramped spaces.

With capacities up to 5.5 l/s and heads up to 14 metres, Ready pumps are a perfect example of the operational reliability and durability for which Flygt pumps are renowned, and will guarantee fast and dependable drainage.





Installation







Impeller

A wear-resistant impeller for abrasive and corrosive media.

The impeller, hydraulics and lining are all made out of highly wear-resistant polyurethane, which is ideal for handling both abrasive and corrosive media. This makes Ready the optimal choice for flexible operation in a wide range of construction and industrial dewatering applications.



automatically turns the pump on and off.

Tough pumps for dewatering

Flygt Bibo, the original submersible pump, is designed specially for tough operating conditions. The pumps are ideal for applications in which the water or liquid contains high amounts of clay, stone chips, drilling fines etc., or to pump heavy sediment from tanks, sumps and containers.

This series of large dewatering pumps is available in three casing materials: light-weight aluminium for heavy construction work and mines, hard-wearing cast iron for corrosive or saltwater applications and stainless steel for additional corrosion protection. They are also available in explosion proof versions. Flygt Bibo pumps can be fitted with a multi-vane, open or semi-open channel impeller. The pump's impeller and component parts also come in a range of materials to suit the application. All major components subjected to wear, are fitted with nitrile rubber, or polyurethane for extreme abrasion protection.

With output power ranging from 1–90 kW, heads up to 240 metres and pumping capacities of up to 300 l/s the Flygt Bibo range of submersible dewatering pumps are designed for long service life whilst providing maximum efficiency.



Design

All pumps are tested and approved in accordance with national and international standards (IEC 34-1 CSA). They are also available in explosion proof versions -Factory Mutual and European Norm (FM and EN) approvals.

The cable entrance is designed to incorporate both a seal and a strain relief function.

Squirrel cage, high performance induction motor, specially designed and manufactured by Flygt for submersible use. The motors are capable of up to 15 starts per hour.

Two sets of mechanical shaft seals that work independently, for double security. Designed, patented and manufactured by Flygt.

Impeller of hardened high-chrome cast iron for maximum wear resistance that provides a long service life.

A portable

solution with

hose coupling

or threads for

connection to

a discharge

pipeline.



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

Pump housing of deformation-resistant, durable, cast aluminium.

> In addition to lubricating the seals, the oil-filled compartment diffuses heat from the motor and the bearings. The housing also provides additional security against penetration by liquids.

Optimally designed wear surfaces coated with nitrile rubber or, for really tough, abrasive applications, with polyurethane.

Installation





Examples

- Standing or lying at any angle on any kind of work site
- Standing in cast pump well with level control
- Pumping head can be doubled or even tripled, through the connection of two or three pumps in series
- Certain slim line models can be lowered into very confined spaces
- Motor cooled by the pumped liquid and can run dry

Impeller

Open or shrouded multi-

vane impeller with adjustable diffuser and strainer for abrasive media and demanding operating conditions.

Vortex impeller

Flow is produced by a rapidly rotating vortex, created by the impeller, enabling good solids handling capabilities.



Cost-effective slurry pumps for high-wear applications

Slurry removal is an essential part of day-to-day operations in a wide range of industries, such as mining, ore dressing, sand contracting, ash handling and steel milling.

The applications in these industries make heavy demands on the slurry pumps, particularly in terms of the costs incurred when it comes to wear and tear, repairs and maintenance.

In this series of pumps the wet end, indeed all wear parts, are made of hardened high-chrome cast iron, which provides complete wear protection. The highchrome impeller, incorporates a swept-back design for sustained high efficiency and clog-free performance in the most severe applications. The drive unit can be easily detached from the wet end for fast access to wear parts. And there is no need to replace the entire wet end because the split casing design enables the volute lining to be easily accessed and replaced.

Flygt is the only manufacturer that offers its customers a total solution for slurry handling. The pumps can be supplied with an agitator and/or a mixer for a cleaner sump. Optional internal cooling allows pumping down to low levels, avoiding sediment build-up – we call it Clean Sump Technology.

Slurry pumps have capacities of up to 350 l/s and pump heads up to 100 metres.



Design

All pumps are tested and approved in accordance with national and international standards (IEC 34-1 CSA). They are also available in explosion proof versions -Factory Mutual and European Norm (FM and EN) approvals.

