

# Recover More Than Just Water. Recover **Trust.**

For high-stake effluents and  
difficult wastewater



- > **Effluent Treatment Plants &  
Zero Liquid Discharge Solutions**

# When Manufacturing Becomes Critical, So Does Water.



Whether your process is *critical, sensitive, complex, costly or simply precious*—Shachi has both sides covered.

*From evaporation to recovery, Shachi delivers complete process and environment integration engineered to keep your plant compliant, efficient, and future-ready.*

## SHACHI Process

Spray Dryers

Beading Plants

Evaporators

Spin Flash Dryer, IFBD

## SHACHI Environment

Zero Liquid Discharge (ZLD) Systems

Effluent Treatment Plants (ETP)

Condensate Polishing Units (CPU)

Agitated Thin Film Dryer (ATFD)

**27+** Years

**500+** Projects

**400+** Customers

**10+** Countries



# Shachi's ZLD Systems recover up to 95% of water



Turning complex effluents into reusable clean water and dry solids that are easy to handle and compliant for disposal.

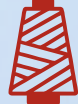
## Built for:



Pharma



Chemical



Textile



Food



Steel



> and More



**Simple to run. Audit-ready. Sized for your site.**

# The Shachi Edge



## Save More Water

High recovery with advanced polishing systems for reuse in utilities and process.

## Reduce Wastage

Recover value where possible, minimize discharge, and cut down ₹/m<sup>3</sup> cost.

## High Uptime

Optimized evaporation and drying systems for maximum reliability.

## Stay Sustainable

Smaller footprint, cleaner emissions, lower lifetime cost.



# From Effluent to Efficiency: The ZLD Process



Turning every challenge in wastewater into a closed-loop advantage.

## 1 Pretreatment

The first line of defense — screening, clarification, pH correction, and selective reduction of TSS, COD, oil & grease, and hardness.

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*Custom-engineered to your feed — not a one-size-fits-all design.*

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## 2 Evaporation

At the heart of ZLD — multiple-effect evaporators with TVR or MVRE recover clean water and concentrate the rest.

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*Smart heat recovery. Compact design. Reliable automation.*

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## 3 Drying / Solid Handling

The concentrate moves to crystallizer, centrifuge, or ATFD/spray dryer for residue solidification.

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*Dry, inert solids ready for compliant disposal or by-product recovery.*

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## 4 Final Disposal / Reuse

Condensate is polished for reuse.  
Solids are safely handled.

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*Water back to process. Waste to resource.*

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**| Outcome: Clean water recovered, solids simplified, compliance achieved.**

# Evaporation Reimagined for Efficiency



High heat transfer. Low downtime. Proven reliability.



## Multiple-Effect Evaporators (MEE)

### Falling Film:

For clean, low-fouling streams — fast heat transfer and compact design.

### Forced Circulation:

For viscous, scaling, or crystal-forming feeds — rugged and reliable.



## Self-Cleaning Evaporation (Klaren Technology)

Advanced Self Cleaning Technology that **resist fouling and salting**, reducing manual cleaning.

More uptime. Lower maintenance. Better lifecycle cost.

## MVR Integration (Mechanical Vapour Recompression)

For large throughputs, MVR recycles latent heat to drastically cut **energy consumption and shrink your footprint**.

***Every kilowatt saved is water recovered — and cost reduced.***

# Dryers: The Final Step Toward Zero Waste



Where every drop of residue is turned into measurable value.



## Advanced Spray Dryers

For sticky or viscous residues that challenge traditional systems.



## ATFD (Agitated Thin Film Dryer)

For tough-to-dry, high-viscosity concentrates and solvent-laden streams.

## Post-Evaporation: Smart Solid-Liquid Separation

### Pusher Centrifuge

Continuous, high-capacity solid-liquid separation for crystalline or granular solids.

### Crystallizer

Engineered control of nucleation and growth ensures purity, uniform crystal size, and enables by-product recovery wherever feasible.

***When you remove the last drop right, your system stays clean, compliant, and continuous.***

# ETPs Built for the Harshest Effluents



Low downtime. Proven reliability. Consistent Performance.

Shachi Effluent Treatment Plants (ETPs) are **engineered for stability, consistency, and compliance**—even under the toughest conditions.

Whether it's high COD, complex solvents, or variable pH, your ETP should do more than just treat water—it should protect your ZLD.

## Core Treatment Steps

- > Equalization & Neutralization
- > Coagulation–Flocculation
- > Clarifiers / DAF (Dissolved Air Flotation)
- > Aerobic / Anaerobic Biological Treatment
- > RO / UF / CPU Systems
- > TSS & Hardness Removal



*Stabilize your load. Protect your downstream.  
Deliver clear, compliant water—every day.*

# Every Reason to Partner with Shachi Environment



Built for engineers, trusted by compliance teams, and loved by operators.

## 1 End-to-End Ownership

Pretreatment > Evaporation > Crystallization/  
Centrifuging > Drying > CPU

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*No blame game. No gaps. One accountable partner.*

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## 2 Optimized & User-Friendly

Right-sized utilities, clear SOPs, easy maintenance access, and built-in CIP systems.

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*Because reliability starts with simplicity.*

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## 3 Energy & Uptime Focused

MEE with TVR/MVR, self-cleaning options, and anti-fouling velocities keep your system running longer, cleaner, and cheaper.

## 4 Audit-Ready Engineering

MOC for compatibility, full HAZOP documentation, interlocks, historian data, and traceable records for every component.

## 5 Proven Delivery Track Record

Fast commissioning, trained operators, remote diagnostics, and readily available spares.

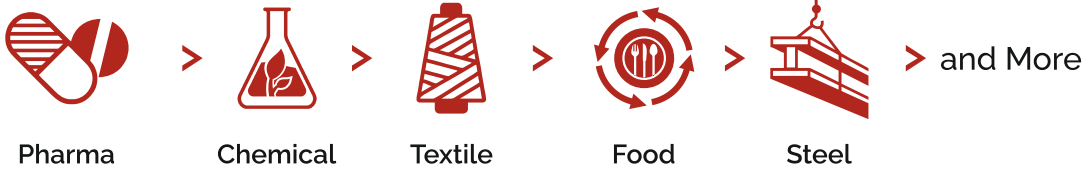
**| We don't just install systems—we deliver peace of mind that lasts years.**

# Trusted by Leading Names Across Every Industry



Because when compliance and continuity matter, top manufacturers trust **Shachi**.

## Industry Footprint:



**From India's industrial heartlands to global innovation hubs—  
Shachi systems keep production sustainable and compliant.**

# Significant OPEX Reduction for APIs: A Proven Result



## ZLD for Active Pharmaceutical Ingredients (APIs)

**Feed TDS :** 10000-100000 ppm

**Process :** Pretreatment + 4-Effect MEE + ATFD + CPU

**Result :** ~95% water recovery with fully compliant discharge

**Outcome:** Reduction in operational expenditure



*Real engineering. Real savings. Real sustainability.*

# Global Presence. Local Support.



Installations across **India** and key export markets —  
**Southeast Asia, MENA, Africa, CIS.**



## Unit I – Pune, Maharashtra



Gat No. 271, Sr. No. 38, A/Po. Bhare,  
Tal. Mulshi, Pirangut,  
Dist.: Pune - 412 115, Maharashtra.

## Unit II – Saykha, Gujarat



Plot No. E-185, Saykha Ind. Est.  
S. No. 44/P, 46/P to 49/P Juned Vagra,  
Bharuch, Gujarat -392140.

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***Wherever water challenges exist,  
Shachi brings purpose-driven engineering to solve them.***