



EN

Application

Fish friendly pumping

Hidrostal's range of fish-friendly pumps combines first-class products with best-in-class hydraulic efficiency, all while minimizing stress or injury to fish.



The crucial role of fish-friendly pumps

Fish migration plays a crucial role in maintaining the ecological balance of aquatic ecosystems. The construction and operation of pump stations, power stations, dams, dewatering systems, and irrigation channels can pose significant challenges to fish migration. Traditional pumps and water infrastructure can impede the natural movement of fish, leading to adverse effects on fish populations.

In response to these challenges, the development and implementation of fish-friendly pumps have become essential to mitigate the impact on fish migration. Government authorities worldwide emphasize the importance of turning all water barriers fish-friendly within the next several years, resulting in laws like The European Water Framework Directive (WFD).

Pioneering fish-friendly pumps with innovative technology

It's hard to imagine even a single fish passing unharmed through rotating machinery, but the requirement to pump fish in fish processing and fish farming applications has been around for decades. The necessity to protect fish being decimated by obstructions such as pumping stations in our rivers only came to pass at the turn of the century, but advances in technology have resulted in "fish friendly" pumps ensuring the survival of both fish and eels in our waterways.

As manufacturers of the first ever fish pump, patented over 60 years ago, Hidrostral pumps now operate in thousands of pumping stations worldwide, transporting not only water but all aquatic animals in a safe manner.

The Hidrostral screw centrifugal impeller with its large ball passage operating at a low rotating speed ensure that fish pass through the pump undamaged. Other pump design can cause stress or injury to fish – especially those with a higher number of vanes.

The advantages to other systems (e.g. Archimedes screw pumps) are high efficiency, flowrate and small installation footprint. Also a twin blade variant was developed, based on the original Hidrostral impeller. It is used for higher flows, providing adaptable, reliable and optimal performance in more demanding flood applications.

Applications

- Dewatering
- Drainage
- Flood control
- Fish bypasses
- Aquaculture
- Canal & Well Renovation



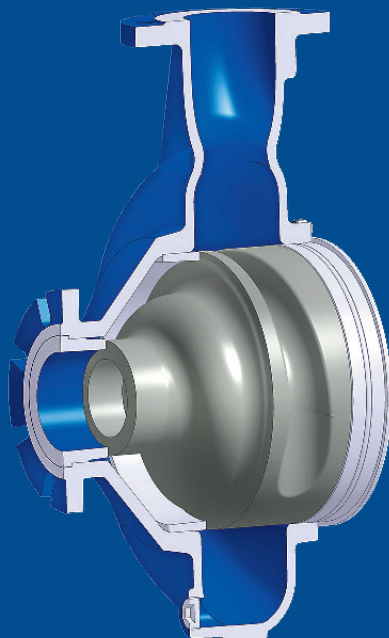
Fish migration facilitated by pump stations and fishlifts

Some fish want to migrate from the sea to inland waters but are blocked by civil constructions. For this situation, pump stations designed for fish migrations, equipped with pipes and valves, can function as a lock system to aid the fish in continuing their journey. Normally, fish swim against the flow, and the ideal lure flow can be adjusted by regulating the pump speed. Special Fishlift constructions, which monitor the fish, are fed by Hidrostral pumps.



Aquaculture

In Aquacultures, not only fresh water and wastewater can be pumped, but also live fish.



Hidrostral impeller, uniquely designed for fish-friendly operation

- Large, smooth open channel with no abrupt change of direction allows the fish to move through the pump from suction to discharge without damage
- Large ball passage and open channel design allows passage of large fish and also provides continuous non-clog operation to minimize downtime
- Enclosed design impeller prevents fish from contacting the suction cover, preventing damage to both small and large fish
- Low rotating speed ensures that fish pass through the pump safely
- Twin bladed variant for higher capacity flows is also available

Global solutions for fish-friendly pumping

Hidrostal and its daughter company Bedford Pumps UK brings extensive expertise and experience to the realm of fish friendly pump solutions. Our commitment to fish-friendly pumping is ingrained in our DNA, offering customers worldwide a diverse product range and various impeller options.