Squirrel cage, high performance induction motor, specially designed and manufactured by Flygt for submersible use. The motors are capable of up to 15 starts per hour.

An optional internal cooling system means that the pump does not always need to be submerged. It will continue pumping down to low slurry levels, helping to prevent sediment build-up in a sump.

An optional agitator in high-chrome cast iron is available to stir up sediment and agitate solids to prevent them from settling.

Made for 50,000 hours of continuous duty, the bearing design consists of a two-row angular contact ball bearing, which counters both radial and axial forces.

> The plug-in[™] seal system provides a perfect fit and faster, simpler replacement. The design also protects the seal surfaces from contaminants during disassembly and mounting.

> > The impeller hub is equipped with effective pump-out backvanes that expel abrasive particles. There is also a pressure isolation zone. Together, these features provide additional seal protection by reducing pressure in the mechanical seal area.

High efficiency, closed impeller made of wear resistant materials. Three vane design provides balanced action, for long seal and bearing life.

Installation



Semipermanent wet



Permanent dry







Impeller

The slurry pump impeller is a shrouded channel impeller made out of hardened highchrome cast iron, which is extremely wear-resistant.

Large throughlets handle solids of varying sizes

Large throughlets ensure efficient pumping, even when clumps of particles or large pieces of foreign matter pass through the pump.



Centrifugal pumps for a variety of applications

This series of pumps covers an extensive performance range and can be used in a variety of applications: from pumping sewage in treatment plants and municipal applications, handling industrial effluent, process water and raw water, to applications in aquaand agriculture. An extensive range of hydraulic sections, including the impeller and volute, are available to handle different types of media. The capacities range up to approx. 2,700 l/s. A variety of drive units, with motor ratings up to 780 kW, are also available.



Design

All pumps are tested and approved in accordance with national and international standards (IEC 34-1 CSA). They are also available in explosion proof versions – Factory Mutual and European Norm (FM and EN) approvals.

For corrosive applications. On special request, pumps can be equipped with zinc anodes, extra corrosion-resistant outer seal, epoxy coating and stainless steel shaft and impeller.

Squirrel cage, high performance induction motor, specially designed and manufactured by Flygt for submersible use. The motors are capable of up to 15 starts per hour.



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

The cable entrance is designed to incorporate both a seal and a strain relief function.

Usually the pumps are cooled by the surrounding liquid. In more demanding applications or when dry installed, the pumps can be equipped with an internal cooling system.

> In addition to lubricating the seals, the oil or coolant-filled compartment diffuses heat from the motor and the bearings. The housing also provides additional security against penetration by liquids.

Two sets of mechanical shaft seals that work independently, for double security. Designed, patented and manufactured by Flygt.

Installation

See following pages.

Impeller

See following pages.

Pump code system

Flygt uses a system to code and thereby identify its products. Each pump is given a code made up of two letters followed by four numbers, e.g., NP 3153. The first letter refers to the pump's hydraulic section, i.e., the impeller and volute. It also refers to the pump, as the impeller used determines the pump type. The second letter refers to the pump's method of installation.

The four numbers refer to the pump's model as well as specify its size in comparison to other pumps of the same type. Thus pump CP 3127 is larger than CP 3085.

Therefore a CP 3127 pump would be equipped with a shrouded, single or multi-vane impeller that runs in a volute. It would be semipermanently installed in a wet well, with twin guide bars, on a discharge connection.

Whereas a NT 3085 pump would be equipped with a semi-open, self cleaning impeller. It would be vertically mounted in a permanent dry well, with flange connections, suction and discharge pipe work.

Impeller Installation С D F Н Μ Ν A semi-permanent, Х Х Х Х Х Х free-standing installation. Transportable version with pipe or hose connection. A semi-permanent, Х suspended installation for quick connection. Н A semi-permanent Х installation with a swivelling guide bar for mixing and pumping. A semi-permanent wet Х Х Х Х Х Х well installation. The pump is installed with twin guide bars on a discharge connection. A portable solution Х Х Х with hose coupling or flange for connection to a discharge pipeline. A vertically-mounted, Х Х Х Х permanent dry well or in-line installation with flange connections for suction and discharge pipe work. A horizontally-Х Х Х Х mounted, permanent drv well or in-line installation with flange connections for suction and discharge pipe work.



