



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 plate washing lines, formation tank cooling, acid dilution water supply, scrubber makeup, and wash-down 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 formation parameters, acid handling procedures, and environmental permit operating 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

☐ **Spikes on high-production days**

Bills climb on high-production days beyond proportional process demand.

☐ **Sewer exceeds actual discharge**

Sewer charges calculated from metered intake outpace documented pretreatment discharge.

☐ **Intake doesn't reconcile with records**

Metered intake exceeds process water records by a persistent margin.

☐ **Cost per unit rising without rate increase**

Water cost per unit climbs year over year with no utility rate change.

☐ **Water balance gaps in NPDES documentation**

Permit water balances show unexplained intake-to-discharge gaps on the intake side.

☐ **Water treated as fixed cost**

Water is accepted as a fixed cost with no reduction path.

WHERE OVER-READING HITS THE OPERATION

Cost per Unit & Plant Economics

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

Pretreatment & POTW Compliance

Surcharges under EPA pretreatment standards are calculated from metered intake — inflated readings inflate reported discharge volume.

NPDES Water Balance Integrity

Permit balances built on metered intake carry the over-read as an unexplained gap — correction closes the intake side.

Operations & Engineering

Formation cooling accounting, rinse optimization, and efficiency projects start from a meter reading that includes volume that never arrived.

ENGINEERING Q&A

Q: Will the FCD affect plate washing, formation tank cooling, or acid dilution delivery?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of plant distribution. Wash line pressure, formation cooling flow, dilution water delivery, and scrubber makeup are effectively unchanged.

Q: Why do high-production days spike beyond actual demand?

A: Simultaneous wash line and formation cooling draws create the highest-velocity demand events of the day at the supply meter — generating air and turbulence billed as volume. Part of the spike is water that never arrived.

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

A: Surcharges are typically calculated from metered intake. After installation, intake reflects actual consumption, reducing surcharge volume calculations and closing the intake side of the permit water balance. Typically no permit modification is required; confirm with your compliance team.

Q: Can documented savings support environmental 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 corporate environmental reporting and CDP disclosure.

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 · OSHA · CDP