IMPROVING THE SAFETY, EFFECTIVENESS AND SUSTAINABILITY OF A/C CLEANING FOR TUNISIAN RAILWAYS

"**Solstice® PF-C, as part of the Ekoflush™ system, offers significant advantages over our previous methodology – the solvent is safer to use, better for the environment and more effective in flushing the air-conditioning circuits on our trains.**"

Maintenance Manager
SNCFT, Tunis

Solstice® PF-C

The Société Nationale des Chemins de Fer Tunisiens (SNCFT) is the national railway of Tunisia, under the direction of the Ministry of Transport. The country's climate makes air conditioning an integral part of the train operator's passenger services and this, in turn, means regular maintenance and servicing by the organisation's technical team. Initially, the company used R141b to flush through the A/C circuits but when this was banned, SNCFT was suggested to use Dichloromethane (also known as Methylene Chloride) as a solvent due to its strong solvent power that resembles that of R141b.

However, Dichloromethane is toxic and comes with health risks associated with inhalation and skin absorption. It is also considered as carcinogenic. In addition, Dichloromethane has a boiling point of 40°, which makes it difficult to evaporate it from a cleaned circuit.

The Needs

- SNCFT needed an effective alternative to HCFC-141b and to Dichloromethane to flush out its train air conditioning circuits

- The solvent needed to be sufficiently strong to deliver the required results but completely safe for operatives to use

- SCCFT required the solvent to have minimal impact on the environment, both in usage and in disposal

- The solvent also needed to be compatible with train A/C system components

The Solution

SNCFT was introduced to Honeywell's Solstice® PF-C by UNIDO Vienna as part of the Ekotez Ekoflush™ system, developed specifically to provide a higher quality, cost effective, safer and environmentally compliant flushing solution for air conditioning and refrigeration circuits.

Solstice® PF-C is the result of Honeywell's latest research to provide a non-flammable, non-toxic, ultra-low global warming and nearly odourless solvent. It is a special grade of a high-performing hydrofluoroolefin (HFO-1233zd) and it is 100% active, offering an improvement over previous cleaning solvents.

Having assessed both Solstice® PF-C and Ekoflush™, SNCFT adopted the integrated system for its A/C service programme.

The Benefits

- Solstice® PF-C with Ekoflush™ provides SNCFT with a high performance, zero ODP (Ozone depleting potential) and ultra-low GWP (equal to 1) solution

- The Honeywell 4th generation solvent is non-toxic, offering significant safety improvements to the SNCFT service teams

- Ekoflush™ works in closed circuit, meaning that there is very little loss of Solstice® PF-C in operation

- The Solstice® PF-C solvent can be used up to 20 times thanks to automatic Ekoflush™ distillation

- At the end of its lifecycle, Solstice® PF-C can be disposed of in line with local waste regulations in Tunisia

- In the case of SNCFT, Solstice® PF-C replaces 4.5 tons of R141b or Dichloromethane previously used annually

SNCFT: Implementing A New Train A/C Flushing Procedure

With the introduction of strict rules governing the use of R141b - and the hazardous nature of Dichloromethane - SNCFT sought a new solvent that would be ultra-effective for A/C circuit cleaning, safer for technicians and more friendly to the environment.

Having identified Solstice® PF-C and the Ekoflush™ system, the railway operator implemented a training programme that included product familiarisation as well as practical demonstrations of the system in use. This included fully functioning sessions using the Honeywell solvent and the Ekoflush™ unit to clean A/C circuits on trains, with a transparent demonstration loop connected to condensers so that technicians could 'see' the flushing procedure in operation.

At the end of the flushing process, the residual oil and grease debris from the cleaned circuit was drained into a bottle.

As a result of this change in solvent and methodology, the service team now works in a safer and healthier environment and circuit cleaning is more effective and efficient than before.

Delivering Eco-Friendly and Superior Air-Conditioning Circuit Flushing

While Solstice® PF-C provides very strong solvent performance, it is also significant for its minimal impact on the environment, with a GWP =1 (the same as CO_2) and zero ODP, and a high safety profile for operators.

In conjunction with the Ekoflush™ system, Solstice® PF-C provides extremely efficient cleaning performance with all kinds of oils used in refrigeration and air conditioning, completely dissolving them in the circuit.

Using the flushing procedure, even difficult contamination is cleaned out, while a special pulsing operation applies additional abrasive degreasing action to remove soot and dirt from crevices and corners. Using high-pressure, up to 8 bar, particles and soot are forcefully flushed out – and thanks to its low boiling point, the solvent can easily be recovered from pipework, leaving the circuit clean and dry.

All Ekoflush™ machines are fully automatic: the technician simply connects the unit to the equipment and the solvent cylinder with the hoses supplied and, on completion of the cycle, disconnects the hoses. A fully automatic cleaning process prevents exposure of service personnel to contaminated cleaning fluids.

In addition to applications such as SNCFT trains, this technology is equally applicable to trams, buses, boats and refrigerated trucks etc.

The service team now works in a safer and healthier environment and circuit cleaning is more effective and efficient than before.

For more information

www.honeywell-solvents.com

Honeywell Belgium N.V.

Gaston Geenslaan 14

3001 Heverlee, Belgium

Phone: +32 16 391 212

Fax: +32 16 391 371

E-mail: fluorines.europe@honeywell.com

Solstice is a registered trademark of Honeywell International Inc.

FPPF-024-2017-01-EN

Honeywell