Designed to minimise clogging

C-pumps are equipped with a shrouded, single or multi-vane impeller that runs in a volute. The shape and size of the impeller are designed to minimise clogging, which makes this pump ideal for wastewater applications. These impellers are also hydrodynamically balanced for submersible duty using the Wetbalance® technique developed by Flygt.



D

Pumps for solids handling

The D-pump is used mainly to pump abrasive media or low volumes at high heads. This pump features a vortex impeller, which means that the flow is produced not by the impeller but by the rapidly rotating vortex the impeller creates. Consequently most of the particles in the liquid never come into actual contact with the impeller, thus minimising wear. These pumps have a comparably large throughlet.



A pump for handling tough conditions

The F-pump is equipped with an S-shaped impeller that cuts long, fibrous and solid particles into small pieces. The sharpened edge of the impeller runs against a cutting plate, placed at the inlet of the pump. The F-pump is ideal for pumping liquid manure, or heavily contaminated sewage and sludge.



Pumps for abrasive slurries and wastewater

The H-pump impeller is a shrouded channel impeller made in hardened high-chrome cast iron, which is extremely wear-resistant. In this type of pump, adjustable and replaceable wear parts are incorporated in the pump housing.





Pumps for pressurised sewage systems

Specially designed for pressurised sewage systems the M-pump features an impeller that grinds solids to a fine slurry, which can then be pumped through narrow piping, measuring 32–50 mm in diameter.



Sustained high efficiency for wastewater handling

With its unique semi-open, selfcleaning impeller, the new series of N-pumps can handle fluids with high concentrations of fibrous material, whilst maintaining a high level of pumping efficiency over long duty periods. The special relief groove in the volute reduces the risk of clogging by creating a selfcleaning flow path through the pump.

The TOP pump station – better by design

TOP, or The Optimal Pump station has a radical new sump floor designed specifically for improved efficiency. It is an all-in-one solution in which pump and pump station are carefully matched. It can be used together with N, C, D and M hydraulic units. In a TOP station the pump's integrated discharge connections are hydraulically optimised to improve the flow over the sump floor during pumping. The converging, sloping floor of the TOP sump, increases turbulence – keeping solids in suspension. This prevents the build up of sediment, thereby eliminating frequent and costly cleaning and maintenance.



Accessories for trouble-free, efficient pumping

The Flush valve

The Flush valve is an automatic flushing system that harnesses the power of the pump and shoots a powerful jet stream of water around the entire pump station at the beginning of each pumping cycle.

As a result the contents of the sump are subjected to intensive mixing, thus resuspending any sludge before the pump cycle begins. This unique system ensures a high degree of oxygenation and practically eliminates odorous hydrogen sulphide.

The Flush valve can be easily attached to the volutes of CP, DP and NP-pumps.



The Flush valve turns a pump into a powerful mixer. When the pump starts the valve opens for approximately 30 seconds and a powerful jet stream flushes all solids into suspension. As the flushing sequence is part of the pump cycle, flushing occurs every time the pump starts.





APF cleaner – the electronic sludge fighter

APF is easily mounted in an electrical control cabinet and works in parallel with the main controller. By running the pumps until the absolute lowest water level is reached, grease and dirt, which normally settle on the surface, are pumped away. This prevents sludge build up and ultimately reduces the cost of manual cleaning.

The pump lift

This unique device is designed to simplify the process of lifting and lowering pumps in and out of sumps. With the pump lift system there is no need to 'fish' for the pump handle and no difficulty when lifting the pump to the top of the sump.

The pump lift consists of a short chain, a long nylon cord and a grip eye. One end of the chain is secured to the pump handle and the other is attached to the nylon cord. The cord runs up to the edge of the sump, just below the cover.

Pump flotation modules

Available in four different sizes, Flygt pump flotation modules are made in lightweight prefabricated polyethylene. They are a cost effective alternative to traditional steel pontoons.



Pumps for high volumes at medium heads

This series of mixed-flow pumps is designed primarily for screened waste water and storm water applications as well as for irrigation, industrial effluent, process water and raw water handling. The standard version of this series of pumps is made in cast iron. Pumps intended for applications in explosive environments are also available in explosion proof versions.

The pumps are usually installed vertically in either prefabricated steel or concrete columns.

Capacities range from 200 to 2,000 l/s and pumping heads up to 20 metres.





