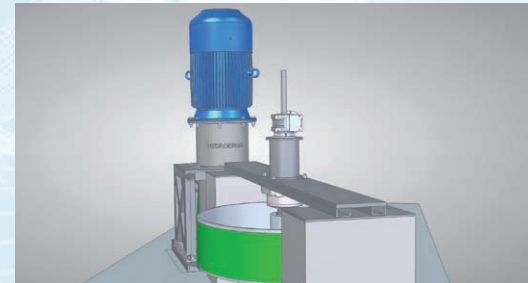
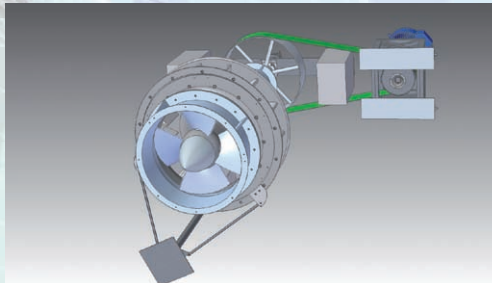
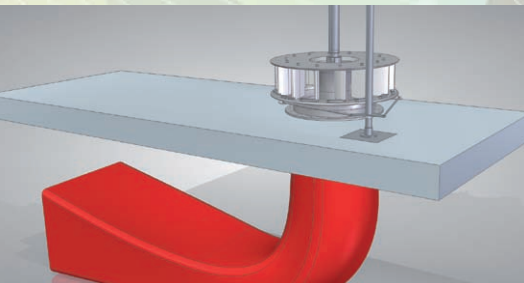


WATER TURBINES

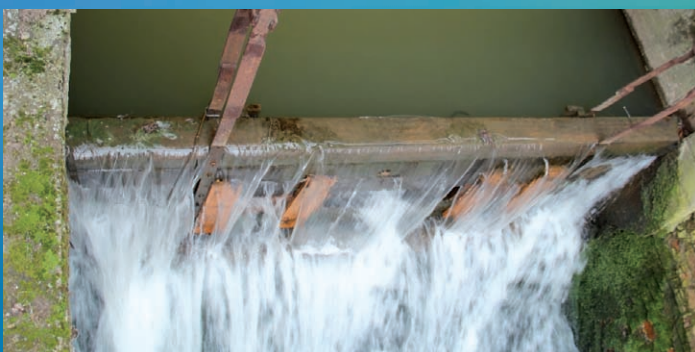
Hydroergia offers comprehensive design and production of water turbines tailored to individual hydrological parameters of a location. Each turbine is equipped with new individually designed rotor blades so that the efficiency of the device is the highest with an appropriate parameters of flow and head. In the design process our engineers use the latest CFD numerical methods to analyze hydraulics of a turbine and the FEM method to examine the strength of mechanical elements. Each newly designed shape of a rotor blade vane is carefully checked and computer verified prior to sending for production.



We are extensively experienced in the area of the offered services, we have our own office and a machinery park situated at our business premises.

The scope of the company's activities also includes comprehensive activities connected with the SHP running, such as:

- construction of a turnkey SHP,
- renovation and modernization of the existing SHP,
- technical counseling,
- investment counseling, support at the purchase of a location dedicated for the investment related to the SHP,
- preparation of necessary documentation and carrying out analyses related to the investment,
- production of equipment supporting the SHP functioning and other.



Our comprehensive offer connected with water turbines production includes:

Kaplan turbines (double adjustable by means of the angles of runner blades and guide vanes). The turbine's runner is always individually designed to match hydraulic parameters of a turbine with hydrological parameters of a site where it is to be installed. Each runner blade is made of stainless steel or bronze additionally milled on a processing center in order to obtain the most accurate representation of the surface.

Guide vanes are produced in the iron casting technology, they are made of cast iron bronze or stainless steel – according to the customer's requirements. Movable elements of guide vanes are made of stainless steel. Each turbine has a fully automated control panel set to achieve the maximum momentary power in the function of flow. Operating range of devices is within 20 to 100 percent of the installed discharge of water – which makes the proposed construction a very efficient device in the wide range of flow.

We offer solutions with Kaplan turbines of optional configurations – appropriate for the SHP.

- Vertical turbines installed in an open chamber Kaplan/Propeller, diameter: from D=400mm to 2200mm; power: from 5kW to 1 MW;
- Vertical turbines installed on a supply pipeline bound with a feeding spiral Kaplan/Propeller, diameter: from D=400 mm to 2200mm; power: from 5kW to 1MW;
- Horizontal tube-type turbine Kaplan/Propeller, diameter: from D=400mm to 1500mm; power: from 5kW to 400kW
- Lever turbines Kaplan/Propeller, diameter: from D=400mm to 1500mm; power: from 5kW to 200kW

Hydroergia provides services of comprehensive modernization of the existing SHP in the range of:

- exchange or regeneration of a runner: decision about modernization results from the performed concept and analytical works. In case of a runner exchange or modernization our engineers carry out hydraulic analysis of a turbine. After carrying out necessary calculations by means of up-to-date numerical methods, the shape of runner blades is changed in order to obtain the highest efficiency of the device,
- guide system regeneration: to increase energy production the surface of guide vanes is regenerated and an automatic regulation of the angle of guide vanes is installed,
- exchange of a belt drive transmission into the one of the highest performance,
- exchange of a generator and electrical system meeting present quality standards and adequate safety measures,
- installation of an adequately designed draft tube enabling recovery of the kinetic energy especially in connection with a Kaplan turbine,
- assembly of the SHP automation: devices are designed to obtain the highest power of a unit in the function of fluctuating water flow of a river. The SHP shall be equipped with a probe, the upper water level as well as a mechanism of automatic guides steering. Such solution allows to sustain the same upper water level on a continuous basis with the simultaneous turbine operation at the highest momentary power.