



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 boiler feed and steam generation makeup, cooling tower makeup, desalter wash water, firewater system fill, and unit wash-down 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 unit operating envelopes, PSM-covered processes, 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

- ☐ **Utility water cost per barrel rising**
Water cost per barrel climbs with no change in throughput or configuration.
- ☐ **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 water balance**
Metered makeup exceeds cooling, boiler, and desalter demand models.
- ☐ **Audits confirmed usage, not the source**
Utility audits confirmed high usage without finding leaks or an operating cause.
- ☐ **Pressure variability at makeup draw**
Cooling tower and boiler makeup draw produce visible pressure swings — entrained air registers as billable volume.
- ☐ **Makeup water treated as fixed overhead**
Municipal makeup is budgeted as an uncontrollable utility cost rather than a correctable one.

WHERE OVER-READING HITS THE OPERATION

- Utility Cost per Barrel**
Inflated makeup intake flows directly into utility cost per barrel — and sewer billed from the same meter doubles the impact of every over-read gallon.
- Water Balance & Pinch Analysis**
Over-reading distorts the site water balance that reuse and pinch studies depend on — correction gives engineering true numbers.
- Makeup Demand Events**
Cooling tower level calls, boiler feed draw, and desalter demand create exactly the events that entrain air at the meter — around the clock.
- Outside the PSM Boundary**
The FCD installs immediately after the municipal meter, ahead of all process units — meter correction with no effect on PSM-covered systems.

ENGINEERING Q&A

Q: Will the FCD affect boiler feed, cooling tower makeup, or any unit operating 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 site distribution. Makeup flows, unit pressures, temperatures, and every operating parameter are unchanged.

Q: Does installation touch anything inside our PSM or MOC boundary?

A: The FCD installs immediately after the municipal supply meter, outside process units and PSM-covered systems. Complete technical documentation is provided to support your management of change review — most sites process it as a main-line utility modification.

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, each line item is inflated. After installation, intake reflects actual consumption, reducing the billed basis.

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, site-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: EPA NPDES · OSHA PSM (29 CFR 1910.119) · American Petroleum Institute (API)