Design

All pumps are tested and approved in accordance with national and international standards (IEC 34-1 CSA). They are also available in explosion proof versions – Factory Mutual and European Norm (FM and EN) approvals.

For corrosive applications.

On special request, pumps can be equipped with zinc anodes, extra corrosion-resistant outer seal, epoxy coating and stainless steel shaft and impeller.

Squirrel cage, high performance induction motor, specially designed and manufactured by Flygt for submersible use. The motors are capable of up to 15 starts per hour.

Two sets of mechanical shaft seals that work independently, for double security. Designed, patented and manufactured by Flygt. de EN) quipped sistant ess steel In addition to lubricating the seals, the oil or coolantfilled compartment diffuses here bearings. The housing also provides additional security against penetration by liquids. Easily-replaced wear rings help maintain high pumping efficiency.

Installation



Impeller

The pumps are equipped with different impellers depending on pump size. Single or multi-vane impeller or the unique semi-open, self-cleaning N-impeller.



Propeller pumps for high volumes at low heads

With capacities of up to 5,000 litres per second, large vertical propeller pumps are used in storm water stations, sewage treatment plants, land drainage, irrigation, aquaculture and water attractions.

Pumping requirements and site conditions vary from one project to the next, but the modular design of the pumps makes them the ideal choice for a wide range of applications and for targeting specific requirements. The results are always the same: high quality, ease of servicing and low overall costs. When it comes to installation, the pumps can be easily installed in a vertical steel or concrete column.

The smaller, horizontal mounted propeller pumps can be quickly and economically installed, operating through the wall between two tanks on a discharge connection. Because of continuous flow, low system hydraulic losses and optimal pumping duty points, the pumps are not just a good economic solution, they will also maximise the efficiency of a system.

The horizontal propeller pumps are extremely compact and use multipole motors with a wide range of propellers, instead of mechanical gearing.





Horizontal propeller pump

Vertical propeller pump

Design

All pumps are tested and approved in accordance with national and international standards (IEC 34-1 CSA). They are also available in explosion proof versions – Factory Mutual and European Norm (FM and EN) approvals.

For corrosive applications. On special request, pumps can be equipped with zinc anodes, extra corrosion-resistant outer seal, epoxy coating and stainless steel shaft and impeller.

Two sets of mechanical shaft seals that work independently, for double security. Designed, patented and manufactured by Flygt.

In addition to lubricating the seals, the oil-filled compartment diffuses heat from the motor and the bearings. The housing also provides additional security against penetration by liquids. The cable entrance is designed to incorporate both a seal and a strain relief function.

Squirrel cage, high performance induction motor, specially designed and manufactured by Flygt for submersible use. The motors are capable of up to 15 starts per hour.

Guide vane configuration stabilises flow and prevents build up of fibres and other debris.

Installation



Semipermanent



Propeller

Designed for optimum hydraulic efficiency. The backswept shape of the propeller, together with a unique groove in the pump housing, reduces the risk of clogging.

The desired duty point for horizontal propeller pumps is achieved by welding the propeller blades at certain angles to the hub.





Solutions for perfect mixing results

Flygt mixers are used in a wide range of mixing duties such as solids suspension, liquid blending and destratification. Submersible mixers have a compact design, which together with Flygt's installation methods makes them easy to install both in new and existing tanks.

They can be found in operation at wastewater treatment plants, on oil and gas rigs and supply ships, in aqua and agriculture and in the steel and metal industry. Unlike their dry-mounted counterparts, submersible mixers provide unlimited freedom of positioning and orientation. By utilising this freedom, the mixer jet is allowed to develop and create efficient mixing of the entire volume.

Flygt's compact mixers are made of stainless steel and provide a cost-efficient alternative for most mixing applications. The low speed, large diameter mixers will gently mix large volumes with remarkably low power consumption.





Installation



Floor mounting Used, for instance, in shallow tanks and ponds.

Flange mounting The mixer is fixed to an adapter flange which is mounted in the tank inspection hole.

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Installation



Single or double guide bar mounting Mixers are easily lowered and raised along guide bars.



The mixer jet can be oriented to generate efficient mixing whatever the tank shape.



Ejector units for small to medium sized tanks and basins

Flygt produces three different types of ejectors, which are connected to our range of pumps. Depending on the application area, the ejectors can be used to provide effective aeration or mixing of tanks and basins.



