TECH OFFER

In-Pipe Hydropower Generation

KEY INFORMATION

TECHNOLOGY CATEGORY:
Sustainability - Low Carbon Economy
Environment, Clean Air & Water - Mechanical Systems

TECHNOLOGY READINESS LEVEL (TRL): TRL4
COUNTRY: MALAYSIA
ID NUMBER: TO175465

OVERVIEW

Traditional hydropower systems require large-scale infrastructure, making them expensive and location dependent. This In-Pipe Hydropower Generation System offers an innovative, cost-effective, and eco-friendly alternative that captures excess water pressure within pipelines to generate electricity.

The system features multiple nozzles and a smart bypass mechanism that optimize power generation while maintaining stable water flow. It is designed to be scalable, modular, and compatible with existing municipal and industrial pipeline networks. Additionally, it can efficiently generate energy under varying flow conditions.

While the system is capable of producing significantly higher power, real-world testing has demonstrated an output of up to 60 kW, helping to reduce energy costs and provide a sustainable solution for water distribution networks.

The technology provider is seeking collaboration partners, including municipal and government agencies, industrial water users, agricultural and irrigation networks, and engineering and utility companies, to co-develop, test-bed, and deploy the In-Pipe

Hydropower System.

TECHNOLOGY FEATURES & SPECIFICATIONS

This pipeline hydropower system is designed to maximize energy conversion efficiency without disrupting water demand. Key features include:

Smart Bypass System - Redirects excess flow back into the turbine and main channel for continuous energy generation and stable water flow.

Multi-Nozzle Design - Optimized to adjust to varying water flow rates, ensuring a stable power output.

High Energy Efficiency - Converts up to 90% of kinetic energy into electricity.

Low Maintenance & Long Lifespan - Built for durability and minimal operational costs.

Modular Configuration - Adaptable to different pipe sizes and water flow conditions.

POTENTIAL APPLICATIONS

This hydropower technology is suitable for various industries and infrastructure systems:

Municipal Water Systems - Generates renewable energy from city water pipelines, reducing municipal electricity costs.

Industrial Pipelines - Provides sustainable power for factory operations without additional fuel costs.

Irrigation Networks - Generates power from agricultural water distribution systems, supporting rural electrification.

Water Treatment Plants - Reduces operational energy costs by utilizing existing water flow for power generation.

Off-Grid & Remote Locations - Supplies environmentally friendly electricity to rural and isolated communities.

UNIQUE VALUE PROPOSITION

This In-Pipe Hydropower System offers a game-changing approach to renewable energy, outperforming conventional methods in both efficiency and sustainability:

Cost-Effective & Energy Saving

- Captures up to 90% of kinetic energy and converts it into usable electricity.
- Reduces operational energy costs for municipalities and industries.

Eco-Friendly & Sustainable

- Produces zero carbon emissions, supporting global net-zero targets.
- Utilizes existing infrastructure, eliminating the need for new dams or reservoirs.

Adaptive & Scalable Technology

- Modular design allows easy integration into various pipeline sizes and networks.
- Adjustable nozzles enable efficient power output even under fluctuating water conditions.

Proven Performance & Market Viability

- Successfully tested with a major water authority, demonstrating power generation of up to 60 kW.
- Ready for commercial adoption in municipal, industrial, and agricultural sectors.

Low Maintenance & Long Lifespan

- Designed for durability with minimal operational costs.
- Significantly reducing maintenance cost by up to 40% compared to conventional hydropower systems.