

# APPLICATION REVIEW

## Microelectronics Manufacturer Reduces Rinse Line Water Disposal Costs and Sludge with Vacuum Evaporation

### Introduction

A top manufacturer of TFT-LCD panels needed to reduce its sludge production and wastewater disposal costs at two of its plants—complying with local environmental legislation. This sludge and water waste was produced in both of the plants' rinse lines, as part of their cu-etching production process.

### The Solution

Because no two wastewater streams are exactly alike, in order to find the best solution to meet the plant's goals for each specific plant application, a careful review of their processes were completed, along with a thorough testing and analysis of the wastewater of each plant's rinsing line. It was then determined that a PRAB EVALED® Vacuum Evaporator would be the best solution for each rinse line process.

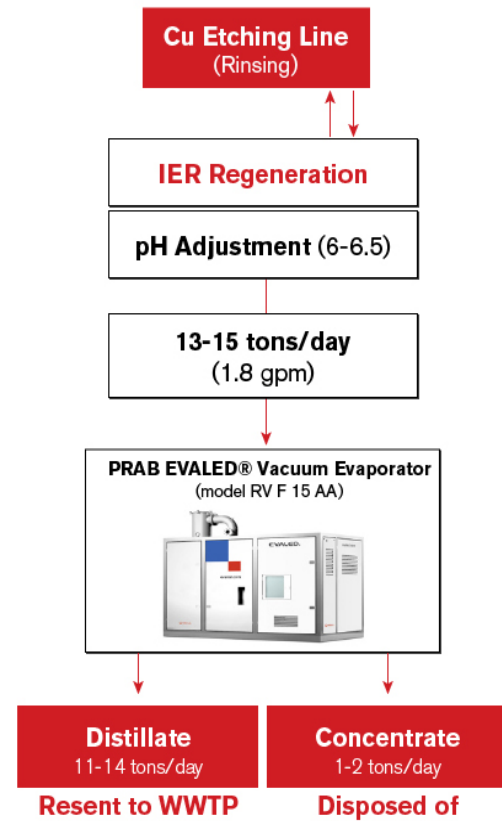
### Plant-1 Treatment Solution

At plant-1 a model RV F 15 AA vacuum evaporator was the solution for effectively cleaning the wastewater coming from their Cu-etching rinsing process and the new process was implemented.



PRAB EVALED Vacuum Evaporator, Model RV F 15 AA (113 sq/ft footprint)

### Wastewater Treatment Process Implemented (Plant-1)



### Plant-1 Wastewater Treatment Results

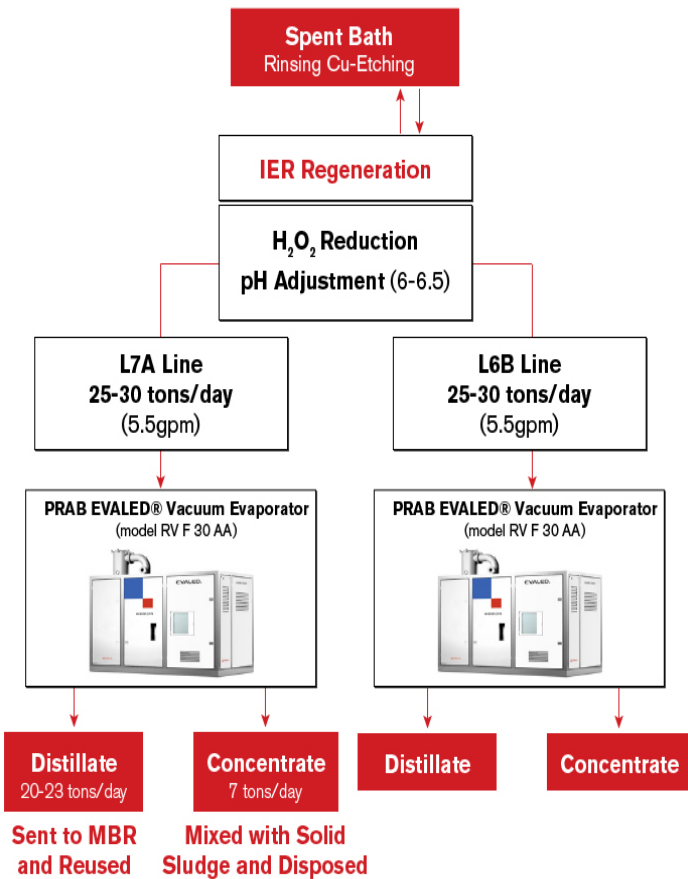
Parameters	u.m.	Waste In	Distilled Out	Concentrate Out
pH		6-6.5	9	-
TDS	ppm	4,000-50,000	<10	-
Conductivity	µS/cm	<8,000	<30	-
TS at 105° C	%	0.6-5	-	30
Chloride	ppm	<500	<300	-
Ammonium	ppm	500-5,000	<500	-



## Plant-2 Treatment Solution

Two model RV F 30 AA vacuum evaporators were determined to be the solution for effectively cleaning the wastewater coming from the rinsing lines at plant 2. One evaporator was implemented into the L7A Rinsing Line, and the other was installed as part of the L6B Rinsing Line.

### Wastewater Treatment Process Implemented (Plant-2)



Plant 2: PRAB EVALED Vacuum Evaporator, Model RV F 30 AA (150 sq/ft footprint)

### Plant-2 Wastewater Treatment Results

Parameters	u.m.	Waste In	Distilled Out	Concentrate Out
pH		6-6.5	9	-
COD	ppm	80,000	<4,000	-
Conductivity	μS/cm	<50,000	<20	-
TS at 105° C	%	5-9	-	30
Chloride	ppm	<500	<300	-
Ammonium	ppm	5,000-15,000	<500	-

## Summary

After adding PRAB EVALED Vacuum Evaporator's to the manufacturer's rinsing line processes, each plant saw a significant reduction in sludge and disposal costs. Now, 70-90% of distillate is recovered and reused in the production processes—which has resulted in system paybacks within 8-months of installation.

## About PRAB

PRAB is a leading engineer and manufacturer of conveyors, chip and fluid management systems, and industrial water and wastewater treatment equipment. Our customized solutions automate metal handling, reduce labor costs, reclaim and recycle expensive cutting fluids/coolants, and maximize return on recycling metals. With our expertise, honed by more than 4,500 installations for the world's leading OEMs and suppliers, PRAB continuously improves material handling, housekeeping, and compliance to environmental rules and regulations within the automotive, aerospace, medical, electronics, defense, off-road and energy markets. For more information about PRAB, visit [prab.com](http://prab.com).

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