

Wheelabrator switched from n-propyl bromide to DOWPER™\* MC in closed cleaning equipment

# ALIGNING STRONG CLEANING PERFORMANCE WITH **WORKER SAFETY**

## Significant role of shot peening in aerospace

Wheelabrator Impact Finishers, part of the Norican Group, is a specialist subcontract shot peening supplier to industries requiring expertly outsourced shot peening services. With over 50 years of experience, Wheelabrator's well-established client base comprises various industries such as aerospace, architecture, automotive and motorsport, oil and gas as well as general engineering sectors.

Given the increasing requirements today to produce lighter, more fuel-efficient aircraft, designers are employing lighter and stronger alloys. Shot peening plays a significant role in increasing the fatigue life of highly stressed critical airframe components. The process allows the further reduction of weight using parts designed with less mass but the same, if not enhanced, fatigue properties. Shot peening works by striking a surface with a shot (round metallic, glass or ceramic particle) with enough force to generate plastic deformation. When a group of shots impact the surface they generate multiple indentations, resulting in the component being encased by a compressive stressed layer on the metal surface.

With ever increasing aircraft build rates and demands on lead times, Wheelabrator has to ensure quick turnaround time for their customers. Aerospace components processed at Wheelabrator range from very large wing ribs, spars, wing skins and undercarriage components such as gear ribs, linkages, hydraulic cylinders and bolts, as well as landing gear wheels, down to a very small spring or fixing. In addition, aero engine compressor blades, fan blades, drums, spinners and supporting components are fully catered for.

## wheelabrator Impact A Norican Technology

### COMPANY

- Wheelabrator Impact Finishers, a specialist subcontract shot peening supplier

### CHALLENGE

- Replace n-propyl bromide (nPB) with an alternative solution that is safe, reliable and fulfils high cleanliness requirements

### SOLUTION

- Union closed cleaning system (MDMV2 PX) under vacuum
- Cleaning agent: DOWPER™\* MC delivered in the SAFE-TAINER™ System
- COMPLEASE™ Chemical Leasing

### RESULTS

- Solvent consumption reduced by 95 % and financial savings
- Improved health and safety for operators
- Better environmental profile

### PARTNER ALLIANCE





Wheelabrator decided to invest in the Union machine model MDMV2 PX

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## Regulatory change prompted a replacement search for n-propyl bromide

In the past, Wheelabrator cleaned the processed parts with n-propyl bromide (nPB) in an open machine. The components were cleaned in dip tanks and every single part had to be hand wiped after the cleaning process which was time-consuming.

In 2017, nPB had been registered as a substance of very high concern (SVHC) under REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals), which regulates the supply and use of chemicals in Europe. For nPB, a sunset date for July 4, 2020 was set, after which its use would be banned. Thus, there was a need for Wheelabrator to find soon an alternative cleaning setup that would offer reliable parts cleaning, while being environmentally compliant and safe for their workforce.

## Safety, reliability and customer acceptance – Key criteria for finding a new cleaning solution

The alternative solution must comply with very specific criteria, as Ron Orchard, Production Manager at Wheelabrator, explained: “The safety of our working staff is absolutely paramount. We wanted to make sure that their exposure to solvent was going to be minimal. At the same time, the solution should be one that is cost-efficient, reliable and fulfils highest cleanliness requirements and very importantly, would be approved and accepted by our customer base that includes Airbus and Boeing, amongst others.”

At the beginning of 2020, Wheelabrator started discussions with SAFECHEM and D&S Ultra-Clean Ltd., the UK distributor for the metal cleaning equipment manufacturer Union S.p.a. At the end, Wheelabrator decided on a Union closed cleaning system (MDMV2 PX) under vacuum.

“Considering that the phase-out of nPB was approaching fast, one big advantage that Union offered to us was the relatively short build time of the machine. And having D&S Ultra-Clean Ltd. based in the UK with their servicing and installation for the machine was a huge benefit for us too”, added Ron Orchard.

The Union machine would be running on DOWPER™\* MC, virgin-grade and highly stabilized perchloroethylene supplied by SAFECHEM. The cleaning solvent caught Wheelabrator’s attention as it is already widely accepted and in use within the aerospace industry. There was no need to gain permission for using the product which saved time.

“All the educational work SAFECHEM has done around the safe usage of perchloroethylene in closed cleaning machines, in combination with the SAFE-TAINER™ System, has given us additional confidence that DOWPER™\* MC is the right product to go for!” noted Ron Orchard.

The use of the SAFE-TAINER™ System developed by SAFECHEM – a closed-loop state-of-the-art solvent management system for the safe transport, storage and handling of solvents – in combination with closed cleaning equipment is considered to be the Best Available Technique (BAT) in the market.

## Reduced solvent consumption & environmentally compliant parts cleaning

The machine was installed in October 2020 and since then Wheelabrator has received great service and support from D&S Ultra-Clean Ltd. The vast majority of the parts that Wheelabrator cleans fits perfectly into the machine, which is equipped with an automated basket system. Parts are now 100% degreased in fully controlled and enclosed conditions.

Wheelabrator has also signed up to SAFECHEM's COMPLEASE™ Chemical Leasing, a tailor-made leasing package aiming to increase efficiency of the parts cleaning process with less resources. The offering covers supply of new solvent in the SAFE-TAINER™ System, waste handling, service elements to safely extend the working life of the solvent, along with staff training in process management to ensure a safe and efficient parts cleaning process – all for a monthly fixed fee.

“We used to spend a huge amount on replacing solvents. Now, thanks to the built-in distillation unit in the Union closed cleaning machine, used solvent can be constantly reused and recycled. This routine recycling means there are very low solvent replacement volumes necessary. This has allowed us to reduce our spend considerably, which in itself is a solid financial argument to justify the investment of the machine.”

On the question whether Wheelabrator would make the same choice again, Ron Orchard answered: “In a heartbeat. The impact on the environment that we have now is a fraction of what it was. We are clearly satisfied and SAFECHEM and D&S Ultra-Clean Ltd. have been reliable partners to us throughout the process. With the Union machine in combination with DOWPER™\* MC, we have gained process control, plus improved health and safety for our operators.”

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“We have also been able to cut down on emissions and chemical waste – our solvent use has been reduced by a substantial 95 %.”



# IF YOU WOULD LIKE TO SEEK ADVICE ON ACHIEVING THE BEST PARTS CLEANING RESULTS, PLEASE CONTACT:

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**SCAN TO LEARN MORE ABOUT THE SAFE USE OF  
PERCHLOROETHYLENE IN CLOSED CLEANING MACHINES:**

<https://www.youtube.com/watch?v=GuZ3IMjPb7k&t=>

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