The FloGet ejector aerator is the natural choice for small treatment plants where flexible and reliable aeration is essential. FloGet provides optimal mixing and efficient aeration, which can be performed separately or in combination. The FloGet unit can be used with or without pressurised air for optimal flexibility.



The hydroejector is best utilised in retention basins or other water storage tanks, keeping water in motion until it transferred for treatment. The hydroejector performs two functions, when submerged it produces a powerful bulk flow, mixing the contents and resuspending the pollutants in the basin. When the water level starts to fall, the hydroejector automatically turns into a flushing device, relieving the walls and floor of organic matter.

The air/water ejector can be used separately or together with hydroejectors in retention basins and tanks. The ejector uses a mixture of air and water to produce a powerful flow jet, which by aerating the mixing zone, controls the odour level. When unsubmerged the air/water ejector acts as a flushing device.



Monitoring and control equipment

Intelligent systems for pumps and mixers

At Flygt we produce monitoring and control systems for many different pump and mixer applications. Our systems offer reduced operational costs, better overview, less report handling and improved safeguarding of the environment.

As well as supplying the hardware, such as pump controllers, sensors, electrical start equipment and cables, we also have software for running the system.

The Flygt AquaView supervision software provides the PC-based SCADA (Supervision, Control And Data Acquisition) know-how.

The applications range from those operating in wastewater treatment plants and pump stations to products pumping ground water from building sites.

Supervision system

AquaView is a unique, easy-to-use software package that enables you to receive accurate information as well as control your entire waste water system.

AquaView can reduce operating and maintenance costs by giving you a complete overview of the facility: everything from alarm reports and graphs to flow conditions and trends. The software also gives you complete remote control of connected stations or plants within your network and lets you view the operational status of the station at the same time.

Pump controllers

FMC is an automated control system for wastewater treatment, specifically designed for pumping applications, to monitor and control the flow in and out of a system, both precisely and effectively.

With a controller to suit all standard pumping operations, these units offer additional control in a wide range of wastewater handling applications. FMC can be used in conjunction with AquaView for greater power and flexibility to monitor and control the equipment in your system.



FGC is an automatic controller for grinder pumps operating in pressurised sewage systems, for the onsite supervision of pump stations displaying real time information.

Flygt also offers high-performance level sensors providing 4–20 mA signals to pump controllers.

Automatic control panels

Flygt's series of automatic control panels are primarily for use in municipal sewage applications where a high standard of safety is a major concern. The panels are CE-marked, which ensures personnel safety and conformity to the provisions of the Low Voltage Directive (LVD). Standard Flygt control panels are designed for one pump and two pump operation and several optional packages are available to meet the needs of the various European markets.

Generally, Flygt provides panels that cover all the conditions under which Flygt pumps and mixers are in operation. These include sites such as mines and treatment plants, and for products with motors ranging from a hundred watts up to hundreds of kilowatts.

Starters

Flygt has developed a wide assortment of manual and automatic starters, which provide a range of functions that ensure the pumps work at optimal efficiency.

ENM-10 Level regulator switch

The patented ENM-10 self-cleaning level regulator uses a unique switching mechanism to start and stop a pump whenever the liquid reaches a pre-determined height. A micro switch is housed in the smooth polypropylene casing, which is resistant to most aggressive liquids and prevents grease and solids from sticking to its surface. Instead of floating, ENM-10 regulators hang immersed in the liquid, preventing the cables from tangling.

The ENM-10 is the ideal solution for sewage water, ground water and dewatering pumping, in fact, for most level control applications.

Subcab[®] power cable

The Subcab[®] cable is a flexible cable specially developed for heavy duty submersible pumps and mixers. It is designed for tough operating conditions and exceeds general standards with regard to mechanical properties, particularly in terms of tearresistance, abrasion resistance and tensile strength. In addition, the Subcab[®] cable also demonstrates low water absorption properties, which means that when it is submerged it retains its mechanical and electrical properties over a long period of time.

Pump controller











Regulator switches



Flygt is the world's leading manufacturer, supplier and innovator on the submersible pump, mixer and aeration markets. With production facilities in four continents our products are used everyday in wastewater treatment plants, sewage systems, aqua-agriculture, the process industry and numerous other applications. Our experience is utilised by engineers, planners and consultants to ensure reliable and cost-effective use of our systems in all corners of the world.

Flygt is represented in over 130 countries and has 40 sales companies around the world.

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