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FLOTATION TECHNOLOGIES

CAST Technology Overview

Capillary Action Separation Technology

Proven pretreatment that extends the life of every treatment train.



Non-confidential · for general distribution · August 2026

What CAST is

Capillary Action Separation Technology (CAST) is a modular water pretreatment unit that removes fine suspended solids, oils, organics, and metals from challenging water and conditions that water for high-efficiency downstream polishing. It installs ahead of a system's existing or planned treatment — including reverse osmosis, ion exchange, and membrane systems — and improves the performance and operating economics of whatever process sits behind it. CAST is delivered as a service and is always proven first on the client's own water in a paid pilot.

How it works

Water first passes through CAST vessels whose hydrophilic surfaces drive capillary separation, coalescing and lifting fine particles, oils, and interfering organics at low energy and removing the fouling precursors first. Selective ion-exchange media then capture target constituents of concern — strong-base anion resins for organics and PFAS, cation resins for metals — and an optional granular activated carbon stage provides final polishing. Integrated sensors and software monitor flow, pressure, breakthrough, and

effluent quality across the train. The treatment train is matched to the site water rather than sold as a fixed package.

Markets served

Municipal and public water

PFAS removal, reverse-osmosis and membrane pretreatment, and reduction of hardness and dissolved solids for constrained or declining source water.

Federal and defense

PFAS treatment at Department of Defense and federal facilities subject to Superfund and drinking-water requirements.

Oil and gas

Produced-water and flowback treatment and reuse, reducing disposal volume and enabling recycling.

Industrial and manufacturing

Process and cooling-water conditioning, reverse-osmosis reject recovery, metals capture, discharge reduction, and water reuse. Landfill leachate pretreatment is a further fit.

Reference technical envelope

Parameter	Reference value
Throughput per unit	150 to 200 GPM per unit; capacity scales by adding units
Total suspended solids removed	90–99% (expected; site-specific)
Turbidity	to ~1–3 NTU
Oil and grease removed (when present)	over 90%

Parameter	Reference value
Chemical oxygen demand (hydrophobic fraction)	30–60% reduction
Single-pass TDS reduction	approximately 30%, water-chemistry dependent
Membrane feed quality	SDI ₁₅ below 3
Coagulant / chemical dosing	10–20% less than conventional flotation
Downstream ion-exchange resin life (PFAS pretreatment)	extended several-fold
Water recovery (with downstream high-recovery RO)	from ~75–80% toward 90–95%
Footprint	modular ConEx box or skid; field-deployable, no building required
Monitoring	integrated sensors and software (flow, pressure, breakthrough, effluent quality)

Values are expected, bench- and pilot-based ranges and are site-specific; confirmed per water matrix in a pilot. Dissolved salts pass through CAST and are addressed downstream.

Deployment model

Flotation delivers CAST as a service. Units are modular and field-deployable, scale by adding capacity, and are provided on a lease-plus-usage basis that shifts spending from the capital budget to the operating budget. This supports rapid deployment, pilots, and phased or distributed projects without a large upfront purchase.

Proof

In independent third-party bench-scale column testing, adding CAST ahead of ion exchange extended run length more than eightfold before breakthrough — delaying PFOS breakthrough past the 4 ng/L drinking-water limit — while reducing column fouling. Longer runs cut media replacement, the single largest recurring cost in PFAS treatment. In a

separate supervised field pilot on PFAS-impacted groundwater, CAST pretreatment reduced 42 PFAS compounds to non-detect under continuous third-party monitoring and precipitated manganese out of the stream.

Status

CAST is in active deployment readiness and is the subject of United States non-provisional and Patent Cooperation Treaty applications filed February 19, 2026. Paid pilots are underway across municipal and industrial settings, with independent third-party performance testing completed.

Contact

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CAPILLARY ACTION SEPARATION TECHNOLOGY

Proven pretreatment that extends the life of every treatment train. Modular units, delivered as a service, pilot-first.

STRATEGIC ADVISORS



Data evaluation & verification — not an investor in Flotation or CAST.

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