Case Study

New Water and waste treatment installation reduces bills and enhances efficiency at expanding anodiser

When Colour Anodising Ltd - a privately owned anodiser in Radcliffe, Manchester - decided to expand its business to include a further process line for small parts, the company decided it was also time to reassess its water and waste water requirements. Says Jonathan Buckley, quality and financial manager at Colour Anodising: "We already had a water treatment plant including a demineraliser system for recovering some of the rinse water but over time it was no longer performing as we wanted.“

Environmental Water Systems (EWS) was one of the specialists Colour Anodising called in to discuss its current and future water requirements. "It was apparent to me that, as Colour Anodising had grown as a company, rinse water requirements had changed and the existing water treatment plant was no longer capable of keeping up,“ comments a Director of EWS.

On a recommendation from EWS, Colour Anodising decided to opt for an initial study, which took into account all the water used for rinsing on process lines throughout the site. The in-depth study also gave mass balances for the level of solids likely to be produced through chemical precipitation, chemical usage through demineralised recovery of low contaminated rinse waters, and even the affect of water recovery on the stringent site discharge limit for sulphate.

Also encompassed by the report were recommendations for segregation of rinses into three distinct streams, and proposals for plant items to treat the various streams, along with

Part of the installation at Colour Anodising in Radcliffe

capital costs and potential running cost reductions. As part of the report, EWS considered the current site discharge consent limits and also likely future ones. The final report was so comprehensive that it was subsequently utilised for Colour Anodising's future submission for an IPPC license.

"We were very pleased with substance of the report, which outlined a good understanding of our requirements and also offered the opportunity to re-utilise many of the existing plant items to minimise cost," said Jonathan Buckley. "As a result, we awarded EWS the final contract to build us a new water treatment plant.“

Dedicated Treatment Area

As part of the ongoing site development, the new water treatment plant was installed in a new, dedicated area within the factory. Included within the scope of supply was a demineraliser with duty and standby streams for recovery of

Settlement Tank

Benefits

low contaminated rinse waters and a conventional effluent treatment systems for treatment of stronger contaminated rinses and demineraliser regenerants.

The conventional effluent treatment system includes two reaction tank stages, followed by flocculation, settlement and final filter pressing of settled solids. As height within the new plant building was limited, a tilted plate clarifier was utilised for settlement.

Also included are a number of balancing tanks for evening out fluctuations in flow and concentration and a final outfall monitoring system which continuously monitors and records pH and flow. Trend monitoring is also provided for reaction tank pH conditions. Acid and caustic reagents are stored within semi bulk holding tanks, which are refilled by pump over delivery from fill assemblies at the boundary to the factory, thereby reducing operator handling to a minimum.

Overall plant control is supplied by a Mitsubishi PLC with a touch sensitive interface mounted on the control panel door on which the plant is displayed pictorially for ease of plant operation. The "human machine interface" (HMI) also allows operational security through password entry to different levels of control and provides a great deal of flexibility with regard to overall plant control.

Jonathan Buckley comments: "We are pleased with the overall performance of EWS on this project. As a direct result of the plant being fully operational for some time now we have seen our bills for water reduce dramatically, particularly with regard to outfall charge, as water quality discharged to drain has improved significantly".

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