



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 stock preparation dilution, shower and felt cleaning water, boiler feed makeup, cooling and sealing water, and converting and finishing demand. 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 wet-end chemistry, machine operating parameters, and discharge permit conditions — 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

☐ **Water cost per ton above benchmarks**

Water and sewer cost per ton persistently exceeds mill comparables and TAPPI benchmarks.

☐ **Sewer and discharge fees track intake**

Sewer and treatment charges billed from metered intake are inflated with the water bill.

☐ **Intake won't close the mill water balance**

Metered makeup exceeds shower, dilution, and boiler demand models.

☐ **Audits confirmed usage, not the source**

Mill audits confirmed high usage without finding leaks or a process cause.

☐ **Pressure variability at pump starts**

Shower headers and stock pumps produce visible pressure swings — entrained air registers as billable volume.

☐ **Makeup treated as fixed mill overhead**

Municipal makeup is budgeted as an uncontrollable cost rather than a correctable one.

WHERE OVER-READING HITS THE OPERATION

Cost per Ton & Mill Economics

Inflated makeup intake flows directly into cost per ton — and sewer billed from the same meter doubles the impact of every over-read gallon.

Water Balance & Closure Studies

Over-reading distorts the mill water balance that closure and reuse studies depend on — correction gives engineering true numbers.

Shower & Stock Pump Demand Events

Shower headers, stock pumps, and boiler feed cycling create the events that entrain air at the meter — around the clock.

Sustainability Reporting Data

Corrected intake gives EHS accurate water-intensity data for AF&PA and sustainability reporting — savings you can document.

ENGINEERING Q&A

Q: Will the FCD affect shower pressure, stock dilution, or any machine parameter?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs immediately after the municipal meter, ahead of all mill distribution. Shower pressures, dilution flows, and every machine parameter are unchanged.

Q: Most of our water is river-sourced and recycled — does the FCD still apply?

A: Yes. The FCD corrects the municipal meter on the purchased makeup and facility supply you're billed for. Raw sourcing and whitewater recycling reduce how much you buy; the FCD ensures the volume you do buy is measured accurately.

Q: How does the FCD affect sewer and treatment charges?

A: Sewer and many treatment charges are calculated from metered intake. When the meter over-reads makeup demand, both are inflated. After installation, intake reflects actual consumption, reducing both line items.

Q: How do we estimate savings before committing?

A: Use the Water & Sewer Bill Savings Calculator at waterflowinnovations.com for an instant projection, then request the free savings analysis — a documented, mill-specific projection suitable for a utilities engineering package.

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: TAPPI · AF&PA · NCASI · EPA NPDES