

RECEIC Awards on Resource Efficiency & Circular Economy

**GRASIM INDUSTRIES LIMITED, UNIT: INDIAN
RAYON**

RESOURCE EFFICIENCY & CIRCULAR ECONOMY

GRAND JURY PRESENTATION ROUND

10th MARCH 2025



ABOUT THE INITIATIVE

1. Implementing advanced seawater reverse osmosis (SWRO) for closed-loop water management, promoting resource conservation and reducing reliance on freshwater extraction.
2. Adopting a circular economy approach by repurposing effluent treatment plant (ETP) sludge as gypsum substitute in cement production, minimizing waste and maximizing material lifespan.



ACCOMPLISHMENTS

1. Optimizing water resource efficiency through SWRO and demineralization (DM) plants, enhancing water security and minimizing operational vulnerabilities associated with freshwater scarcity, leading to cost reductions.
2. Embracing waste valorization by diverting ETP sludge from linear disposal to a circular feedstock for the cement industry, significantly reducing landfill burden and fostering environmental stewardship, while generating economic benefits.



WAY FORWARD PLAN

1. Scaling up SWRO capacity to 18 MLD, furthering water resilience and promoting sustainable water sourcing through closed-loop systems.
2. Expanding material recovery initiatives to encompass diverse waste streams, driving a comprehensive circular economy model and minimizing resource depletion.
3. Implementing co-processing of sulfur sludge, transitioning from incineration to a resource recovery pathway, reducing emissions and promoting waste-to-resource strategies.

"Environmental risk is business risk." -Managing environmental impact is crucial for ensuring business continuity in a changing climate."

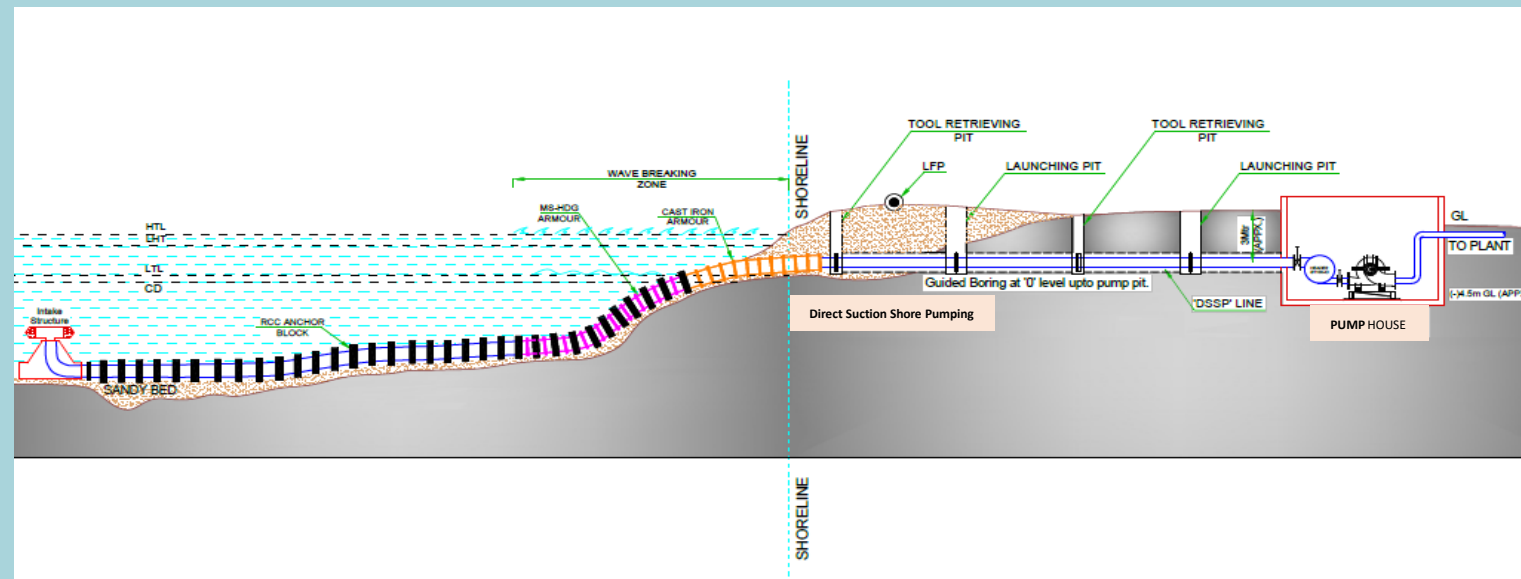
Problem: Critical freshwater scarcity in Cellulosic Fiber Yarn (CFY) manufacturing.

