



**Sunnytek** Solar Sweden

Here we have a summary list of solutions for water turbines capable of 30 meters water head and different flow from 350 liter / sec to about 2 M3 / sec. All systems are horizontal Francis turbines with brush less generator for 400/440 Volt 3 phase output. What we deliver is a complete package with water turbine + generator , main valve, governor system with hydraulics and Control cabinet and voltage stabiliser.

All systems can be delivered a components as images show or preinstalled in a container with electrical components and output switchboard



**Technical specifications and parameters.**

<b>System</b>	Horizontal Francis turbine 2 X Fulcrum structure
Runner blades	20 Si-Mn alloy
Water head	30 meter
Water flow	350 to 1800 liter / sec
Efficiency	Typical 91% of turbine
Rotational speed	900-1500 RPM
Control	Speed controls unit by PLC operated hydraulic governor
Stabiliser	Fly wheel design in heavy steel
Generator type	Brushless excitation In sublation class F/F
Output Voltage	400 Volt AC optional 440 volt 50 to 60 Hz
Efficiency	93% Power factor 0.8 of generator
Frequency	50-60Kz spec when ordered
Governor	PLC control. Digital control Hydraulic servo system with valves and pump
Flow control	Inlet valve with electrical control. Flange mounted.
Control panel	Automatic security systems. Power control. temperature control. External system hydraulic regulator. RS 485 computer interface Included
Kit and spares	Tool kit for service and installation. Random spare parts and seals and some key spare parts.
For installation	Installation and assembly lifting kit.



**Options** Installed in a container preinstalled components for easy and fast start up MPPT phase lock inverter and power control with Web interface.



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Hydro power 30 meter water head Francis turbines Page 2/2 16 October 2017

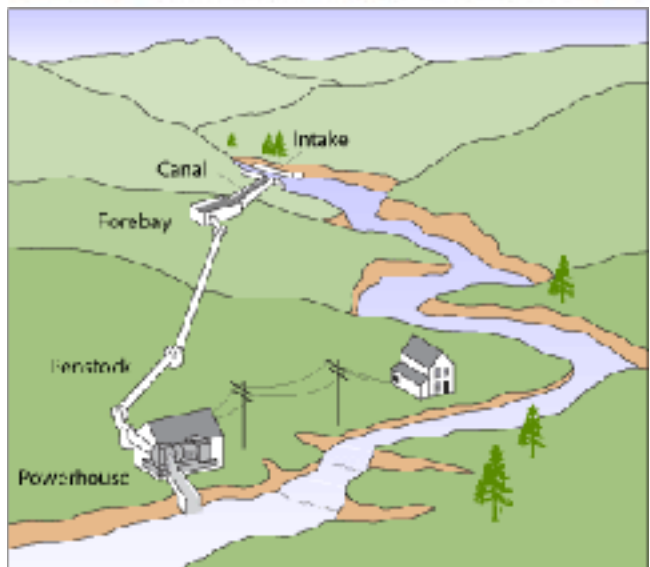
## Turbine models Francis design

Output power	Water flow	Runner diameter	Speed
75 KW	350 liter / sec	35 cm	1000 rpm / 50 Hz
118KW	500 liter / sec		1000 rpm / 50 Hz
160 KW	653 liter / sec	42 cm	1000 rpm / 50 Hz
300 KW	1260 liter / sec		900 rpm / 60 Hz
400 KW	1800 liter / sec	50 cm	900 rpm / 60 Hz

### All systems include following

- \* Francis water turbine system
- \* Brushless generator
- \* Governor with hydraulic control and PLC system
- \* Inlet valve with electric operation
- \* Synchronisation panel and control cabinet with system protection functionality
- \* Service kit for installation works
- \* Spare part kit

These systems have a good quality and a very good cost in purchasing and operation. This makes many new sites possible to be profitable that did not be OK earlier. We offer other hydro power solutions from small to very big beside what is on this paper.



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