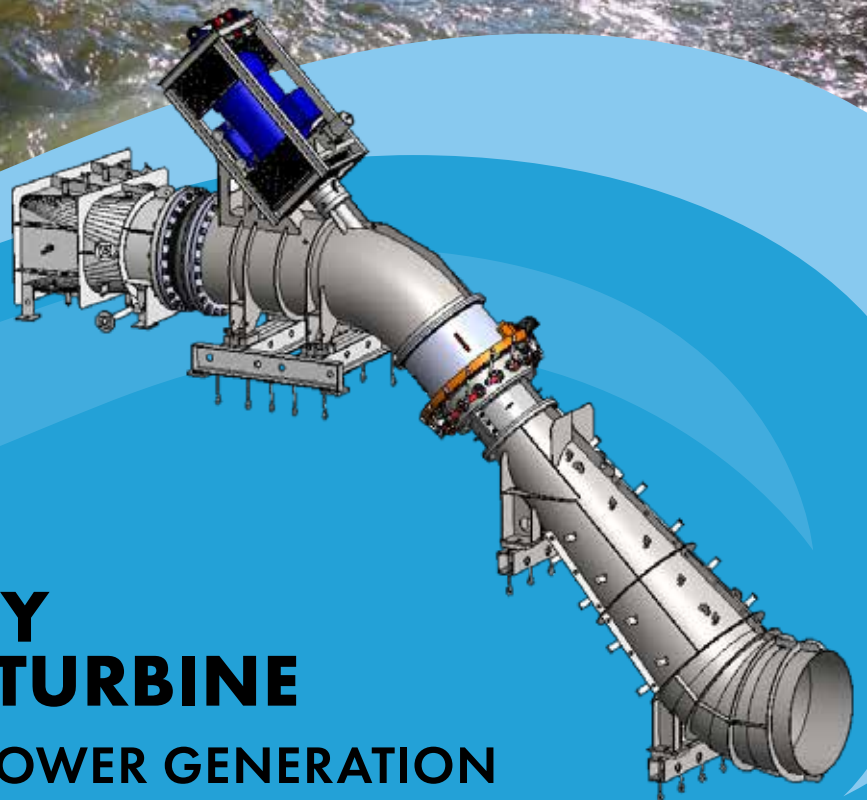




UHE

HIGH EFFICIENCY MICRO HYDRO-TURBINE

FOR ZERO EMISSION POWER GENERATION

HIGHEST EFFICIENCY MICRO HYDRO-TURBINE WITH LONG OPERATIONAL WEARLIFE

Today, hydro power production is the most efficient power source with no waste byproducts. And small-scale hydro-turbines are generally seen to be the biggest and most important component of a growing hydro-power industry. In Canada, many remote communities rely on diesel gen sets for power. These require costly maintenance, are noisy and inefficient compared with small hydro. A well designed, low-maintenance hydro site may be a better option if there is a nearby river.

Thordon Energy UHE

The UHE micro hydro-turbine is truly revolutionary in so many ways, that we really need to examine its construction to appreciate the benefits it brings. Considering hydro-turbine performance, the real parameter that makes a difference is efficiency.

The UHE turbine offers zero pollution with grease-free operation. The water path through the machine sees minimum flow resistance, making the UHE extremely quiet, however it's how much electricity that actually gets generated that is the true test.

COMMUNITY/BUSINESS BENEFITS

- Highest efficiency, lowest Total Ownership Costs
- Requires minimal attendance and maintenance
- Completely non-polluting
- Quiet operation, low noise

Highest Efficiency

Micro Hydro-Turbine on the Market

The UHE has no drive mechanism for the generator, so there are no mechanical efficiency losses. Belt drives and gearboxes are common with other turbines but the UHE is direct drive; so zero losses.

Next comes the electrical efficiency of the generator. Typical induction generators have inherent electrical losses. The Permanent Magnet (PM) generator in the UHE has the lowest internal electrical losses. Being able to control both the pitch of the turbine runner blades as well as the wicket gate angles gives us two modes of control to suit varying levels of head and flow.

The UHE100 offers three modes of control!

Turbine Operation: Controlled Power Output

A synchronous machine with an induction generator must turn at a certain speed to maintain line frequency; 50 or 60 cycles. If the water head falls for whatever reason, the conventional turbine will tend to slow down. However, that cannot be allowed to happen or the output frequency would also fall.

So, to maintain the power output, the wicket gates must open more to allow more water to reach the runner. If the runner blade pitch can be shifted, this will also be done, but in the process, the machine's output efficiency falls, since the grid governs the machine's speed.

While the turbine must continue to operate at the required speed, the energy output falls along with efficiency. If the head drops too much, the turbine will likely be taken off-line or the whole station shut down, until normal water head conditions can recover.

Under such a reduced head, the UHE control system sends a signal to the actuators controlling both wicket gates and runner blade angle adapting the machine to the new water conditions to maintain a high efficiency. The turbine will run slower and while it produces less power, because it is operating at higher efficiency, it produces a higher power output than the conventional turbine which must run at only one speed.

If water flow conditions due to variations in head occur often, then the UHE will produce more power over time than the typical synchronous turbine and that is reflected in an almost flat efficiency curve. Payback is what it is all about, and if the UHE micro hydro-turbine can produce more power per day or week or month, then it's going to be a better investment for the owner.



CUSTOMER FOCUSED TO QUICKLY MEET YOUR NEEDS

Quick and Responsive Service

It takes quality products to be globally successful in the hydro-turbine industry. It also takes high performance products and service to keep customers coming back.

Thordon Energy and its sister company, Thordon Bearings Inc. are geared to respond quickly to supply high performance micro hydro-turbine solutions.

Our products are manufactured to eliminate pollution and built to last!

Application Engineering

Our Thordon Energy engineers work closely with customers to provide innovative micro hydro-turbine system designs and solutions. We offer engineering support from concept through to execution and operation.

Manufacturing Quality

Thordon Energy is part of a family-owned company that operates a state-of-the-art polymer processing plant and new product development facilities in Burlington, Ontario, Canada, as well as a production and machining facility in Poland. A manufacturing facility in northern Ontario is planned.

We manufacture to ISO 9001 Quality System requirements.

Your Authorized Thordon Distributor

Head Office:

3225 Mainway, Burlington, Ontario
L7M 1A6 Canada

Tel: +1.905.335.1440 Fax: +1.905.335.4033

info@thordonbearings.com

Northern Ontario Facility:

433987 Hawn Drive, Temiskaming Shores, Ontario
POJ 1P0 Canada



TE UHE 06/2023
Printed in Canada

