



Novec™

Brand

3M™ Novec™ Engineered Fluids

3M cleans up for BAE

Adoption of sustainable, high-performance fluids from 3M™ Novec™ delivers a host of benefits in the production of advanced defense electronics.

BAE Systems' Electronics site has shifted from trichloroethylene (TCE) to 3M™ Novec™ 72DE Engineered Fluid from Acota for the solvent cleaning of delicate sonar transducers during the manufacturing process. The change has significantly reduced the organization's consumption of harmful solvents and improved quality by allowing sensitive parts to be quickly and effectively cleaned at lower temperatures, reducing the chance of damage during the cleaning process.

The production facilities at BAE Systems manufacture a variety of highly advanced and sensitive electronics equipment for the defense and aerospace sectors. Parts are typically manufactured at relatively low volumes, and they can be extremely costly and time consuming to produce, with testing only possible at a late stage in assembly. As a result, manufacturing quality requirements are critical, and contamination from handling or contact with grease and debris must be avoided at all costs.

In the production of its sonar transducer systems, BAE Systems has traditionally operated an ultrasonic cleaning regime using TCE to eliminate contamination before final assembly, but environmental and quality concerns prompted a search for an alternative solution.

"As manufacturing engineer in charge of the solvent cleaning processes, I was well aware of the potential effects of the Solvent Emissions Directive," explains Mark Seccombe of BAE Systems. "Our site solvent consumption is actually well under the limits set out in the Directive, but we were keen to adopt environmental best practices and protect our process against any future tightening of environment regulations."

The Solvent Emissions Directive (EC Directive 1999/13/EC) places strict limits on the emissions of volatile organic compounds (VOCs) from industrial processes. Solvents, including common cleaning solvents such as trichloroethylene

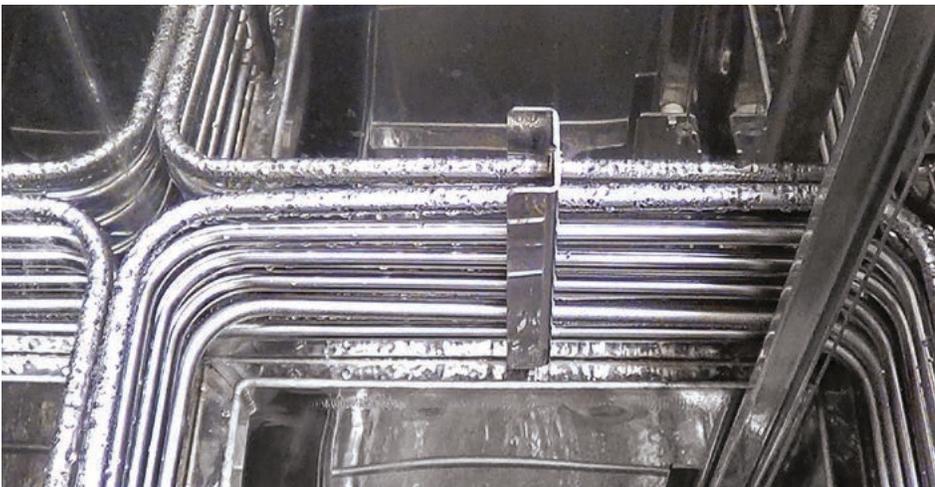
and n-Propyl-Bromide (nPB), needed to be replaced in the shortest possible time.

"I spoke with Acota about alternative solutions to TCE. They suggested that the most future-proof solution would be Novec 72DE Engineered Fluid from 3M, which could be adopted in my current Kerry precision cleaning equipment from Guyson International Limited. They also suggested I visit a 3M seminar on the SED and alternative approaches," Seccombe recalls.

As a result of his discussions, Seccombe realised that by working with Guyson to convert his existing Kerry Microsolve machine to use Novec Engineered Fluids, he could significantly reduce the toxicity of the cleaning process and deliver quality improvements at the same time.

"The Novec fluid cleans as quickly and effectively as our previous solution and it works in the same equipment without modification," he explains. "But as it has a much lower boiling temperature of 44°C as opposed to 80°C, we reduce the risk of thermal damage to components."

The much reduced solvent emissions also meant that there was no need to install an expensive and elaborate fume extraction system in the cleaning area, saving significant capital investment. "The fluid itself may be more expensive than our previous solution, but the new processes mean that we use less of it, get better results and avoid buying expensive and disruptive additional equipment," concluded Seccombe.



General precision cleaning image provided by 3M

3M Science. Applied to Life.™

3M™ Novec™ Engineered Fluids are designed to balance performance with favorable environmental and worker safety properties. They are available for a wide variety of applications, including heat transfer, cleaning, testing and lubricant deposition. Novec fluids offer excellent dielectric properties, a wide range of boiling points, good materials compatibility, low toxicity and non-flammability, low global warming potential and zero ozone depletion potential.

Smart. Safe. Sustainable.

The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for smart, safe and sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Grade Coatings • 3M™ Novec™ Electronic Surfactants • 3M™ Novec™ Insulating Gases

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Regulatory: For regulatory information about this product, contact your 3M representative.

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Electronics Materials Solutions Division

3M Center, Building 224-3N-11
St. Paul, MN 55144-1000 USA

Web 3M.com/NovecCleaning
Phone 1-800-810-8513

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01743 466200
sales@acota.co.uk
www.acota.co.uk

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