

PROJECT PROFILE SERIES #34

LG Electronics chooses HERO™/DEMIN/UPW

The Facility

LG Electronics (LGE), the Korean electronics and digital giant, recently commissioned its fourth Plasma Display Panel (PDP) line, A#3 at their South Korean Display Workplace. Reflecting their confidence in the global PDP market, LGE was determined to concentrate its core capabilities on building A#3, which is capable of producing 12,000 units a month. The PDP A#3 project is built on a 1,256,200 square meters at Gumi City in South Korea.

LGE established the A#3 line as the most competitive and sophisticated line of its type of the world. For the first time, the line will be equipped with a mass production system capable of producing six panels from a single sheet of glass and the line will harness additional innovative technologies and process.

The Problem

In order to expedite the PDP manufacturing process and to ensure good quality of PDPs by mid 2005 LGE needed to reduce normal wastewater quantity. LG Electronics selected a Demineralized water and UPW system and began their evaluation process for a suitable vendor.

The Solution

After analyzing the past performance and continuing results of Aquatech International Corporation's water treatment systems at the A#1 and A#2 sites, LGE selected Aquatech's Demineralized Water (featuring HERO™ /Sandwich Mixed Bed) and UPW system.

Aquatech's design featured five filters, six Weak Acid



Cation (WAC) units, six skids of HERO™ RO's and six Sandwiched Mixed Beds (SMB) which are divided into two trains.

Significant Reduction in Wastewater

According to the requirement of LGE, Aquatech provided the state of the art HERO™ (high efficiency reverse osmosis) technology which has a recovery greater than 94% which produces less waste water. The filters, WACs and SMB are also designed to produce less waste water as compared to a normal system.



Quantity and Quality of Water The designed water flowrate of PDP A#3 is 660m³/hr which fulfills LGE's requirement as well as the requirement of LG Micron. By maintaining the quantity, it also maintains the quality as it produces demineralized water with resistivity more than 18 Mohm, TOC less than 5 ppb, DO less than 10 ppb, particles less than 10/ml >0.1 micron and silica less than 5 ppb.

The Results

The construction as well as the installation of the water treatment plant with commissioning and quality was achieved *before*

the targeted period --within 28 weeks of Letter of Intent. LGE's PDP A#3 went into full production in September 2005. The A1/A2 production lines have a monthly production capacity of 190,000 PDP Modules, and the A3 line has a monthly production capacity of 160,000 PDPs. This brings the world's largest monthly capacity of 350,000 PDPs. All lines now have water treatment by Aquatech International Corporation.



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Design Water Analysis:

Ca CaCO₃ 60 mg/l
 Mg as CaCO₃ 50.02 mg/l
 Na as CaCO₃ 24.96 mg/l
 K as CaCO₃ 4.99 mg/l
 Total Cations 139.97 mg/l
 HCO₃ as CaCO₃ 60.02 mg/l
 SO₄ as CaCO₃ 9.98 mg/l
 Turbidity..... 5 NTU

Cl as CaCO₃ 60.01 mg/l
 NO₃ as CaCO₃ 10.04 mg/l
 Total Anions 140.07 mg/l
 Silica 9.96 mg/l
 CO₂ 4.02 mg/l
 pH, in pH units 7.5
 TOC 2 to 4 mg/l

Process Flow Diagram

