

The power of precision

Why high-stability electromagnetic flow data matters in retrofit environments



Benefits at a glance

- Plug-and-play in tight spaces:** 0xDN installation (no straightrun piping) keeps retrofits on track and reduces footprint and rework
- More power from the same pipe:** Full-bore, low-loss path minimizes added head-loss – critical when every PSI translates into recoverable energy
- Rapid time-to-value:** Guided setup cut commissioning to about 20 minutes versus multi-day troubleshooting on previous flowmeters
- Trustworthy data for controls:** Stable, non-jumpy signal enables reliable flow-based control strategies and performance monitoring
- Lower project risk:** Global Endress+Hauser support (US and international) and clear order/shipping communication reduce surprises from procurement to startup
- Future-ready verification:** Built-in Heartbeat Technology can streamline in situ checks and reduce manual diagnostics as the fleet grows



Summary: Based in Portland, OR, USA, InPipe Energy is a smart water technology company that developed the HydroXS, an energy recovery system that integrates into new and existing water pipelines to convert excess hydraulic pressure into reliable, renewable electricity, helping utilities and communities increase revenue and generate power without building new generation assets. To maximize system efficiency, InPipe Energy requires flow measurement technology that minimizes pressure loss, installs easily in retrofit environments and delivers reliable, stable flow data. Additionally, the company needs remote support capabilities for their

installations, some of which are on a different continent.

Challenge: Existing flowmeters in the facility caused unnecessary drops in pressure, reducing energy recovery and power generation efficiency in InPipe Energy's systems. Many of these flowmeters required significant straight pipe runs upstream and downstream, increasing installation complexity, cost and space requirements, which is especially challenging in retrofit scenarios with existing infrastructure.

InPipe Energy makes the HydroXS energy recovery systems that convert



excess pressure in existing water pipelines into clean electricity. To make that business case work at scale, every project must thread the needle between minimal added pressure loss, tight retrofit footprints and fast, reliable commissioning, often with small field teams traveling to job sites in the US and abroad.

Up until recently, three pain points have undermined that formula.

First, several existing electromagnetic flowmeters introduced unnecessary pressure drops, directly eroding the hydraulic head that InPipe Energy wants to convert into power. In an energy recovery application where every PSI matters, even small losses compound to reduce generation efficiency.

Second, many flowmeters demanded long upstream and downstream straight piperuns. In brownfield galleries – where elbows, strainers, valves and legacy pipework already fill the envelope – those straight run rules can force re-piping, enlarge the

footprint and even jeopardize a retrofit's feasibility when space simply doesn't exist.

Third, InPipe Energy's engineers faced OxDN device challenges from other vendors that delivered jumpy, unstable signals and required days of field troubleshooting and grounding adjustments. The net effect: delayed startups, contingency flowmeters kept on hand for emergency purposes and added unnecessary costs. Another requirement sat in the background: verifiable performance and accessible support. The team wanted the ability, now and in the future, to confirm the flowmeter's health in situ as well as rely on local expertise when projects take them overseas. Given recent work in Thailand and upcoming sites like Tualatin, Oregon, global service coverage is more than a convenience – it is a risk reducer for a small company running critical schedules sometimes far from home.

Our solution: To remove those constraints, InPipe Energy adopted Endress+Hauser's Proline Promag W 10

electromagnetic flowmeter configured for OxDN installation – a full-bore electromagnetic flowmeter that requires no upstream or downstream straight piping and can be mounted directly after elbows, strainers or valves without compromising signal quality. Having that capability directly addressed the main retrofit challenge: projects are no longer dependent on the availability of several diameters of straight pipe for installation.

In one Thailand deployment, late-stage upstream additions would have invalidated a conventional straight run spec – the OxDN Proline Promag W 10 preserved the project without redesign, rework or timeline shock.

Equally important, the full-bore flow path removed the measurement bottleneck that had been quietly taxing InPipe's energy balance. Because the flowmeter does not reduce the internal diameter, it avoids the velocity increases and added head-loss common to narrowed sections, therefore protecting the

pressure budget that feeds the turbine. For InPipe Energy, that translates to more electricity from the same pipe – a direct lift to the company’s central KPI of maximizing net power generation.

In addition to solving installation challenges, the Proline Promag W 10 significantly streamlined commissioning. Using on-meter prompts and standard grounding practices, InPipe Energy’s team was able to bring the flowmeter online in about 20 minutes – a significant improvement over the multi-day tuning cycles required with previous OxDN offerings. This rapid, predictable startup reduces travel, labor and schedule risk and eliminates the need to carry back-up flowmeters as contingency. The stable, dependable signal at startup also gives InPipe Energy greater confidence when planning flow-based control strategies at future sites.

Results: The selection offered two layers of assurance. Endress+Hauser’s global support network meant local help was available worldwide, critical peace of mind for a small team on a distant site with installations stretching as far as into Thailand. Furthermore, built-in Heartbeat Technology provides a path to embedded verification and diagnostics when InPipe Energy is ready to formalize in situ health checks and reduce manual spot testing. Even before using Heartbeat Technology, the mere availability of a structured verification approach strengthened the measurement plan for a growing fleet.

By adopting Endress+Hauser’s Proline Promag W 10 electromagnetic flowmeter with OxDN, InPipe Energy overcame critical installation and performance barriers that previously slowed projects, reduced energy recovery efficiency and strained field resources. The full-bore, zero straight run flowmeter enabled faster installs,

stable flow data and higher energy conversion potential, reinforcing InPipe Energy’s mission to deliver renewable hydropower from existing water pipelines.

Commissioning experience proved to be a decisive differentiator. Using on-meter prompts and standard grounding practices, the team brought Endress+Hauser’s Proline Promag W 10 online in about 20 minutes, a stark contrast to the multi-day tuning cycles they had endured with prior OxDN offerings. This not only cuts travel and labor, but it also removes a persistent schedule risk that forced InPipe Energy to carry back-up flowmeters and contingency plans. The qualitative difference at startup continued in operation: the signal from the installed Proline Promag W 10 was stable and dependable, enabling InPipe Energy to plan for flow-based control strategies at future sites with far greater confidence than before.

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