Solution:

- 12 MLD Seawater Reverse Osmosis (SWRO) plant.
- Innovation: India's first Direct Suction Shore Pumping (DSSP) technology.
- USP: Sustainable seawater utilization, reduced freshwater dependence.
- Approach: Collaboration with Thermax & Hydro Air, stakeholder engagement.
- Investment: ₹105 Crore.



Energy Recovery Device



Only 2.5 % of water is freshwater; 97.5 % is saltwater. Almost 69 % of freshwater resources are tied up in glaciers and ice caps; about 30 % is groundwater, and a mere 0.27 % is surface water.

Benefits:

- 1.2 Cr litres /day water made available to local public and agriculture activities
- ₹2.22 Cr cost savings (FY25, till Dec 24).
- Enhanced operational efficiency.
- Reduced Water source availability risk
- 348 kW of power saving per day from ERD.
- Improved brand image & sustainability.

Leadership: Strong involvement and support.

Maturity: Evolved, with planned expansion to 18 MLD.



Only 2.5 % of water is freshwater; 97.5 % is saltwater. Almost 69 % of freshwater resources are tied up in glaciers and ice caps; about 30 % is groundwater, and a mere 0.27 % is surface water.

ROI/Benefits Derived :

❑ Economic:

- ₹2.22 Crore cost savings achieved in FY25 (till Dec 24) by utilizing desalinated seawater (₹43.97/m³) instead of dam water (₹52.72/m³).
- ₹1.38 Crore annual savings from DM.
- Reduced operational costs by minimizing reliance on expensive freshwater sources.
- Improved operational efficiency through consistent and reliable water supply, minimizing risk of production disruptions.

❑ Environmental:

- Significant reduction in reliance on freshwater resources.
- Reduced pressure on local water ecosystems.
- Utilization of abundant seawater as a sustainable alternative.
- Efficient treatment of SWRO permeate, minimizing water wastage.

❑ Social:

- Enhanced brand image and reputation as an environmentally responsible company.
- 1.2 Cr litres /day water made available to local public and agriculture activities
- Proactively addressing water scarcity concerns.

"Innovation quenches thirst: Advancements in desalination technology promise a future where water scarcity is a thing of the past."

Problem: Linear waste stream of ETP sludge posing landfill burden.

Solution:

