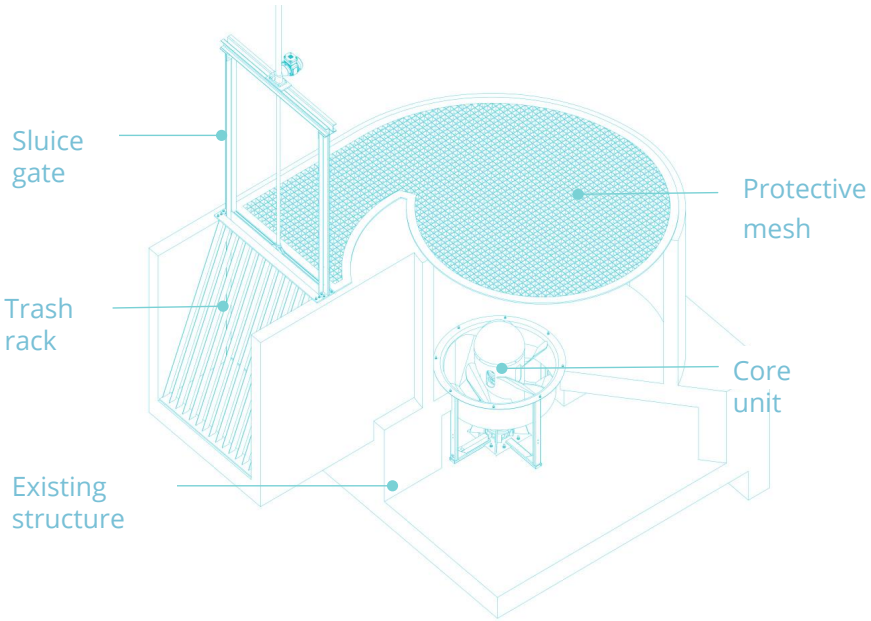

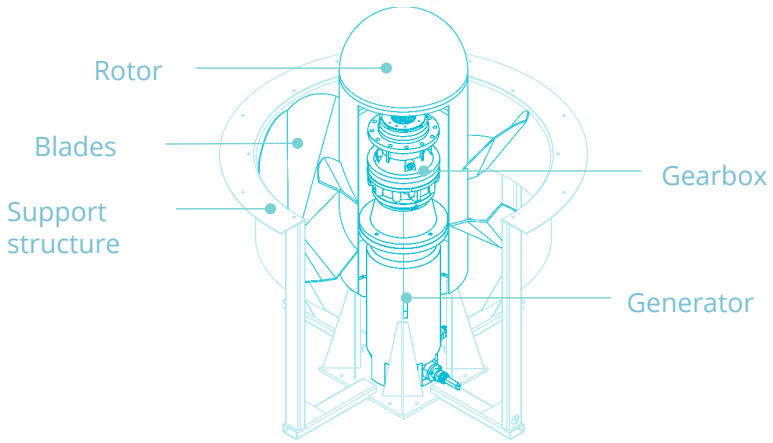

15 - 70 kW HFLH Vortex Turbine

- Fish-friendly hydrodynamic rotor with flow-optimized blades and low turning speeds
- Compact low-noise submerged design
- Core unit designed to operate for over 25 years
- Submersible gearbox and generator outfitted with Double Eagle Burgmann mechanical face seals that can withstand any type of flood
- Secondary sealing system with multiple layers of protection against fresh and brackishwater debris and sand, designed by SKF for continuous heavy-duty use in harsh environments
- All rotor and casing parts made from stainless steel used in the food industry
- Carbon steel parts blasted with impact- and abrasion-resistant epoxy resin coating
- Equipped with maintenance-free induction generator from European manufacturers

Turbine range and standard models

The HFLH vortex turbine blades are **optimized** to perform best in a well-defined range of flows and heads. Due to the open flow nature of the vortex turbine, it is critical to carefully select the **head and flow combination** that will guarantee the best performance at design and part flow operations at every site. Standard turbine **impeller dimensions** range from **1.3 to 1.9 meters** and the standard **electrical power outputs** range from **15 to 70 kW**. To address **higher power demand**, all standard models can be combined and **installed in clusters**.

HFLH standard range	Min	Max	Unit
Flow	1.5	4.7	m^3/s
Head (inflow channel to tailwater level)	1.4	2.7	m
Hydraulic efficiency at BEP	0.65	0.75	-
Inflow channel required water depth	1.3	2.3	m
Impeller diameter	1.3	1.9	m
Impeller rotational speed	40	100	rpm

A list of **sample turbines** for our standard power output range is listed in the following table, together with the representative dimensions of the turbine core.

Impeller diameter	**1.3m**	**1.5m**	**1.7m**	**1.9m**	Unit
Hydraulic output	17	34	56	78	kW
Electrical output	**15**	**30**	**50**	**70**	kW
Maximal energy generation per year	130,000	260,000	440,000	610,000	kWh
Design flow	1.6	2.5	3.4	4.3	m^3/s
Design head	1.7	2.2	2.4	2.6	m
Rotational speed	75	95	75	75	rpm
Dimensions core unit (l x w x h)	0.8x1.5x1.5	1.2x1.7x1.7	1.5x1.9x1.9	1.8x2.1x2.1	m
Impeller and support weight	240	380	590	870	kg
Generator and gearbox weight	310	470	700	1070	kg
Core unit total weight	550	850	1290	1940	kg

Maintenance

Maintenance item	Maintenance interval
Initial replacement of gearbox oil fill	After 2/3 months of continued operation
Gearbox oil change	After every 6 months
Generator visual check	Once every year
Retightening all bolts	Once every year
Re-greasing of gearbox bearings	After every 2 years
Electrical controls check	After every 2 years
Replacement of seals	After every 2 years
Replacement of bearings	After every 3 years

Power electronics

Our turbines ranging from 15kW to 70 kW use a 3-phase submersible induction generator. We provide different converter solutions depending on your situation.

ON-GRID

- Grid = Buffer
- Automatically adapts to the grid
- up to 99% uptime

BASIC OFF-GRID

High quality electrical signal for household appliances

- control
- Perfect load balancing
- up to 99% uptime

SMART ON/OFF GRID

With energy storage solution to provide peak power up to 3x design power

- Auto on/off-grid
- up to 99% uptime
- Compatible with additional solar panels, wind turbines & gensets

Remote control and monitoring

A range of control and monitoring solutions can be provided to fit your specific project requirements:

Manual

- On/Off + emergency button
- Manual sluice gate and turbine operation

Premium

- On/Off + emergency button
- Automatic control for genset
- Sluice gate control for active flood protection + increased power output
- Remote control via mobile/PC
- Detailed monitoring and web dashboard