

Easy Hydro



- ✓ **Theme:** Energy efficiency, energy generation, rural electrification
- ✓ **Solution:** Modular and off-the shelf available hydropower
- ✓ **Technology:** Centrifugal pumps used as turbines

easyhydrosolutions.com

Description of the venture

Easy Hydro is a spin-out based at Trinity College Dublin which originated from the experience of the Dŵr Uisce and REDAWN research projects. Its members have accumulated a unique expertise in the design, selection and installation of hydraulic pumps running as turbines for either energy recovery in water networks or small-scale hydropower schemes.

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Easy Hydro

Description of the technology

The low cost and simple maintenance needs make our devices the perfect choice for many Run-of-River sites to conveniently exploit previously untapped hydropower resources thus generating CO₂-free baseload renewable electricity. Our devices are particularly suited to sites where intakes and pipelines already exist as well as those where the intake and generation are co-located (e.g. bypassing a waterfall).

The type of turbine proposed is reliable and widely tested and consists of standard pumps running in reverse as turbines (PAT – Pumps As Turbines) which only cost a fraction of a conventional custom-made hydro turbine.

Features:

- ✓ The turbines consist of **standard water pumps** running in reverse mode
- ✓ **Certified with use with potable water**, can be supplied with parts in stainless steel, bronze or super duplex on request
- ✓ Range of power output from **1 to 500kW+**, range of flows from **15 to 3,600+ m³/h**, range of pressure from **1 to 300 bar**.

Benefits:

- ✓ **Low installation cost**, just a fraction than a conventional hydro turbine
- ✓ **Modular system**, plug and play
- ✓ **Easy maintenance**, same as a regular water pump
- ✓ **Fail-safe bypass installation**, hands-off operations

Value:

- ✓ **Exploiting an untapped hydropower potential**
- ✓ Generating baseload **electricity needs** without **CO₂ emissions**



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



RawMaterials

Examples of practical applications of Pumps As Turbines (PAT)



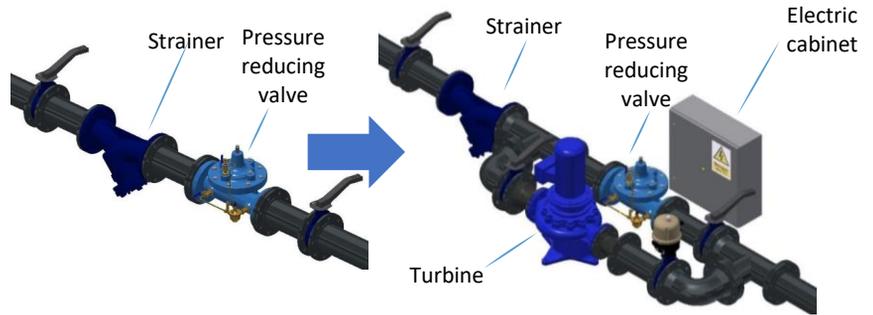
A Turbine at the inlet of a raw water storage tank in a rural Irish water scheme
 B Stainless steel turbine powering a 4 kW hydropower installation in Northern Wales
 C 30 kW energy recovery turbine at Boliden's Tara Mines in Ireland

The Easy Hydro turbines are suitable for Energy recovery from any pressurized water network:

- Drinking water networks
- Irrigation networks
- Skiing resorts relying on artificial snow
- Mining sector
- Industrial cooling systems

From this...

...to this



Application chart

The minimum required pressure corresponds to 1 bar or 10 m of water column, and the available flow rate must be equal or above 4 l/s. According to the pressure and flow parameters, these devices can produce power outputs ranging from a few kilowatts up to hundreds of kilowatts.

Head (m)

