

EKIDS MICRO HYDEL TURBINES

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ABSTRACT

In general, specifications of Hydro electric power system vary depending upon the installation location. The hydro turbine and generator employed therein are custom manufactured in accordance with site conditions.

However, this approach, especially for small scale hydro turbines and generators, is inefficient, requiring a high construction cost which is not economically viable.

In order to improve the economic viability, we have developed a new concept to improve the manufacturing and construction efficiency of hydro turbine and generator sets for small scale hydroelectric power generation, through mass production approach.

WHAT IS HYDRO-EKIDS?

1. Hydro-eKIDS has four types of Standard unit so as to confirm to the various types of the site condition.
2. **Wide output range** of 1 to 200kW with four standard Propeller Turbines and effective head between 2 and 15m.
3. **Flexible application** for various types of sites with parallel arrangement for discharge and a cascade arrangement for higher effective head.
4. **Small and compact package** to facilitate transportation and handling.
5. **Reduced Construction cost** achieved by adopting a straight pipe-in shape for turbine water passage, which simplifies construction work.
6. **Reduced concrete volume** for foundation achieved by mounting the generator on the turbine structure.
7. **Simple Power House Design** achieved by straight water flow so as to locate the tailrace out of the powerhouse as far as civil design requires, unlike in the CROSS-FLOW type which requires the tailrace under the powerhouse so as to divert flow downward which costs civil construction.
8. **It can be used for Stand alone system as well as Grid Connected.**

MAIN COMPONENTS HIGHLIGHT:

1. **Runner:** Optimum selection is made among two types of runners depending on site condition such as head discharge and cavitation. Runner blades are of Stainless Steel.

2. **Turbine Shaft:** is of stainless steel and is designed with analysis by FEM and also static strength analysis so as to withstand runaway speed in same methods as large capacity turbines.
3. **Turbine Bearing:** combine with tapered roller type which withstands thrust and radial load, and cylindrical roller type which withstands radial load independently.
4. **Shaft Seal:** is a mechanical type of self lubricating with water with material of ceramic or carbon.

Hydro-eKIDS has all the features which is best suitable for both remote area applications under distributed generation systems and also in the city centers for the social use such as in schools, hospitals etc., with a easy maintenance design and manufacturing concept. The design and the quality material used make these machines of prime quality and highly reliable, with a very simple operation procedure.