



WATER TREATMENT SYSTEM

Online Hot-Alkali Wastewater Recovery & Reuse for Plastic Recycling Plants

A Water Treatment System for plastic recycling is the engineering backbone of any sustainable, cost-effective, and regulator-compliant plastic washing operation. Every PET bottle washing line and hot-alkali plastic-cleaning workflow generates large volumes of wastewater containing suspended solids, dissolved organics, residual chemical agents, oils, glues, and label residues. Without a properly engineered water-treatment system, this wastewater becomes a triple liability: rising fresh-water consumption, escalating chemical costs, and growing exposure to environmental discharge regulations. With the right system, that same wastewater becomes a recoverable resource — 80% or more of the hot-alkali water can be filtered, sedimented, and returned directly to the cleaning line.

Torontech offers a dedicated range of Online Hot-Alkali Washer Water Recycling Treatment & Reuse Systems engineered specifically for plastic-recycling plants. Two purpose-built configurations cover every operational scale. The TT-WTS (3 m³/h) is the compact precipitation-and-filtration system designed for small-to-medium recycling lines — featuring a circular vibrating screen, vertical-flow sedimentation, SLCDT-3000 sedimentation tower and RST-3000 hot-water tower in SUS304 stainless steel, ZQX-30 filters, a 630 filter press, and automatic pH dosing for stable hot-alkali wash chemistry. The TT-WTS20 (20 m³/h) is the industrial-scale system engineered for high-throughput PET bottle washing plants — combining filtration, sedimentation, and dissolved air flotation (DAF) into a single L11000 × W2000 × H3500 mm installation, equipped with a DMF3224-1A high-speed quartz-sand filter, dual 5.5 kW vertical centrifugal pumps with automated level control, dosing systems for reagent injection, and automatic periodic mud discharge.

Both systems are engineered around the same core philosophy: install the water-treatment unit online with the cleaning line — instead of sending hot-alkali wastewater to a downstream effluent station — so that heat, chemical agents, and water are all preserved and reused. The result is dramatically lower fresh-water consumption, lower chemical procurement costs, reduced energy demand for re-heating, and a cleaner discharge profile that meets stringent environmental compliance standards.

Recycle Plastic. Recycle Water. Save Both.

In a world where fresh water is increasingly precious and environmental regulations are increasingly strict, the recyclers and manufacturers who consistently grow are the ones who close every loop — including the water loop. Sending hot-alkali wastewater to a downstream effluent station means paying twice: once for the fresh water and chemicals you used, and again for the treatment, heating, and disposal of the wastewater. The Torontech Online Hot-Alkali Washer Water Recycling Treatment & Reuse Systems eliminate that double cost by recovering up to 80% of the hot-alkali water — with its heat, with its chemical agents — and returning it directly to the cleaning line. Less fresh water. Less chemical consumption. Less energy. Less discharge. Lower operating cost. Higher environmental performance.

Whether you are commissioning a small-to-medium plastic recycling line with the compact TT-WTS, or building an industrial-scale PET bottle washing plant with the high-capacity TT-WTS20, Torontech has the water-treatment platform engineered to meet your exact needs. Equip your recycling facility with the water-treatment systems trusted by plastic recyclers worldwide — and turn one of your largest operating cost lines into a competitive advantage.

APPLICATIONS

Applications in Industries

- **PET Bottle Washing & Recycling Plants** — Online treatment of hot-alkali wash wastewater containing suspended solids, label glue residues, and beverage residuals — feeding clean recycled water directly back into the wash line.
- **HDPE/PP Rigid Plastic Recycling** — Wastewater recovery from rigid HDPE/PP bottle, barrel, and container washing lines — preserving caustic agents and heat within the cleaning loop.
- **PE Film & Soft-Plastic Washing** — Treatment of high-turbidity film-wash wastewater with heavy soil, sand, and ink residues — particularly valuable for dirty agricultural and post-consumer film recycling.
- **PP Woven Bag Washing Recycling** — Compact in-line water recovery for woven-bag washing operations, reducing operational water and chemical costs.

- **Municipal & Industrial Plastic Reclamation** — Large-scale plastic-recycling facilities, MRF wash lines, and circular-economy programs requiring high-throughput wastewater treatment.
- **Environmental Compliance & Discharge Management** — Multi-stage filtration + sedimentation + air flotation produces treated effluent that meets local environmental discharge standards.
- **Water-Scarce & Cost-Sensitive Regions** — Recyclers in regions with high water tariffs or limited fresh-water supply benefit most from the 80% water-recovery capability, dramatically reducing operating costs.

FEATURES

Why Choose Torontech for Your Water Treatment Needs

With more than two decades of experience supplying advanced industrial equipment to plastic recyclers, manufacturers, and waste-management operators across more than 60 countries, Torontech delivers premium water-treatment performance backed by deep recycling-industry expertise.

Online Recovery — Engineered for Recycling Plants

Torontech's water-treatment systems are not generic effluent plants — they are purpose-engineered for the specific chemistry, temperature, and pollutant profile of plastic-recycling hot-alkali wash wastewater. Online installation directly with the cleaning line means heat, agents, and water are all preserved and reused, lowering operating cost dramatically versus conventional downstream effluent treatment.

Two Scaled Platforms for Every Operation

The compact TT-WTS (3 m³/h) is the ideal entry-level platform for small-to-medium plastic recycling lines, with SLCDT-3000 sedimentation, RST-3000 hot-water tower, filter press 630, and ZQX-30 filters in SUS304 construction. The industrial TT-WTS20 (20 m³/h) is engineered for high-throughput PET and rigid-plastic plants, integrating filtration, sedimentation, and dissolved air flotation (DAF) on an L11000 × W2000 × H3500 mm footprint.

