



Small hydropower, endless possibilities

FLYGT SUBMERSIBLE HYDRO TURBINES

Bring renewable and sustainable energy to your operation easily

At Xylem, we've manufactured hydro turbines for nearly 40 years, in addition to over a century of experience in pump water technology. We're uniquely equipped to provide you with holistic small hydropower solutions through our family of Flygt submersible hydro turbines.

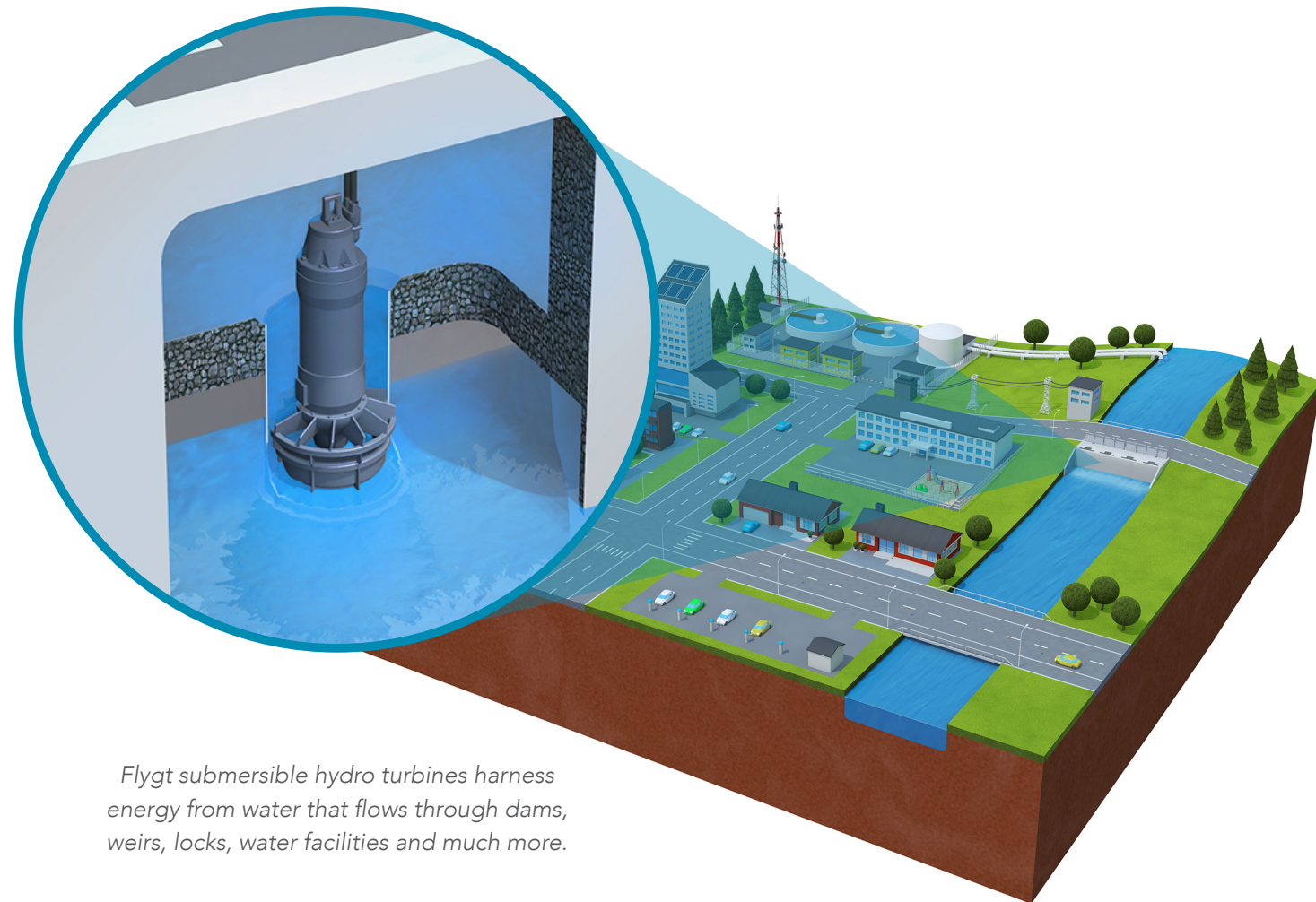
Simple installation. Many processes require just three steps, although there are multiple methods available.

Flexible operation. Install in applications with heads up to 20 meters (65 feet) and flows up to 10 m³/s per unit.

Multiple sizes. Our family of hydro turbines span from 40kW to 700 kW (50 Hz).

400+

turbines installed
worldwide from 1984



Flygt submersible hydro turbines harness energy from water that flows through dams, weirs, locks, water facilities and much more.



High-performance, low environmental impact

Hydropower is an outstanding – and long-standing – source of renewable energy. To reap the maximum benefit, its operations must be sustainable, too. At Xylem, minimising environmental impact and actively protecting natural habitats are paramount to our small hydropower solutions.

