



The Flow Conditioning Device: Installation Point, Mechanism, and Meter Accuracy

Water Flow Innovations
LLC
Flow Conditioning Device
(FCD)
waterflowinnovations.com

INSTALLATION POINT & MECHANISM

Installed Just After the Meter — Ahead of Every Validated Process System

The Flow Conditioning Device (FCD) installs between two pipe joints on the main water line immediately after your water meter — ahead of your facility's internal distribution to wash system supply, float-sink separation tank makeup, pellet cooling troughs, and utility wash-down lines. Each FCD is custom-built to the facility's exact specifications — pipe size, operating water pressure, and existing PRV configuration — and may include an integral check valve depending on the installation requirements. It requires no power and is installed by a licensed plumber or mechanical contractor with water off for approximately one hour.

Mechanically, the FCD creates a slight static back-pressure that extends back through the meter, reducing the air, gas, and turbulence that form during demand events and delivering a laminar-like flow profile through the measurement chamber. Municipal meters register volumetric displacement — entrained air and turbulent flow register as billable volume. Pressure loss through the device is under 0.8 psi across all flow conditions; downstream pressures, temperatures, and flow rates are effectively unchanged. Because the FCD sits just after the meter, it is outside wash chemistry, separation performance, and pellet quality parameters — no process change is required. Complete technical documentation is provided to support your internal change control review.

DIAGNOSTIC CHECKLIST — SIX SIGNS YOUR METER IS OVER-READING

- ☐ **Cost per ton recycled above benchmarks**
Water cost per ton of recycled plastic persistently exceeds industry benchmarks.
- ☐ **Intake exceeds wash and trough accounting**
Metered intake exceeds documented wash system and cooling trough consumption.
- ☐ **Disproportionate high-throughput spikes**
Bills climb during high-throughput periods beyond proportional process demand.
- ☐ **NPDES balance shows intake gaps**
Permit water balances show unexplained intake-to-discharge gaps on the intake side.
- ☐ **Intensity above brand owner targets**
Water intensity per ton runs above brand owner sustainability targets despite recycling investments.
- ☐ **Over-reading persists on makeup**
Internal water recycling reduces intake — but over-reading persists on the makeup connection that remains.

WHERE OVER-READING HITS THE OPERATION

- Cost per Ton & Mill Economics**
Inflated intake flows directly into cost per ton — billed on both the water and sewer side of a water-intensive wash process.
- Recycling ROI Clarity**
Internal recycling investments look weaker than they are when benchmarked against inflated makeup intake — correction reveals true performance.
- NPDES & Pretreatment Balance**
Permit water balances built on metered intake carry the over-read as an unexplained gap — correction closes the intake side.
- Brand Owner Sustainability Data**
rPET and recycled-content buyers benchmark supplier water intensity — over-reading overstates yours against their targets.

ENGINEERING Q&A

Q: Will the FCD affect wash performance, separation tanks, or pellet quality?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of mill distribution. Wash pressure and chemistry, float-sink operation, trough cooling, and pellet quality are effectively unchanged.

Q: We recycle most of our water — does the FCD still pay?

A: Yes. Over-reading occurs on the municipal makeup connection, and makeup demand cycling against recycling system levels creates exactly the events that entrain air at the meter. Whatever volume you still buy, the meter should count it accurately.

Q: How does the FCD affect our NPDES and pretreatment documentation?

A: The permit water balance improves — with intake accurately metered, the intake-to-discharge balance closes without unexplained gaps. Surcharge volume calculations based on intake also drop. Typically no permit modification is required; confirm with your compliance team.

Q: Can documented savings support brand owner sustainability requirements?

A: Yes, as cost documentation. Before-and-after utility bills verify the corrected billing. Because the FCD corrects the meter reading rather than reducing water use, confirm with your sustainability team how to report it for brand owner scorecards, CDP disclosure, and recycled-content certification sustainability data.

Q: How quickly do savings appear?

A: The meter reads accurately immediately after installation. Savings appear on the next full water and sewer billing cycle — no ramp-up period. 90% of installed customers reach full return on investment in under 12 months.

ENGAGEMENT PROCESS — FOUR STEPS

From Analysis to Verified Bill Reduction

1

Free Savings Analysis

We review your water and sewer bills and facility demand profile — no cost, no obligation.

2

Documented Projection

You receive a written savings projection specific to your facility before any commitment.

3

FCD Installation

Licensed plumber or mechanical contractor installs immediately after the meter — water off approximately one hour.

4

Verified Bill Reduction

Before-and-after bill comparison verifies the reduction on your next billing cycles.

GUARANTEE & WARRANTY TERMS

6-Month Money-Back Guarantee

If you're not satisfied within 6 months of installation, the FCD purchase is fully refunded — no questions asked. Installation labor is non-refundable.

Lifetime Transferable Warranty

The FCD carries a lifetime warranty, transferable to the new building owner if the facility changes hands (a transfer fee applies).

DEVICE SPECIFICATIONS

Construction, Certification & Installation

Custom-built to each facility's specifications — pipe size, operating pressure, PRV configuration · 316L stainless steel construction; titanium and specialty alloys available by special order for medical and other specialized applications · Configuration may include an integral check valve per installation requirements · No power required · Under 0.8 psi pressure loss · Certifications: IAPMO, NSF/ANSI/CAN 61, KIWA, GMP, SQF · Installed by licensed plumber or mechanical contractor

Regulatory & Standards References: EPA NPDES & POTW Pretreatment · Association of Plastic Recyclers · CDP