



Aircelle switched from traditional solvent delivery to COMPLEASE™ Chemical Leasing with DOWPER™ MC Perchloroethylene

Environmentally compliant surface cleaning with maximum performance

Chlorinated solvents are essential to achieve the desired results in numerous precision surface cleaning applications, especially in the aerospace industry. However, many manufacturers are evaluating alternatives; so did Aircelle Ltd. at Burnley (UK). In order to not jeopardise cleaning quality, the nacelle manufacturer decided for DOWPER™ MC Perchloroethylene and COMPLEASE™, the chemical leasing model from SAFECHEM Europe GmbH ('SAFECHEM'), a subsidiary of The Dow Chemical Company. It helps to ensure that the highest requirements to both component cleanliness and health, safety and the environment (HSE) are met. At the same time, the service-oriented leasing model provides process optimisation to reliably produce top products.

Aircelle, a member of the SAFRAN Group, is one of the world leaders in nacelle integration and the only manufacturer that offers solutions for different market segments – from business and regional jets to the largest commercial airliners. In addition to technical and financial performance, protection of HSE are important corporate objectives. In the framework of SAFRAN's HSE programme, Aircelle adheres to strict environmental protection rules based on ISO 14001 norms, with strict audits of Aircelle facilities.

HSE – main drivers to a new cleaning solution

At the site in Burnley (UK) the company manufactures amongst others the Trent 900/GP 7200 nacelle and thrust reverser for the Airbus Aircraft A380.

The manufacturing capabilities include production of complex sandwich and monolithic composites, sheet metal stretch forming and final assembly. A critical step in the composite production process is the reliable removal of contaminations such as grease prior to the subsequent adhesive bonding process.

Even though retaining solvent cleaning was seen as a challenge, with COMPLEASE™ Chemical Leasing Aircelle has implemented a solution which supports the company's aims regarding HSE and product quality. The chemical leasing model developed by SAFECHEM allows the company to benefit from solvent cleaning for an all-inclusive monthly fee. "COMPLEASE™ enabled us to capture a number of critical requirements under one easily managed package. It helps to meet all our requirements to HSE and provides us with expert consultancy and industry know-how.", explains Stephen Ingham, Facilities and Capital Assets Engineer at Aircelle.

Considering alternatives

Aqueous cleaning was, as in many cases, the considered alternative. However, the evaluation showed that more complex part geometries and the composite items – aluminium honeycomb – require vapour degreasing to achieve the necessary cleanliness. An additional initial investment and much higher operating costs finally convinced the management of Aircelle and SAFRAN that a variety of components manufactured at Burnley were cleaned efficiently and reliably with a chlorinated solvent.



Virtually emission-free cleaning process

As a result, the company decided to retain a well proven process in a safer environment. Aircelle invested into cleaning technology from the company HÖCKH Metall-Reinigungsanlagen GmbH, one of the leading closed cleaning equipment manufacturers. The new cleaning machine is one of the UK's largest, completely closed chamber systems for cleaning with trichloroethylene, perchloroethylene and modified alcohol solvents, operating under vacuum. Emissions stay below 1 ppm. The solvent is supplied and taken back for an environmentally responsible disposal in the SAFE-TAINER™ System, developed by SAFECEM. This system for transport, storage and handling, consists of two different, specially designed double-walled containers for fresh and used solvents. In combination with the new cleaning machine the SAFE-TAINER™ closed-loop transfer system represents the Best Available Technology (BAT) and enables a virtually emission-free cleaning process.

Further improvements through COMPLEASE™ Chemical Leasing

DOWPER™ MC is a highly stabilised, virgin perchloroethylene grade which has a wide range of approvals in the aerospace industry. Integrated into COMPLEASE™ Chemical Leasing the cleaning process can be improved even further due to a higher level of involvement from SAFECEM. "The process lifecycle has become extremely reliable and efficient. We now have a clearly defined cycle of delivery, testing, waste management, documentation, consultancy and HSE compliance all within a managed cost", states Stephen Ingham.

SAFECEM also coaches and consults on solvent maintenance in the CHEMAWARE™ Solvent Training every year. Involved staff not only get information on the safe handling of perchloroethylene but also on optimising the process by monitoring the quality and maintaining the solvent stability using MAXICHECK™ Test Kits and MAXISTAB™ Stabiliser. "Testing and analysis are critical to the safe and efficient functioning of the equipment, having staff trained and understanding the risks is essential", says Stephen Ingham. Test results are recorded in a logbook provided by SAFECEM, allowing tracking of measurements and solvent quality over the entire lifespan. These services have resulted in a further decrease of solvent consumption up to 10 percent. "Additionally machine utilisation is running at 99 percent. Previous to the COMPLEASE™ agreement we have had occasions where the utilisation had been interrupted due to supply issues, testing problems and general health and safety issues", reports Stephen Ingham. In total,

solvent consumption at the Burnley facility could be dropped by 92.9 percent annually compared to the previous cleaning technology. Aircelle could also recognise a decrease of energy costs by 50 percent, mainly because the new system requires less energy for heating.

Another aspect: cost transparency

In addition to the technical aspects, COMPLEASE™ Chemical Leasing convinced with financial advantages. "Cleaning has also become more economical. This results, on the one hand, from reduced admin costs. On the other hand, supply of solvent and stabiliser match exactly our need. Previously we held extra requirements to mitigate short falling", describes Stephen Ingham. The annual cost for the solution package is negotiated on requirements and stays flexible to Aircelle's needs. The fixed monthly charge prevents from high cost peaks and enables the company to know its annual budget requirements. "Besides the process reliability and cost transparency, COMPLEASE™ offers high levels of safety for people and the environment", concludes Stephen Ingham.



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