

Electroplating Plant Reduced Heat Loss & Acid Fumes Using PP Floating Balls

Industrial Case Study | Electroplating & Surface Treatment Industry

Operational Challenge	Observed Improvement
Open heated tanks losing temperature	Improved heat retention
Continuous acid fumes & mist	Reduced surface fumes
High heater runtime	Lower heating requirement
Operator discomfort	Improved workplace conditions

Client & Application

Client: Aqua Systems Pvt. Ltd., Mohali, Punjab

Industry: Electroplating & Surface Treatment

Application Tanks: Nickel Plating Tank, Chrome Tank, Ultrasonic Cleaning Tank & Cathodic Cleaning Tank

The Problem

The client operated multiple heated open-surface process tanks within their electroplating line.

These tanks continuously lost heat through exposed liquid surfaces while simultaneously releasing acid fumes, vapors, and mist into the workplace environment.

Key Issues Identified: Higher heater runtime and increased energy consumption Temperature instability in process baths Continuous acid mist exposure Evaporation losses of water and chemicals Uncomfortable operator working conditions

Visual Representation

VISUAL REPRESENTATION:

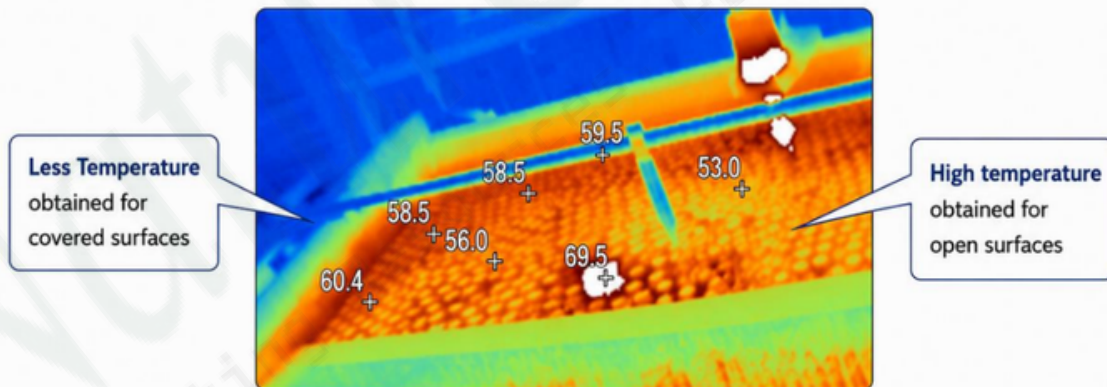


BEFORE: Cathodic Cleaning tank



AFTER: Cathodic Cleaning tank

THERMAL IMAGE OF CATHODIC CLEANING TANK



Solution & Performance Results

Solution Provided

Naturegreen Technology LLP supplied **Virgin Polypropylene (PP) Elliptical Floating Balls** to create a floating thermal and vapor barrier across the liquid surface.

The floating blanket reduced exposed liquid area while allowing continuous plant operation without mechanical modifications or production shutdowns.

Parameter	Specification
Product Type	Solid Elliptical Floating Ball
Material	Virgin Polypropylene (PP)
Temperature Resistance	Suitable for heated process applications
Ball Size	32 mm Diameter
Surface Coverage	Approx. 90–95%
Application	Electroplating & Heated Chemical Tanks

Observed Improvements

Reduction in Fumes & Acid Mist: Reduced direct vapor escape from heated tank surfaces. **Improved Heat Retention:** Lowered heater runtime requirements. **Reduced Evaporation:** Helped maintain process bath concentration and reduced top-up frequency. **Better Workplace Conditions:** Lower operator exposure to fumes improved worker comfort. **Maintenance-Free Operation:** No moving parts or complicated installation system required.

Implementation Timeline

Implementation Period: December 2013 – March 2014

Total Duration: Approximately 3–4 months

Applications & Conclusion

Recommended Industrial Applications

Electroplating • Hard Chroming • Nickel Plating • Anodizing • Pickling Lines • Heated Acid Tanks • Surface Treatment Plants • Chemical Processing Tanks

Conclusion

Open heated process tanks silently waste energy, chemicals, and operational efficiency.

This project demonstrated that a simple floating surface barrier can significantly reduce heat loss, acid fumes, and evaporation without expensive modifications or operational disruption.

The biggest operational advantage was practicality: easy installation, compatibility with production movement, and continuous performance without maintenance-heavy systems.

Naturegreen Technology LLP

Industrial Floating Cover & Evaporation Control Solutions

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