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 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 lab's internal distribution to fining and polishing slurry systems, water-cooled edging stations, and RO/DI final-rinse makeup water. 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 small, controlled back-pressure that extends back through the meter. During demand surges, pressure inside the meter drops, dissolved gas comes out of solution, and vapor forms; holding pressure up through the meter means far less gas and vapor form and are counted as water. Municipal meters register volume, so gas and vapor that form inside the meter register as billable water. Pressure loss through the device is under 0.8 psi across all flow conditions; downstream pressures, temperatures, and flow rates see no practical change. Because the FCD sits just after the meter, ahead of all process systems, it is outside generating, fining, polishing, edging, and coating operations — 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

- ☐ **Water cost per job above targets**
  Water and sewer cost per lens job produced persistently exceeds lab comparables.
- ☐ **Sewer moves in lockstep with water**
  Sewer charges follow the inflated meter reading — the over-read is billed twice.
- ☐ **Intake exceeds process math**
  Metered volume won't reconcile against fining, polishing, edging, and RO/DI demand.
- ☐ **Pressure swings at station startup**
  Edging and RO/DI systems produce visible pressure swings — gas and vapor that form inside the meter register as billable volume.
- ☐ **Audits confirmed usage, not the source**
  Lab audits confirmed high usage without finding leaks or a process cause.
- ☐ **Water treated as cost of production**
  Water is carried as a fixed production cost rather than a correctable line item.

WHERE OVER-READING HITS THE OPERATION

Cost per Job & Lab Economics

Inflated intake flows into cost per lens job produced — with sewer billed from the same meter, every over-read gallon is billed twice.

Fining, Edging & RO/DI Demand Events

Fining/polishing cycling, water-cooled edging, and RO/DI makeup draws create exactly the events that drop pressure inside the meter — every shift.

The Audit That Finds Nothing

Lab audits count water that arrives; over-read volume never arrived and is invisible to them — the source is the flow conditions at the meter.

Production Process Isolation

Generating, fining, polishing, and edging run downstream of the meter — the FCD corrects billing accuracy with no effect on production schedules or optical quality parameters.

ENGINEERING Q&A

Q: Will the FCD affect fining, polishing, edging, or RO/DI water delivery?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs immediately after the meter, ahead of lab distribution. Fining/polishing water delivery, edging wheel coolant flow, RO/DI feed, and other systems see no practical change.

Q: How does the FCD affect sewer charges?

A: Sewer charges are typically calculated from metered intake. When the meter over-reads fining, edging, and RO/DI demand, both charges are inflated. After installation, intake reflects actual consumption, reducing both line items.

Q: Does the FCD affect our RO/DI water treatment system?

A: No. The FCD corrects the flow conditions at your incoming municipal meter — it does not treat, filter, or otherwise alter water composition, and does not connect to or modify your RO/DI system. An accurately metered supply gives your team a truer baseline for treatment capacity and effluent compliance planning.

Q: How do I estimate savings for the lab 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, lab-specific projection suitable for an operations package.

Q: How quickly do savings appear?

A: The correction starts at installation, and savings start on the next full water and sewer billing cycle. 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, starting on the next full billing cycle.

RESULTS & TERMS

Documented Results

Typically up to a 30% reduction in water and sewer costs (46% highest documented, a rare case). 90% of customers reach full ROI in under 12 months.

Guarantee & Warranty

Current guarantee and warranty terms are available from Water Flow Innovations: waterflowinnovations.com/fcd-guarantee-warranty-terms

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: The Vision Council · Optical Laboratories Association (OLA) · ANSI Z80.1 Ophthalmic Standards

FREE SAVINGS ESTIMATE

Models your building's 24-hour flow profile. No contact info required.
waterflowinnovations.com/water-bill-savings-calculator

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CERTIFICATIONS

IAPMO · NSF/ANSI/CAN 61 · KIWA · GMP · SQF

Patented (AquaFlow Technologies, Inc.)
316L Stainless Steel · Made in USA
Under 0.8 psi pressure loss
Typically up to 30% savings · 46% highest documented