



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 aqueous cleaning systems, anodizing rinse headers, DI/RO feed, test cell cooling circuits, and autoclave systems. 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 generally outside the scope of AS9100 quality management and NADCAP special process accreditation — typically no process change notification or re-qualification 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

☐ Water cost per unit above engineering targets

Cost per unit or per lot persistently exceeds facility engineering baselines despite conservation measures.

☐ Metered intake doesn't close against water balance

Site water balance studies show metered intake exceeding the sum of identified consumption and discharge.

☐ POTW surcharge disproportionate to actual discharge

Sewer surcharges calculated from metered intake outpace what your pretreatment discharge volume supports.

☐ Costs spike with production or test schedules

Water charges climb during high-production periods or engine test campaigns beyond proportional usage.

☐ Pressure variation at the supply header

Observable pressure swings during anodizing line startups or DI system cycling — the same demand events that entrain air at the meter.

☐ Water treated as uncontrollable overhead

Water is accepted as fixed process overhead rather than a measured, controllable input — over-reading hides in that assumption.

WHERE OVER-READING HITS THE OPERATION

Production Cost & Program Budget

Inflated intake flows directly into unit cost and program budget baselines — every over-read gallon is billed on both the water and sewer side.

Regulatory & Pretreatment Compliance

POTW permits and surcharges under EPA categorical pretreatment standards (40 CFR Parts 413, 433) are calculated from metered intake — inflated readings inflate reported discharge.

Quality & Certification Documentation

NADCAP environmental audit data and AS9100 environmental records reference metered intake — over-reading overstates water intensity in prime contractor scorecards.

Operations & Engineering

Water balance studies, leak detection programs, and efficiency projects all start from a meter reading that includes volume that never arrived.

ENGINEERING Q&A

Q: Will the FCD affect cleaning system performance, anodizing bath chemistry, or test cell cooling capacity?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and the device installs ahead of your internal distribution. Downstream pressures, temperatures, flow rates, rinse effectiveness, process chemistry, and cooling capacity are unchanged — the FCD improves flow stability at the meter and does not interact with any downstream process system.

Q: Does the FCD require AS9100 record updates or NADCAP documentation changes?

A: No. As a device installed just after the municipal meter, it generally sits outside AS9100 QMS and NADCAP special process scope. Typically no process change notification or re-qualification is required; confirm with your compliance team. Full technical documentation is provided for your internal facility change control review.

Q: How does the FCD interact with our POTW pretreatment permit and EPA categorical compliance?

A: Sewer surcharges are typically calculated from metered municipal intake under EPA categorical pretreatment standards (40 CFR Parts 413, 433 for metal finishing). When the meter over-reads, reported intake — and therefore surcharge volume — is inflated. After installation, metered intake reflects actual consumption, reducing surcharge calculations at your next permit review and strengthening water balance documentation.

Q: Can documented savings support defense contract environmental reporting and sustainability commitments?

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 DFARS environmental reporting, CDP water security disclosure, ISO 14001 water use data, and prime contractor sustainability 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: AS9100 Quality Management · NADCAP Special Process Accreditation · EPA Metal Finishing Effluent Guidelines (40 CFR 433) · EPA NPDES Permit Program · CDP Water Security Disclosure · Aerospace Industries Association

FREE SAVINGS ESTIMATE

Instant estimate — takes 30 seconds, no contact info required.

waterflowinnovations.com/water-bill-savings-calculator

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CERTIFICATIONS

IAPMO NSF/ANSI/CAN 61 KIWA GMP SQF

316L Stainless Steel · Made in USA
Under 0.8 psi pressure loss
Lifetime Transferable Warranty