

Metal Processing Application

Case Study - Reclamation of Copper Sulphate and Acid Rinse Waters Topan PCB Manufacturer, San Diego USA

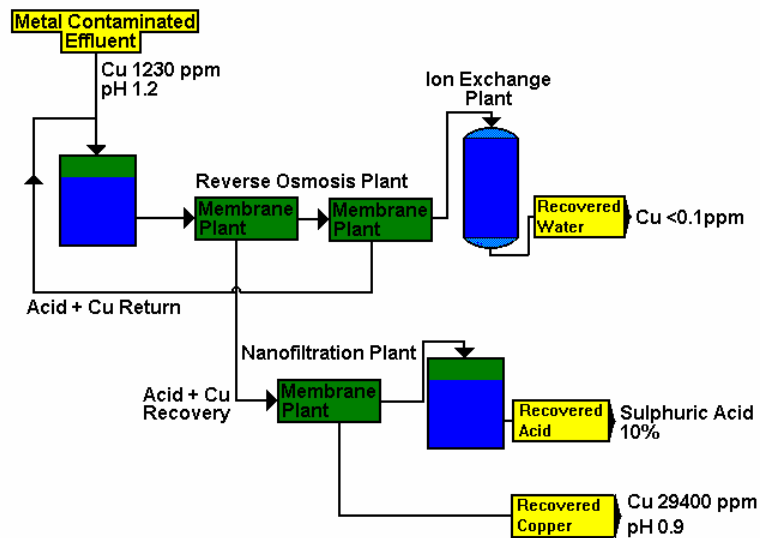
The manufacture of printed circuit boards results in the generation of an effluent comprising dilute acid and trace metals, particularly copper. Historically, PCB manufacturers have treated this effluent by a combination of neutralisation followed by precipitation which has the following generic shortfalls:

- Requirement for constant monitoring of the precipitation plant
- Poor treated effluent quality
- High operating costs associated with chemical dosing and off site sludge disposal

"State of the Art" Membrane System

Effluent generated at the manufacturing plant located in San Diego was treated by a combination of membrane nanofiltration stage followed by an ion exchange plant. The system was designed to optimise recovery of both residual copper and spent acid rinse waters. The upgraded system offered the following advantages:

- Rapid investment pay-back
- Copper Sulphate recovery
- Acid rinse water recovery
- Reduced environmental liability
- Reduced loading on Ion Exchange plant



**SPECIALISTS IN THE TREATMENT OF CHALLENGING INDUSTRIAL EFFLUENTS
Metal/Electronic Industry**

Benefit Summary

Competitive Edge of Membrane Plants versus Conventional Precipitation Plants	
Membrane Advantage	Justification
Low Capital Cost	Smaller Ion Exchange Plant Low civil engineering investment requirement Low earth working investment requirement
Rapid Investment Pay back	Reduced raw material usage Reduced effluent disposal costs Reduced towns water / natural water intake requirement Reduced loading on Ion Exchange Plant
Reduce, Recycle & Re-use	Reduced sludge generation Recycle of residual metals Recycle of spent acid Re-use of high quality treated effluent
Confidence of Environmental Compliance	Robust treatment process that is not affected by temperature, complexing ions, or variations in pH Fixed physical barrier thereby guaranteeing compliance State of the Art Technology (BATNEEC)
Modular System	Discrete process units facilitating incremental upgrading

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