Mortek 1000 Litres/Hour Effluent Treatment Plant

Stock No	DPS700
Manufacturer	Mortek
Year of Manufacture	2015
Condition	From a working environment, Seen working by RSW, Good Condition
Work Envelope (WxDxH mm)	1000 litre/hour
Other Info	Chromium, cyanide acid/alkali and alkali
Location	Derby, UK

Description

This plant is designed to automatically treat up to 1000 litres/hour of chromium, cyanide acid/alkali and alkali cleaner, rinse waters from the electroplating line.

Catchment Pits

The rinse waters are segregated into four stream:

1. Acid/Alkali rinses
2. Chromium rinses
3. Cyanide rinses
4. Alkali cleaner rinses

These rinse waters flow into catchment pits, within the plating shop, each pit has a suction lift transfer pump, that is controlled by pressure type level switches. The solutions are pumped to the effluent treatment area.

Chromium Reduction

Chromium rinses from the catchment pit flow into the treatment compartment, the solution is agitated with an electric mixer. In order to reduce the hexavalent chromium to trivalent, the pH of the solution is managed by dosing pumps. The redox potential of the solution is measured and sodium bisulphate used to maintain the solution within boundaries.

Cyanide Oxidation

Cyanide rinses from the catchment pit flow into the treatment compartment, the solution is agitated with an electric mixer. In order to oxidise the cyanide to cyanate, the pH of the solution is managed by dosing pumps. The redox potential of the solution is measured and sodium hypochlorite used to maintain the solution within boundaries.

Neutralisation

The reduced chromium and the oxidised cyanide, together with any acid and alkali rinses, flow into the larger treatment compartment, the solution is agitated with an electric mixer. In order to precipitate the heavy metals, the pH of the solution is maintained by pH sensors and a sodium hydroxide (caustic) dosing pump.

Pumping Chamber

The neutralised solution flows into the pumping compartment. As the solution level rises, a level switch will operate, the duty pump will be switched on, this will pump the chemically treated solution to the settlement tank.

Settlement Tank

Neutralised effluent enters one end of the tank, a baffle plate forces the solution down and under the lamella tubes. In order to flow out of the tank, the solution must flow through the tubes, these are designed to maximise coagulation of the heavy metals and solids these, being of a greater mass they fall into the base section of the tank, and form sludge. Clear effluent flows over the outlet weir and to the final pH correction tank.
Provision has been made for a polyelectrolyte flocculation solution to be added to the incoming effluent, this will enhance coagulation of the heavy metals and solids. Periodically the sludge to be drained from the tank into the holding pit.

Final pH Correction

The discharge from the settlement tank, together with the alkali cleaner rinses, flow into the pH correction tank. A dip type pH electrode immersed in the tank is, connected to the pH correction controller, that operates an acid dosing pump. This pH corrected effluent then flows to drain.

Data Logger

Each of the pH/mV controllers are connected to the Nanodac data logger. This records the history of each parameter.

Alarms

All alarm conditions operate a sounder and a red flashing light. The sounder may be muted, but the light will continue to flash until the fault is cleared. Each additional alarm condition will operate the sounder again.

Photographs taken prior refurbishment. Our refurbishment service is not available on all machines.