

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 paint shop pretreatment and wash decks, cooling tower makeup, press and weld cooling loops, and DI/RO feed 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 outside IATF 16949 quality scope and paint process control documentation — 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

☐ Cost per vehicle above plant benchmarks

Water cost per vehicle or unit of production persistently exceeds corporate plant benchmarks.

☐ Intake doesn't close against water balance

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

☐ Sewer surcharge seems disproportionate

Surcharges tracking municipal intake outpace what actual pretreatment discharge supports.

☐ Spikes during high-production weeks

Water costs climb during high-production weeks without any rate increase.

☐ Pressure instability at paint shop startup

Observable supply header pressure swings during paint shop and pretreatment startups — the demand events that entrain air at the meter.

☐ Water reported as plant overhead

Water and sewer are reported as uncontrollable overhead rather than managed inputs.

WHERE OVER-READING HITS THE OPERATION

Cost per Vehicle & Plant Budget

Inflated intake flows directly into cost-per-vehicle metrics and plant utility budgets — 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.

ISO 14001 & Corporate Water Data

ISO 14001 environmental data and corporate CDP disclosure reference metered intake — over-reading overstates plant water intensity.

Operations & Engineering

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

ENGINEERING Q&A

Q: Will the FCD affect paint shop wash pressure, cooling tower makeup, or press hydraulic cooling?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of your internal distribution. Paint shop pressure, pretreatment chemistry, cooling makeup, and press cooling loops are effectively unchanged.

Q: Does installation require IATF 16949 or process documentation changes?

A: No. As a device installed just after the municipal meter, the FCD generally sits outside quality management and paint process control scope. Full technical documentation is provided for your plant change control review.

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 paint shop and cooling demand, reported discharge is inflated. After installation, intake reflects actual consumption, reducing surcharges.

Q: Can documented savings support ISO 14001 and 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 ISO 14001 data, CDP disclosure, 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 · ISO 14001 · CDP Water Security Disclosure