Hidrostal M700 pumping 4000 m³/h in a fish migration system

Climate-induced heavy rainfall in northern Friesland is causing flooding, jeopardizing the eel and three spiny minnow fish species. Dams and dikes block their natural migration, leading to a 95% decline in the Netherlands' eel population over 50 years. An urgent need for reliable, fish-friendly solutions was required to preserve and protect the endangered fish population.

A new pumping station, equipped with two Archimedean Screw Pumps and a Hidrostal Screw Centrifugal Pump, efficiently drains the area at 4,000 liters per second. The Hidrostal pump ensures a smooth transfer of fresh water to a 1.5km long canal, facilitating fish migration. Controlled by a valve system, the Hidrostal pump maintains a steady flow, operating around 4,000 hours annually.



Hidrostal pumps safeguard fish in Aarmatten channel's water management system

The Aarmatten channel in Switzerland takes the drainage water of the Grenchen Airfield, the surrounding agricultural areas, as well as the overflow water of the wastewater plant from the city of Grenchen. Normally, the channel flows freely into the Aare River. At a certain water level of the Aare, the water can no longer flow freely out of the channel and must be pumped to the river.

To protect small fish during this process, two Hidrostal Screw Centrifugal Immersible Pumps with closed impellers, renowned for their gentle handling abilities, are utilized.



Hidrostal – the pioneer in fish friendly impellers to protect both land and life

When it comes to fish-friendly pumping Hidrostal is the number one choice, offering unparalleled advantages that elevate the efficiency and reliability of your production process. Here's why Hidrostal is the right product for your fish friendly application:

Proven performance and gentle handling

- A comparably **low impeller peripheral** speed reduces the risk of collision and also alleviates pump shear.
- The **physical shape of the impeller** allows fish, eels and other solids to pass through the pump.
- An **extra-large clearance gap** between the impeller and the diffuser-vane avoids the close proximity of rotating parts with stationary components that are only found in fish friendly pumps.
- Best in class **hydraulic-efficiency** up to 86% leading to smooth flowlines – avoiding adverse pressure gradients and turbulence which can affect fish and eels.
- The pump's shaped and rounded internal contouring means that any debris 'snagging' is also kept to a minimum.



Specifications

- Discharge sizes: 50 – 1600 mm (2 – 63")
- Head: 2 – 14 m (6.5 – 46 ft)
- Flow: 7 – 9000 l/s (110 – 143 000 gpm)
- Power: 2.5 – 500 kW (3.3 – 670 hp)
- Frequencies: 50 Hz, 60 Hz, VFD
- Materials: Cast Iron, Ductile Iron, Hi-Chrome Steel, Duplex Steel, Ni-resist, Aluminium Bronze

Customize your Hidrostal pump to your needs!

Customizing your Hidrostal pump to meet specific requirements is crucial for optimizing its performance in various applications.

Material options

- Standard cast iron for neutral pH-values
- Stainless steel, or duplex for pumping seawater/salt water

Installation options

- Horizontally on base plates. This is the standard installation for dry installed pumps.
- Vertically on the Hidrostal flow optimized suction stand. Choose this option, where the place of installation is limited. The suction stand ensures that the fluid enters the pump with an optimal velocity profile.

