Wastewater Recirculated to the Chiller or Tower Loop

By: Andy Smith

Before governments began monitoring wastewater discharges and long before it was popular to be "green" in your process, a Swedish company named Wirsbo partnered with ECOsmarte to solve both a process wastewater problem and develop a system to reuse the process water.

Wirsbo, founded in 1694 in Sweden is most famous for its world leading in floor radiant heat tubing. ECOsmarte, founded in 1994 is the world leader in residential swimming pool purification without the use of chemicals, using natural oxygen and ionic copper through hydrolysis.

Wirsbo manufactures its tubing through a robotic extrusion process, cooling the tubing in water troughs fed 24/7 by the robots. Because of the high temperature, and the open air trough, the cooling water in the trough was black and oily, with a burning odor. The trough itself had string algae 1-2" thick on the sides. Minnesota Water Treatment arrived with ECOsmarte in 1996 to design and develop a chemical free system.

Wirsbo has a 50 year warranty on their tubing, the use of chlorine or other chemicals degrade the life of their product. Tests after cooling, in chemically treated water were employed were the same. Chemicals were not an option!

Minnesota Water Treatment and ECOsmarte not only solved the "black water" cooling trough issue, a recirculation strategy was ultimately developed allowing water to recirculate through 60 ton EVAPCO cooling towers and chiller bundles in later years.

"In addition to the extreme black water on install, it was determined that fusaria and nematode infestations to the cooling trough water existed as loading dock doors allowed these common spores to enter the open trough water on each robotic process line."

ECOsmarte and Wirsbo implemented programmable controllers and an ionization test on every shift to prevent recurrence of the microbes.

Glass media was implemented in 2006 at flow rates of 60 GPM to 400 GPM to further lower microns of filtration and maintenance cost. Filtration has evolved from bag to DE, DE to Zeolite, Zeolite to Glass over the 13 year site history, with Glass media extending both media life and reducing backwash by 50%. The glass media is used in Pentair TA 60, TA 100 and TR 140 low pressure, high flow rate sand filters with high flow rate valves. Two years without rebidding is now historical.

The use of ASAHI differential pressure valves has allowed a headered bank of filters to automatically shift filters for backwashing at the convenience of on-site personnel. Previous bag filter systems did not permit the recirculation and rinse of the water and would shut down flow in the troughs requiring cleaning or change out to continue manufacturing tubing.

TECHNICAL SPECIFICATIONS

MECHANICAL & PLUMBING

Operating Press. Max. 150 PSIG
Operation Temp. Max. 120˚ F
Tank listing and structural integrity
requirements only.

OXYGEN ELECTRODES
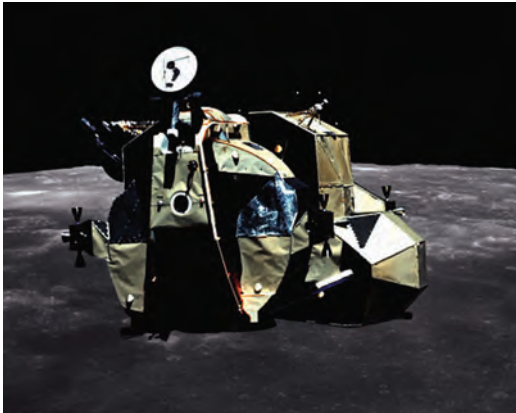Proprietary composite material

IONIZATION ELECTRODES
100% Pure Copper

ELECTRICAL

Input Voltage: 110 to 267 Volts, Specify
Output Voltage: 100 VA Class UL CSA
Compliance Power Supply
GPM: Each Unit 800 GPM to 6000 GPM

Recirculation Systems May Require More
Than One Electronics Package and Can Be Used
With All Existing Water Treatment.

Est. 1994

Each three week mission in NASA's Apollo program featured ionization in a closed loop -- Safe to humans, toxic to microbes.

1-800-ION-SWIM

EPA EST#083498-MN-001

Glass Pack®