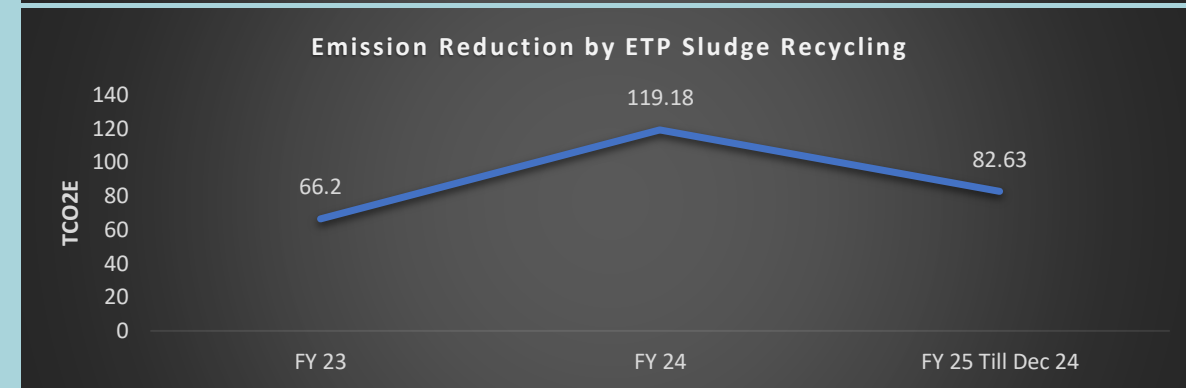
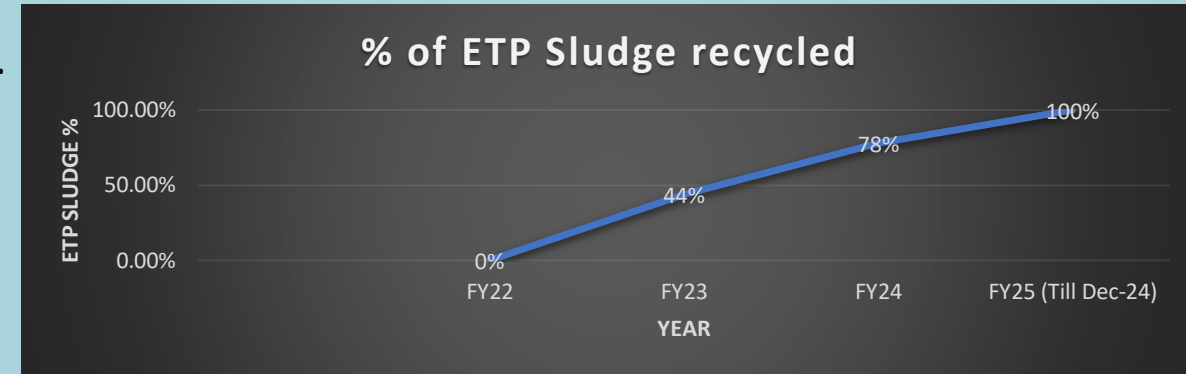
- Circular material flow: ETP sludge repurposed as cement feedstock.
- Innovation: In-house sludge natural sun-drying bed for enhanced quality.
- USP: Waste valorization, achieving zero-landfill goals.
- Approach: Partnerships with Ultratech & Ambuja Cement, expert consultation (Green Circle, Detox Corp).
- Investment: ₹3.5 Crores for sludge drying bed.

Benefits:

- Landfill to co-processor option in cement plants
- 100% ETP sludge utilization in cement plants (FY25).
- Significant landfill reduction (4675.1 MT diverted since FY23).
- Enhanced brand image & sustainability.

Leadership: Active participation in industry forums, strong commitment to circular economy.

Maturity: Mature, with ongoing expansion to Sulphur sludge & Brine Sludge.



"True progress is measured not just by what we build, but by how we sustain our waste management practices."

ROI/Benefits Derived :

❑ Economic:

- Landfill avoidance, driving cost efficiency through circular resource management.
- Resource optimization through waste-to-resource conversion optimizing material lifecycles.

❑ Environmental:

- 100% ETP sludge diversion from landfills in FY25.
- 4675.1 MT of ETP sludge diverted from landfills since FY23.
- Lowered value chain emissions (Scope 3), contributing to decarbonization goals.
- Reduced need for raw Gypsum mining, by supplying a secondary raw material.

❑ Social:

- Strengthened corporate reputation, showcasing commitment to environmental stewardship
- Promoting sustainable waste management innovation, fostering sector-wide circularity.
- Participating in and sharing best practices in GPCB organized forums.

Awards/Recognition:

- "Grow Getter Award" for advancing circular economy principles and turning waste into valuable resources.

"Investing in waste management technologies upfront saves money and environment in the long run."

❑ Scalability of Solution:

- The 12 MLD SWRO plant is designed for expansion to 18 MLD, ensuring water resilience for future needs. The technology offers a model for water-stressed regions.
- The ETP sludge recycling process is scalable across industries. Expanding to sulphur and brine sludge further promotes resource recovery.

❑ Availability of Leadership Support:

- Strong, continued leadership commitment to sustainability and circular economy principles is evident in both projects.
- Active participation in industry forums and conferences demonstrates ongoing leadership engagement.
- Ongoing financial support for expansion and waste reduction projects demonstrates commitment to resource optimization.

❑ Stakeholder Engagement Plan:

- Continued collaboration with cement plants, technology partners and consulting firms to enhance sustainable practices..
- Actively engaging with waste management partners for pre processing of sulphur sludge.
- Ongoing engagement with local communities, regulatory authorities (GPCB), and educational institutions (IIT BHU) fosters shared sustainability goals.

THANK YOU