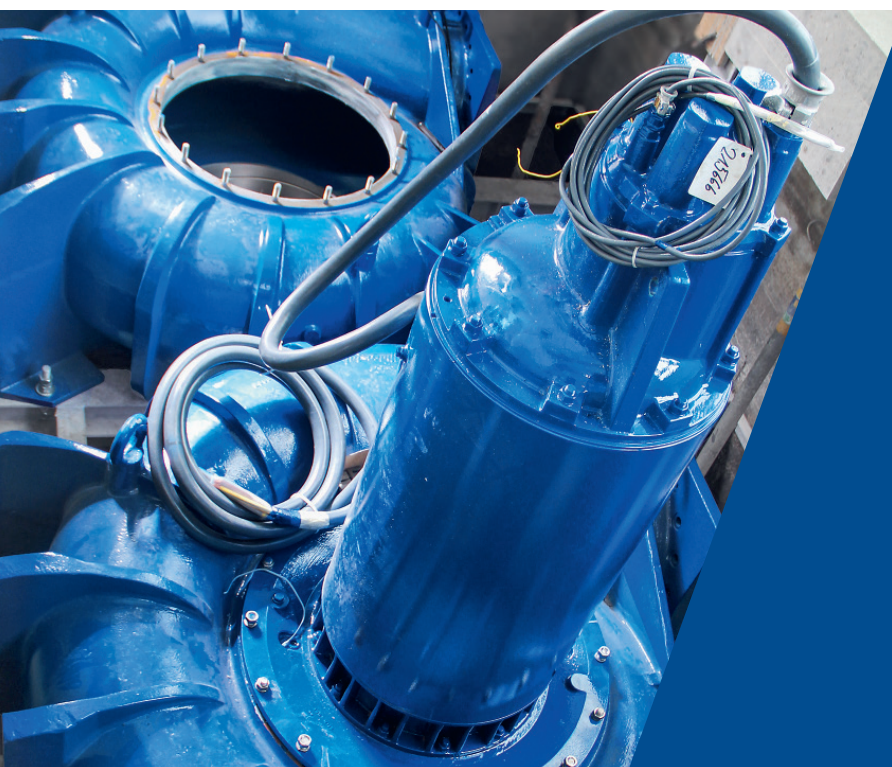
Shaft Seal options

- Double (tandem) mechanical seal barrier fluid filling (also available as food degradable) or for water flushing.
- Mechanical cartridge seal
- Hydraulic parts of Hidrostal pumps are free from silicone.

Drive options

- A standard IEC-Motor using an additional bearing frame to absorb the occurring forces from the impeller. Customers' needs such as special voltage or motor brand can be considered.
- An immersible Hidrostal motor in case of wet well installation, outside installation or if flooding, e.g. when cleaning the plant, is possible.
- To save time during maintenance or in the case of a disturbance, baseplates for Hidrostal pumps are also available as easy-dismounting baseplates.

Our worldwide specialists can support you with all special requirements and challenges around fish friendly solutions. Find your personal contact on hidrostal.com



Materials

- Cast iron, duplex, spheroidal graphite iron, hi-chrome, stainless steel

Motor

- IP 55 (splashproof)
- IP 68 (submersible), robust and waterproof

Installation

- Dry
Horizontally on base plate
Vertically on suction stand
- Wet well

Reliable and efficient services during the whole life cycle of your pumps

Our customers are individual and so are our solutions, products and services. We offer our support in the early project phase to find the optimal pump for a specific application.

Thanks to our excellent quality system and our worldwide manufacturing, sales and service network, we meet any demand for our customers and provide efficient maintenance and servicing.



Consulting & training

Our experienced team of engineers will advise you on the selection of a suitable pump and with energy-saving solutions. We offer professional pump selection training and help you design the optimal solution for your needs.



Production & installation

Our skilled technicians offer tailored solutions, from minor service calls to full installation and commissioning. We specialize in comprehensive re-engineering to maintain peak equipment performance. Additionally, we handle piping and fitting installations with equal precision.



Digital solutions

Our cloud-based solutions for failure-free pump operation enable seamless remote monitoring and control of your assets. With our vibration monitoring module you get real-time insight into the condition of your pumps.



Service & repair

We prioritize reliable pump operation. With an extensive inventory of original spare parts and an experienced service team, we offer expert advice, predictive maintenance, and swift repairs for your pump installations.



Rental solutions

Our rental fleet features diverse Hidrostat quality pumps, including submersible and diesel/electric-driven options like the self-priming SuperBetsy. We offer classical pumping systems and highly energy-efficient siphon systems, such as the Heber 2000.



Analysis & testing

From pump performance tests, condition monitoring, inspection & analysis to troubleshooting – we ensure a reliable and safe operation of your pumps and processes.

