



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 reactor jacket and cooling water systems, cooling tower makeup, boiler feed, scrubber makeup, and utility water headers. 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 process safety management, batch records, and operating procedure scope — typically no process change notification or MOC beyond a standard utility-side review is required; confirm with your compliance team. Complete technical documentation is provided to support your internal change control review.

DIAGNOSTIC CHECKLIST — SIX SIGNS YOUR METER IS OVER-READING

☐ Cost per unit above site targets

Water cost per unit of production persistently exceeds site engineering targets.

☐ Input doesn't close against water balance

Site water balance shows metered input exceeding identified consumption and discharge.

☐ Sewer bill disproportionate to discharge

Sewer charges tracking municipal intake outpace actual pretreatment discharge volume.

☐ Spikes during reactor campaigns

Water costs climb during high-throughput reactor campaigns beyond proportional demand.

☐ Pressure swings during reactor cycles

Observable supply header pressure swings during reactor cooling cycles — the demand events that entrain air at the meter.

☐ Water accepted as uncontrollable

Municipal water cost is treated as an uncontrollable variable rather than a managed input.

WHERE OVER-READING HITS THE OPERATION

Unit Cost & Site Economics

Inflated intake flows directly into unit production cost baselines — billed on both the water and sewer side.

Pretreatment & POTW Compliance

POTW permits and surcharges under EPA pretreatment standards are calculated from metered intake — inflated readings inflate reported discharge.

Site Water Balance Integrity

Water balance closure is a routine engineering expectation — the over-read is often the unexplained intake-side residual.

Operations & Engineering

Cooling optimization, leak detection, and utility efficiency projects start from a meter reading that includes volume that never arrived.

ENGINEERING Q&A

Q: Will the FCD affect cooling water pressure or process water system performance?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of your internal distribution. Reactor cooling flow, tower makeup, boiler feed, and scrubber supply are effectively unchanged — the device does not interact with any process system.

Q: Does installation require a full management-of-change process?

A: The FCD is a utility device installed just after the municipal meter, ahead of all process systems. Most sites handle it as a standard utility-side MOC. Complete technical documentation is provided to support whatever review your PSM program requires.

Q: How does the FCD interact with our POTW pretreatment permit?

A: Surcharges are typically calculated from metered intake under EPA pretreatment standards. When the meter over-reads reactor cooling demand, reported discharge is inflated. After installation, intake reflects actual consumption, reducing surcharge calculations.

Q: Can documented savings support corporate sustainability reporting?

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 CDP water disclosure, ISO 14001 data, and corporate scorecards.

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 · CDP Water Security Disclosure