



**Novec™**

Brand

## Saab chooses sustainable alternative to Trike

**For decades, the renowned Swedish defence contractor Saab has used precision cleaning processes to ensure that the components and systems they manufacture and assemble meet the highest quality standards. For many years, Trichloroethylene (Trike) provided the precision cleaning needed to meet these standards. After the banning of Trike, these processes within Saab have been decommissioned and replaced by other approved solutions.**

Therefore, when Project manager Lars-Gunnar Huss at Saab Dynamics and his team took on the task of phasing out their Trike process, they immediately set about finding a replacement. Such an undertaking required a pre-selection methodology since the evaluation tests were considered too extensive, expensive and impractical to perform more than once. Lars-Gunnar found an archived Saab precision cleaning report, comparing different solvent based technologies. The results in the report were very promising but, at over 30 years old, needed some re-validation. The test report did point Saab and Lars-Gunnar in a particular direction and that's where Novec™ and 3M™ came into focus.

3M had supplied Saab with 3M™ Novec™ Engineered Fluids and Fluorinert products in the past, primarily for dielectrical purposes. Kemi-Intressen AB, the Swedish 3M distributor, and 3M were engaged to help in the evaluation process for precision cleaning, and in addition, Guyson,

the UK precision manufacturer of 'Kerry' Ultrasonic cleaning machines was brought in to ensure Saab got the optimal solution. Saab decided to evaluate the Novec co-solvent cleaning process to see if it was at least equivalent to their own Trichloroethylene process. Inventec supplied the co-solvent TOPKLEAN™ EL-20A via their Swedish distributor, Desab AB.

Lars-Gunnar began the tests by using the Trike cleaning as a standard of comparison. DINITROL® was used as a contaminant, being particularly difficult to remove, and two identical sets of components were selected and contaminated. Saab cleaned one set in their still operational Trike process, Guyson cleaned the other identical set.

The sets were then sent to the 3M UK lab for analysis. Following some adjustments to the precision cleaning process at Guyson, the results showed excellent consistency and cleanliness compared to Trichloroethylene. With this milestone achieved by 3M™ Novec™

precision cleaning, Lars-Gunnar and Saab decided to take the next step. They were generously provided a Microsolve co-solvent machine by Guyson and went on to further evaluate this cleaning process for their magnetron assembly. This involved inspecting and rigidly testing magnetron components during manufacture, to ensure they reached satisfactory cleanliness and operational stability. The evaluation was finalised by running tests of complete magnetrons. The new precision cleaning passed all the tests.

Throughout this test and evaluation, support was provided by a number of parties. Lars-Gunnar mentions Kemi-Intressen AB, and Peter Kollmann in particular having provided sustained and measured support along with Guyson's technical service from Alan Thompson and Mikael Edlund. After nearly two and half years of evaluation, with an estimate of two months of work time spent by Saab on the evaluation and qualification of the replacement, the decision was finally taken to acquire a Guyson co-solvent precision cleaning machine using Novec engineered fluids. To date, according to Lars-Gunnar Huss, this process has consistently produced desired cleaning results.

### In short:

**Saab seek a sustainable alternative to Trike, for precision cleaning of components and systems.**

A comprehensive evaluation confirms that TOPKLEAN™ EL-20A, used with Novec engineered fluids in a co-solvent process, offers excellent consistency and cleanliness compared to Trike, with a significantly enhanced sustainability profile.



The Microsolve co-solvent machine used at Saab.

**3M Science. Applied to Life.™**

3M™ Novec™ Engineered Fluids are designed to balance performance with favourable 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; wide range of boiling points; good materials compatibility; low toxicity and non-flammability; low global warming potential; and zero ozone depletion potential.

## 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 safe, effective, 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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