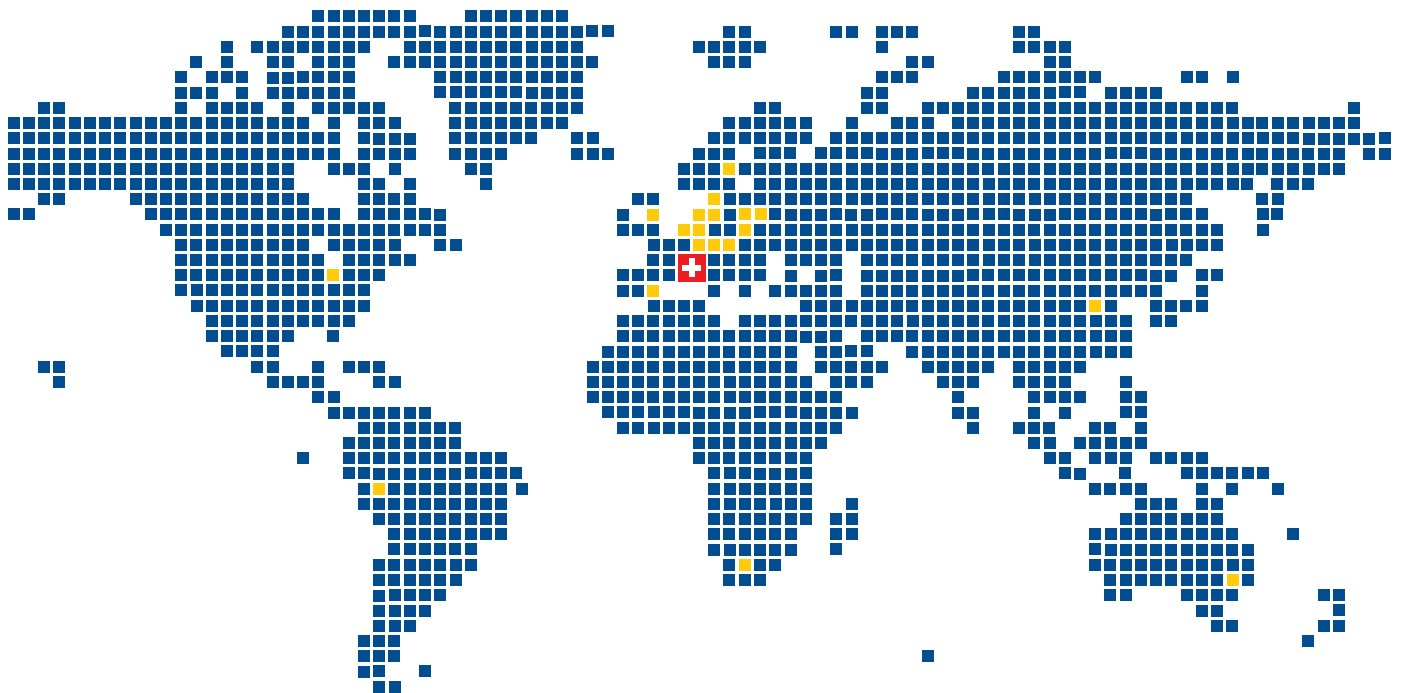
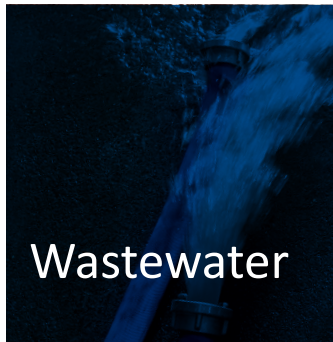
Hidrostal pumps

Make a quick and accurate
pump selection:
hidrostal.com/pumpselector.php



Hidrostal pumps are used in numerous branches and industries due to their excellent pumping characteristics. They convey a wide variety of liquids and materials with low pulsation and gentle handling. Our specialists select the suitable material combinations and adapt each pump individually to the conditions on site. This approach ensures that Hidrostal pumps prove their worth even in difficult applications and thus achieve the best results in terms of efficiency, energy efficiency and low life cycle costs.

- non-clogging delivery
- high suction capacity
- gentle conveying due to low shear forces
- high efficiency
- stable characteristic curve
- long service life
- low pulsation
- continuous, speed proportional conveying
- high pressure stability



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Pioneers in Pump Technology