



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

PAINT SHOP REPLACES 'TRIKE' AND CUTS CLEANING COSTS BY 20%

Subcontract finisher's aerospace turnover to be 60% by 2010

Although relatively inexpensive and highly efficient at cleaning components, trichloroethylene (trike) is ecologically harmful. If over one tonne of the chemical is used in a year, the solvent emissions directive states that it must be replaced in the shortest possible time and should not be used without a permit beyond 31st July 2008.

So Exeter paint shop, Revill Industrial Finishes, which previously used nine tonnes of trike annually, has switched to an aqueous cleaning system from Hampshire-based Turbex, which specialises in supplying water-based industrial washing machines.

Instead of solvent it uses water and two non-hazardous additives – detergent for degreasing and phosphate to coat the parts ready for painting. They are of such low environmental impact that the company has received wholehearted approval of its new process from both its local authority and water treatment company.

The company has found that the aqueous cleaning machine, which started operating on the Exeter site at the beginning of 2008, is just as efficient as trike at degreasing components. The sole proviso is that water tends to

remain longer in awkward areas compared with solvent, so more care has to be taken when loading the parts in the work chamber.

A major advantage, however, is that the front-loading, multi-stage Turbex AC-2.5-3 spray wash machine is one fifth cheaper to run than the former trike system, as although electricity usage is a little higher, consumption of consumables is down and so too are labour costs.

The addition of a protective phosphate layer after aqueous cleaning means that it is no longer necessary to paint components straight away, as was necessary after degreasing with trike. Furthermore, the phosphate coat provides a better key for wet paint or electrostatic powder coating. Using tape, bend and cross-hatch tests, the subcontractor has confirmed the quality of the paint finish on components that have been processed in the aqueous machine.

Accent on aerospace work

Commented Revill's operations manager, Dave Moore, "We are one of the few finishing services companies in Britain operating to the aerospace quality management system, AS9100. When we add Nadcap accreditation later in 2008, we believe that we will be one of only two independent subcontract paint shops in the UK to hold that approval.

"Around 20 per cent of our turnover currently comes from aerospace work, painting such items as transmission and structural components for helicopters, and interior parts for the cabin and cockpit in both civil and military aircraft.

“However, we intend to grow this side of our business to around 60 per cent, so it was important when changing our cleaning plant that we chose a technology acceptable to the aerospace sector.”

The company considered a modern trike system and also looked at vapour degreasing using lower risk (and more expensive) solvents. There was a nagging doubt, however, whether in the coming years all volatile organic compounds will be subject to increasingly stringent controls.

Revill finally decided that aqueous cleaning was the way to go when one of its aerospace customers asked about the subcontractor’s plans for cleaning components. The manufacturer commented that the aerospace industry, which traditionally used trike for cleaning, now favours water-based degreasing of its components. Another major aerospace company was even more direct when it recently asked Dave Moore what his plans were for switching from trike degreasing.

Against a background of more and more aerospace OEMs and first-tier suppliers closing their internal plating and painting facilities and putting work out to subcontractors, Revill is particularly well placed to pick up additional contracts.

Part of the reason is the proximity of its sister company within the EIC Group, electroplating firm South West Metal Finishing, which is also in Exeter. Rapid transfer of components between the sites means that Revill is able to paint them soon after plating, which is important as the time lag between operations must be short to avoid degradation of the surface.

The group is able to offer a one-stop-shop service that includes not only finishing but also non-destructive testing of components, which is exactly what aerospace customers are looking for these days. South West Metal Finishing's turnover is also biased towards aerospace contracts – around 70 per cent by turnover – and the company holds many industry- and customer-specific approvals. Director Kevin Baker was responsible for purchasing the Turbex machine, together with Dave Moore.

Quality is fundamental

Having decided that they wanted an aqueous machine, they seriously considered three potential suppliers and visited customers that used the different makes of cleaning system. They discussed their operation and performance with users and were able to see the condition of the machines after several years in service.

Commented Mr Baker, "We opted for the Turbex machine on the basis of what we saw. We considered it to be the best quality in terms of its robust, stainless steel construction and the attention to detail that has gone into its design.

"Little things like the way the upper and lower spray bars rotate, the minimal effort needed to move the heavy table in and out of the work area, and automatic door lift when the cycle ends – they have thought of everything. We also liked being able to carry out test runs on our components using a similar machine in the Turbex test lab at the company's Alton showroom.

“In the end, you get what you pay for. The Turbex system was the most expensive of the three options, but we are considering moving from single-shift to 24-hour operation as the aerospace side of our business builds up and we wanted a top quality machine that would be able to cope with heavy use.”

Large machine provides versatility

Around two-fifths of parts received by Revill are plated, including from South West Metal Finishing. Some have already been cleaned before they arrive, while others require degreasing. Phosphating is not applicable with these components.

It is the other three-fifths of throughput that present the paint shop with more of a challenge. As a subcontractor, it is uncertain what parts will come in from week to week and what soils will be on them. Some could be aluminium castings that have cutting oil left on them from machining, while ferrous parts may have been coated with dewatering oil to prevent the surface from rusting.

Moreover, the material may not even be metal; Revill routinely receives plastics and composites to finish. There is also the wide range of different component sizes to contend with, which vary from small bracketry to the base of a flight simulator.

Continued Mr Moore, “With all of this in mind, we wanted the largest cleaning machine that we could fit into our factory and one that would be

able to cope with virtually anything. The Turbex system, with its wash chamber dimensions of 2.1 by 1.2 by 1.2 metres and 2-tonne weight capacity, does just that.

“It means that we can clean rectangular parts up to 2.4 metres long and accommodate even larger, thin components across the longest diagonal, giving us more versatility than our previous, smaller trike tank.

“Overall we can process 25 per cent more parts in a single cycle, which is key to the efficiencies we are experiencing. We don’t need to run the Turbex machine as often, so chemical use is less than we expected and the labour element is also reduced.”

In this connection, Mr Baker added that the less frequent use of the machine results in 0.6 m³ of daily water usage instead of the anticipated 2.0 m³. Contributing to this saving is the small amount of cold water needed for rinsing after the 60 - 75°C detergent wash and 50 - 55°C phosphating, as efficient compressed air purging of the pipes, as well as chamber geometry, minimise carry-over of chemicals to the subsequent stages.

Component batches for processing can vary widely from one- to 500-off. A typical cleaning cycle takes around 20 minutes including load / unload, final 60 - 75°C water spray rinse and steam extraction. All parameters are variable, with multiple preset programs stored for immediate call-up from the control’s keypad. The cleaning program is entered on the process sheet for each job so that the correct cycle is always used.

Mr Moore concluded, “All our customers benefit from the additional phosphating process after degreasing, provided that they want it of course, so we are providing a better service at no extra charge.

“The new cleaning system has exceeded all our expectations and our staff have accepted it readily, despite some having operated the former trike system for more than 20 years.

“In the Turbex machine, we feel we have a sustainable and ecologically acceptable cleaning system to help take our business forward.”

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Radars platforms are some of the larger items processed by Revill in its new Turbex AC-2.5-3-FS-LD aqueous cleaning machine.



Dave Moore (left) discussing the merits of aqueous cleaning with Kevin Baker.

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