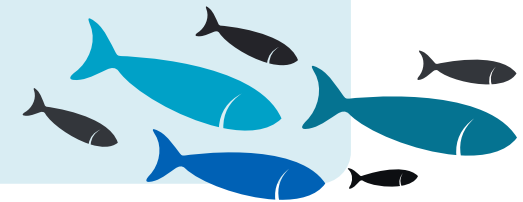
Fish friendliness

Creating extra space between turbine blades is no longer enough. Migrating fish are safest when they avoid turbines altogether.

Our solution: Fish attraction flow for downstream fish passage

Developed by Xylem, this unique method effectively guides migrating fish away from the turbine.

1. Reorients fish just in front of the turbine intakes
2. Directs them to a channel where water velocity steadily increases
3. High-velocity flow prevents fish from returning to the turbines



Xylem also partners with universities and energy companies to develop new methods for controlling downstream migratory fish to increase passage efficiency and minimise production losses.

Minimal footprint

Flygt turbines can be added to new and existing structures with less civil work than is required for a standard hydropower station. Plus, the station itself can be hidden, so sites with natural or social heritage values can remain intact.

Flygt hydro turbines at work around the world

The compact, modular Flygt submersible hydro turbine was built with versatility at its core. The units can produce clean energy wherever there's a flow and head of water – creating endless applications for installation.



Repurpose inactive sites

Hydro turbines can be retrofitted into the structure of inactive hydropower plants like old mills as well as non-powered dams, weirs and unused water locks to generate clean energy with minimal effort and no impact on the environment.

Kentucky, United States

Challenge:

Appalachian Hydro Associates (AHA) was seeking to develop a more cost-effective model for new small hydropower projects in rural areas.

Solution:

Xylem installed five Flygt submersible hydro turbines in an existing 52-foot-wide lock on the Kentucky River.

Results:

Clean, inexpensive hydropower supplied to a local college – and a highly repeatable process.

Modernise existing power plants

Solve for outdated equipment while meeting heightened energy and environmental demands.

Flygt turbines make modernisation attainable with minimal effort, easily replacing existing machinery to increase efficiency and capacity while lowering costs – all without the need for new infrastructure.

Smedjebacken, Sweden

Challenge:

In 2015, this 21-year-old hydroelectric power plant and dam wanted to implement new technologies to help optimize performance and efficiency.

Solution:

Xylem installed three submersible hydro turbines providing 1.4MW of capacity, in addition to new control panels for more seamless monitoring and operation.

Results:

The easy upgrade in generator technology resulted in increased efficiency and higher electricity production for the plant.

Future-proof new power plants

The global demand for renewable energy is only growing. Using Flygt turbines in new small hydropower plants offers a sustainable solution to efficient and modern clean energy generation.

Lanaye, Belgium

Challenge:

High canal traffic created the need for a new lock. Capitalising on the flow of water to produce electricity on top of the boat passage was a key objective of the project. But any installation needed to stay hidden.

Solution:

Xylem helped to design and build a virtually invisible hydropower station that harnesses energy from extra water during wetter seasons.

Results:

This existing water stream continues to produce electricity, adding even more value to the canal with no interruption.

Reimagine existing water facilities

Water infrastructure systems can implement small hydropower on a much larger scale globally. From wastewater treatment plants and stormwater pump gates to irrigation canals, pipelines and many more, moving water can be used to contribute to clean energy goals without disruption to activities.

The electricity produced can be used by the facility or injected into the grid for neighbouring industries or homes. Water utilities and municipalities in particular can benefit from lower costs and increased sustainability of in-pipe hydropower.

Milan, Italy

Challenge:

Generate sustainable power for the community in an existing irrigation canal network while maintaining tourism and benefits to the local economy.

Solution:

