Mech-Chem Associates, Inc.

•Design •Engineering •Construction
•Installation •Start-Up

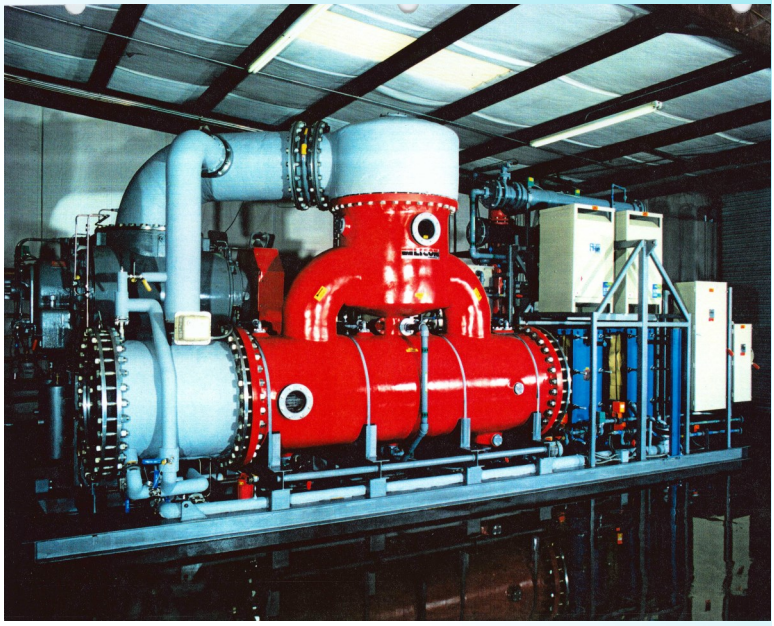
Purification & Distillation Systems

(Water, Rinse Water & Wastewater Applications)

Benefits of Evaporation & Distillation Technologies

Water, rinse water & wastewater evaporation and distillation systems can provide several different key functions for your manufacturing operations as follows:

- **Produce Distilled Water (High Purity)**
- **Rinse & Wastewater Recovery & Recycling**
- **Waste Reduction (Up to 95%)**
- **Meet stringent or non-detectable metal limits**
- **Meet non-detectable mercury (Hg) limits**
- **Meet new molybdenum (Mo) limits**
- **Create zero discharge wastewater systems**



Vapor Compression Vacuum Evaporators

Systems are fabricated with stainless steel and nickel alloy heat exchangers with FRP shells. A benefit of the vapor compression design, is a 50% reduction in evaporation costs

Natural Circulating Thermal Syphon Evaporators

Atmospheric evaporation and purification of rinse water and wastewater. The distilled water is condensed for reuse in the production operations.

System Design and Control

Mech-Chem engineers and designs complete modular evaporation and distillation systems. The designs include integration between the evaporation and distillation systems and the facility's production operations.

The materials of construction include stainless steel and nickel alloy heat exchangers and equipment with stainless steel, FRP, CPVC, PP, and PVDF shells and piping.

The system are equipped with corrosion resistant components and NEMA 4X instruments & electrical components.

The evaporation & distillation systems are fully automated for PLC control with HMI operator friendly screens and remote PC interface connection. This provides for automated systems that are reliable, low maintenance and easy to operate.

Single Effect Vacuum Evaporators

Mech-Chem's single effect vacuum evaporators use conventional climbing film evaporative principles with a horizontal tube arrangements for the heat exchangers.

The vacuum evaporators are designed to produce a high purity distillate while optimizing volume reduction of the waste, rinse water, wastewater or waste acid solution being processed in the system.

Mech-Chem fabricates each vacuum evaporator using the appropriate materials of construction for the specified application (i.e. rinse water, waste water, brine solution or waste acid solution). This provides maximum corrosion resistance with a long service life and low maintenance.

Evaporation & Distillation Applications

These evaporation and distillation systems are versatile operations that can service various functions as follows:

Wastewater and Rinse Water

- Rinse & wastewater purification & recycling
- Waste minimization (up to 95%)
- Removal and recovery of heavy metals
- Meet stringent or non-detectable metal limits
- Create "Zero Waste Discharge Systems"

Acid Recovery and Recycling

- Recover 85%-95% of the acids
- Eliminate off-site disposal of waste acid solutions
- Reduce raw material costs
- Eliminate shipping of hazardous chemicals
- Eliminate "cradle to grave" liability

Metals Concentration and Recovery

- Chemical milling solutions
- Acid etching solutions
- Metal dissolving acid solutions
- Concentration of plating solutions
- Recycling of plating bath metals
- Concentration of dilute acid solutions

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