



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 rinse tank fill lines, plating bath makeup 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 bath chemistry, rinse criteria, and pretreatment 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

☐ **Cost per rack or barrel above benchmarks**

Water cost per rack or barrel load persistently exceeds shop benchmarks.

☐ **Increases during high-throughput weeks**

Bills climb during high-throughput weeks without any rate change.

☐ **Surcharge disproportionate to rinse discharge**

Sewer surcharges calculated from metered intake outpace actual rinse water discharge.

☐ **Pressure drops as rinse tanks fill together**

Observable supply pressure drops when multiple rinse tanks fill simultaneously — the demand events that entrain air at the meter.

☐ **Costs rising faster than throughput**

Water costs climb faster than parts throughput year over year.

☐ **Water treated as fixed overhead**

Water and sewer are accepted as fixed overhead with no reduction path.

WHERE OVER-READING HITS THE OPERATION

Cost per Load & Shop Economics

Inflated intake flows directly into per-load cost baselines — billed on both the water and sewer side of a rinse-intensive process.

Pretreatment & 40 CFR 413/433

POTW surcharges under EPA electroplating and metal finishing standards (40 CFR Parts 413, 433) are calculated from metered intake.

Rinse Optimization Clarity

Counterflow rinse and conductivity-control investments look weaker than they are against inflated intake — correction reveals true performance.

Operations & Engineering

Water balance, drag-out reduction, and BMP documentation start from a meter reading that includes volume that never arrived.

ENGINEERING Q&A

Q: Will the FCD affect rinse tank fill pressure or plating bath makeup supply?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of shop distribution. Rinse fill rates, bath makeup delivery, and scrubber supply are effectively unchanged — bath chemistry is untouched.

Q: Why do simultaneous rinse tank fills matter to the bill?

A: Multiple tanks filling at once create the highest-velocity demand events the shop meter sees — generating air and turbulence billed as volume. It happens every production cycle, compounding across the year.

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

A: Surcharges under 40 CFR Parts 413/433 are typically calculated from metered intake. After installation, intake reflects actual consumption, reducing surcharge volume calculations and strengthening water balance documentation. Typically no permit modification is required; confirm with your compliance team.

Q: Can documented savings support compliance and sustainability documentation?

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 BMP documentation, ISO 14001 data, and customer 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 40 CFR Parts 413 & 433 · NPDES & POTW Pretreatment · ISO 14001