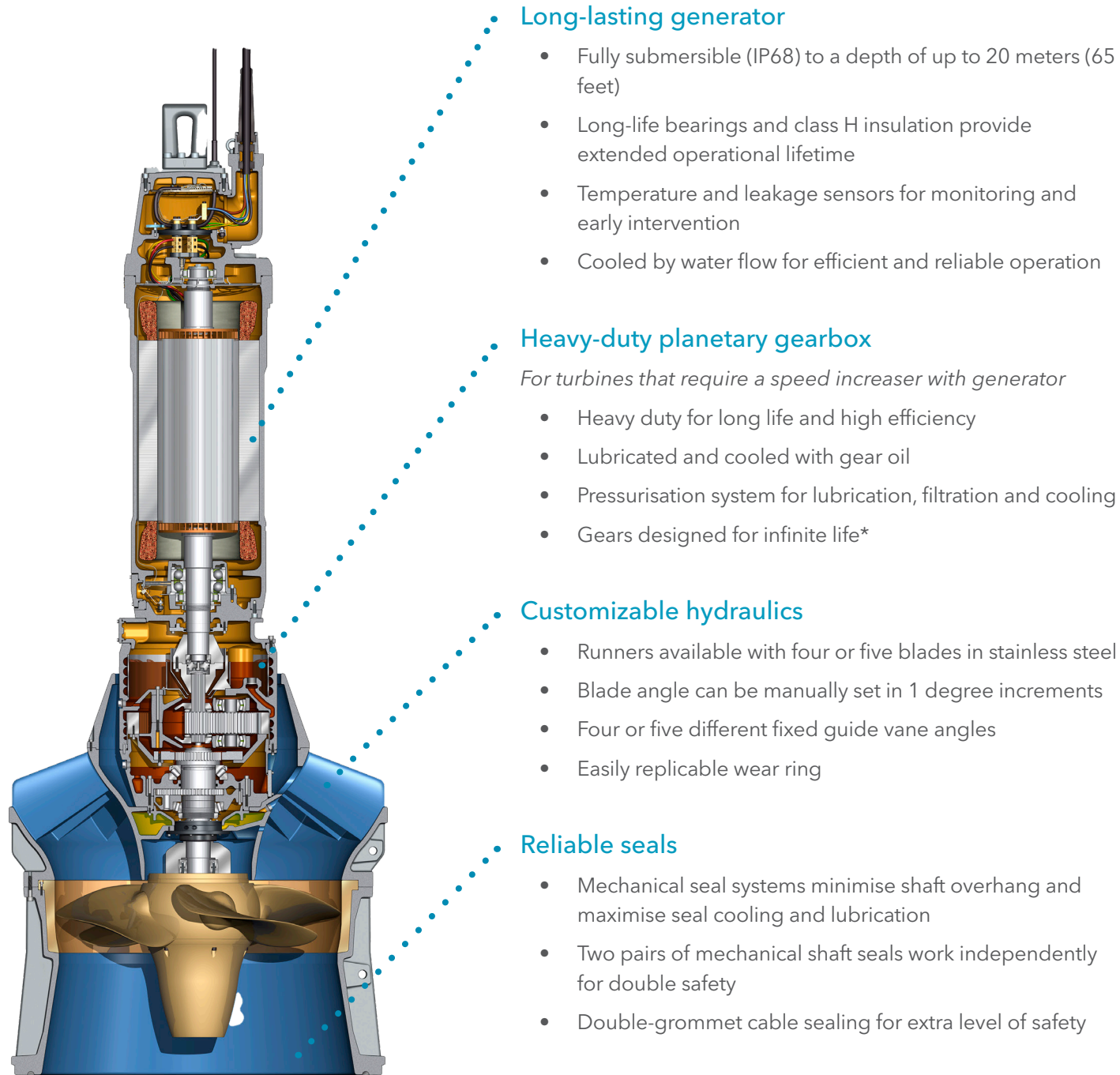
An invisible, soundless hydropower plant using Flygt submersible hydro turbines.

Results:

Completed a successful project and achieved a return on the investment in a short amount of time with no visual impact to the region's aesthetics.

Durable construction for superior operation

Flygt submersible hydro turbines are built to last using standard modular parts for easy upgrades and replacements. Plus, you can customise several components to meet the unique needs of your operation.



Long-lasting generator

- Fully submersible (IP68) to a depth of up to 20 meters (65 feet)
- Long-life bearings and class H insulation provide extended operational lifetime
- Temperature and leakage sensors for monitoring and early intervention
- Cooled by water flow for efficient and reliable operation

Heavy-duty planetary gearbox

For turbines that require a speed increaser with generator

- Heavy duty for long life and high efficiency
- Lubricated and cooled with gear oil
- Pressurisation system for lubrication, filtration and cooling
- Gears designed for infinite life*

Customizable hydraulics

- Runners available with four or five blades in stainless steel
- Blade angle can be manually set in 1 degree increments
- Four or five different fixed guide vane angles
- Easily replicable wear ring

Reliable seals

- Mechanical seal systems minimise shaft overhang and maximise seal cooling and lubrication
- Two pairs of mechanical shaft seals work independently for double safety
- Double-grommet cable sealing for extra level of safety

*According to American Gear Manufacturers' Association (AGMA) standards.

Enjoy the benefits of seamless integration

Adding Flygt submersible hydro turbines to your new or existing operations requires minimal effort – and delivers maximum rewards for years to come.

- Designed to fit flawlessly into existing infrastructure
- Quick connection to the grid
- Auto-adapts to varying water flow
- Submersible and quiet
- Requires no flood protection
- Easy to inspect, service and troubleshoot



Getting started

Only Xylem offers the breadth and depth of water-focused knowledge – from pumping and controlling to treatment and power generation – and the global reach to help you optimise your unique operations with submersible hydro turbine technology.

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.


For more information on how Xylem can help you, go to www.xylem.com



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