80% Water Recovery Capability

Through online hot-alkali water recovery technology, up to 80% of the hot-alkali wash water used in the cleaning process can be reclaimed and reused — eliminating the need for additional water-treatment agents, enabling recovery of chemical agents, and significantly reducing chemical consumption, water bills, and the energy required to heat fresh wash water.

Comprehensive Multi-Stage Treatment

Filtration (including high-speed quartz-sand DMF3224-1A filtration on the TT-WTS20), vertical-flow sedimentation with umbrella-baffle dispersion, dissolved air flotation (DAF) using micro-bubble buoyancy separation, and filter-press sludge dewatering combine to remove suspended solids, oils, glues, and label residues — leaving clean recycled water that meets the cleaning line's quality requirements.

Intelligent Automation & Reliability

Automatic pH dosing with online-pH-controlled metering pumps stabilizes hot-alkali wash chemistry; level-gauge-controlled centrifugal pumps deliver high-level alarms and low-level pump shutdown; electric-valve-controlled automatic periodic mud discharge eliminates manual handling; dual-pump primary/backup configurations ensure uninterrupted operation.

Cost-Effective Value & Global Support

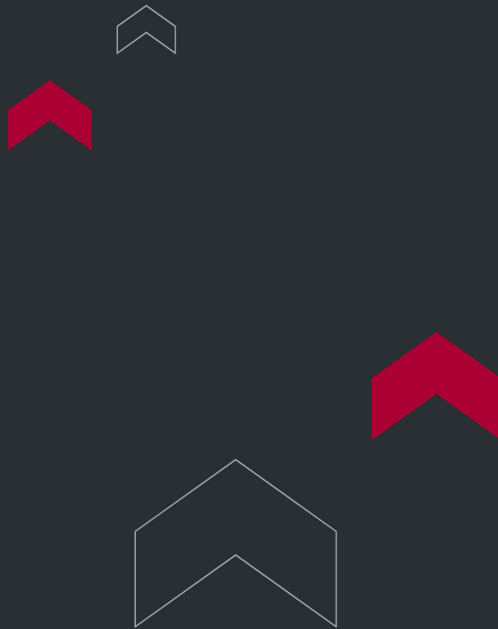
Torontech delivers premium water-treatment performance at a transparent, competitive price point — backed by overseas installation, operator training, and stocked spare parts with prompt global delivery. With offices and authorized partners across the USA, Canada, UAE, KSA, GCC, EU, India, APAC, Africa, and Latin America, expert support is always within reach.

TECHNICAL SPECIFICATIONS

Product Comparison Table

Specification	TT-WTS (3 m³/h Compact System)	TT-WTS20 (20 m³/h Industrial System)
Treatment Capacity	3 m³/h (3 cubic meters per hour)	20 m³/h (20 cubic meters per hour) — 1 set
Wastewater Source	Hot-alkali washing in plastic-recycling cleaning lines	PET bottle washing wastewater & general hot-alkali wash lines
Process Route	Precipitation → Filtration (retains agent, removes SS)	Filtration → Sedimentation → Air Flotation (multi-stage)
Primary Treatment	Circular vibrating screen at hot-wash tank discharge — separates larger particles, protects downstream	Vertical-flow sedimentation tank with central pipe + umbrella baffle for even dispersion
Sedimentation	Vertical-flow design; central-pipe entry; umbrella-baffle bottom dispersion	Sedimentation tank + dedicated air-flotation tank (DAF) for fine floating particles
Air Flotation	Not included (precipitation-filtration design)	Dissolved air flotation — micro-bubbles attach to suspended solids/oil, density <1, buoyancy separation
Filtration	Filter press 630 (1 unit) + ZQX-30 filters (2 units); intermediate water tank + filter pump + filter cloth	Quartz-sand high-speed filtration tank (Model DMF3224-1A); internal water distributor & collector — removes particulates, reduces turbidity

Storage Towers / Tanks	SLCDT-3000 sedimentation tower (1 unit) + RST-3000 hot-water tower (1 unit) — SUS304 stainless steel	Treated-water collection unit doubles as clean-water pump reservoir
Construction Material	SUS304 stainless steel (key wet-contact components)	Carbon steel with anti-corrosion treatment (DMF3224-1A & main tanks)
Footprint / Dimensions	Compact configuration suitable for small recycling lines	L 11,000 × W 2,000 × H 3,500 mm
Recirculation Pumps	Integrated within filter pump + sedimentation/storage tower architecture	2 sets vertical centrifugal pumps, 5.5 kW each (1 primary + 1 backup); level-gauge-controlled high-level alarm & low-level shutdown
Mud / Sludge Handling	Filter press dewateres sludge for further treatment	Electric valve for automatic periodic mud discharge
pH / Chemical Dosing	Automatic pH dosing device — metering pump + medicine barrel + stirrer; online pH-controlled, stabilizes hot-alkali wash pH	Dosing system with metering pump + reagent barrel + agitator — precise reagent dosing
Water Recovery Rate	80% of hot-alkali wash water recovered & reused; chemical agents retained (lower agent consumption)	Treated water reused in cleaning line; remainder discharged in compliance with standards
Best Suited For	Small-to-medium plastic-recycling lines; in-plant hot-alkali wash water recovery with compact footprint	Large PET bottle recycling plants & high-throughput plastic washing operations needing industrial capacity



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

