



P R E S S R E L E A S E

AQUEOUS CLEANING CUTS SHEET METAL FINISHING COSTS BY £12,000 PER YEAR

A significant reduction in the costs associated with component cleaning, degreasing and painting is reported by Propak, Stevenage, a specialist in fine-limit machining and fabrication of sheet metal components. The savings are a direct result of replacing a trichloroethylene (trike) dip tank with a Turbex aqueous cleaning and phosphating machine.

In this report, Propak's paint shop manager, Alan England, quantifies the finishing costs before and after the change and calculates the savings that have accrued.

Based on 24-hour operation for five days a week plus weekend working, the company previously used the trike 'Safetainer' system, each costing £625, once every month or two depending on workload. In addition, 500 litres of two-pack etch prime per month were used to prepare sheet metal for painting by wet or electrostatic powder coating.

With the Turbex AC-2.5-3 water-based cleaning machine, the cost of trike is eliminated. After aqueous cleaning, the machine applies an iron phosphate coat to all parts that will be painted, which accounts for around

70 per cent of throughput. So only around 25 litres of etch prime is now used, mainly for priming stainless steel, which cannot be iron-phosphated.

Consumables for the aqueous machine involve an outlay of £120 per month for the detergent and phosphate, both of which are harmless to the environment, plus £400 every three months for an in-line water filter. This option allows water to be recycled and reused for inter-stage rinses, rather than immediately being lost down the drain.

Mr England says that, after the price of the aqueous consumables have been taken into account, savings in trike and etch prime result in an annual reduction in cleaning and priming costs of up to £12,000. The amount of heat used is equivalent in the solvent- and water-based processes, so this was a neutral factor in the calculations.

Financial benefits extend to the purchase of the Turbex machine itself. The solvent emissions directive dictated a change from the existing open-top trike tank, which will shortly be removed from Propak's factory. It could have been modified at a cost of £35,000, or a new, enclosed solvent tank purchased for over £80,000.

Installed in 2007, the Turbex AC-2.5-3 was significantly less costly and accommodates in its 2.3 m by 2.3 m by 0.9 m wash chamber all of the component sizes that the solvent tank was able to, and larger.

It was Propak's choice to have water filtration and recycling fitted as well as deionisation of the final rinse water, which results in a further financial saving through reduced water usage. As far as the local water board is concerned, it would have been happy for the water and non-hazardous chemicals to go straight into the drain at the correct pH level, as it would have helped to clean the sewerage system.

According to Mr England, the degreasing efficiency of the aqueous, spray wash cleaning machine is equivalent to that of trike and overall lead-time to prepare components for painting is similar with both systems. There is an added bonus with the Turbex process in that work is ready to paint, as it is already pretreated with iron phosphate.

A typical cycle in the front-loading AC-2.5-3 takes around 20 minutes, including 60 - 75°C detergent wash, 50 - 55°C phosphating, final 60 - 75°C water spray rinse and steam extraction. Door lift is automatic when the cycle ends and minimal effort is needed to move the table in and out of the work area to load and unload components.

A significant benefit of the multi-stage Turbex machine is the precision with which components can be cleaned, as all parameters are variable from the control panel. Propak has four wash programs preset for short and long cycles, according to the amount and types of soils on the components, and the option of using two phosphating cycles to suit the adhesive properties of the metal being processed.

Material gauge can be anything from 1 mm sheet to 15 mm plate. Components frequently find their way into military vehicles and other defence-related equipment, medical devices such as X-ray enclosures and across industry generally, both in the UK and overseas.

Mr England concluded, "Moving to water-based cleaning has eliminated volatile organic compounds entering the atmosphere and the operator areas, and is an ecologically sound manufacturing procedure.

"Having decided to go down the aqueous cleaning route, we looked at a number of alternative machines. Turbex was chosen due to the quality of its machine's stainless steel construction and the easy accessibility for maintenance. For example, heaters and pumps may be changed quickly, without having to drain down the system.

"It is also noteworthy that the machine has been very reliable, which is important to us as it is crucial to our painted panel productivity. Service back-up from Turbex has also been good, especially the telephone helpdesk, which has resolved any minor problems we have had."

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The Turbex AC-2.5-3 aqueous cleaning machine in use at Propak's Stevenage factory. The old trike dip tank that is due for removal may be seen in the background.



Another view of the Turbex AC-2.5-3 at Propak.



Cleaned sheet metal components being removed from the sliding table of the Turbex AC-2.5-3 at Propak.



The control system of the Turbex AC-2.5-3. Flexibility of programming and efficient, multi-stage processing elevates industrial component cleaning to a level above that of trike dip tanks, says Propak.



A selection of sheet metal components cleaned in the Turbex aqueous washing machine at Propak.



The iron phosphate tank of the Turbex AC-2.5-3 washing machine being checked at Propak.

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