



Novec™

Brand

Improved cleaning of orthopaedic implants at Beznoska.

Beznoska is a Czech-based developer and manufacturer of implants and surgical tools for orthopaedic surgery. Based in Kladno, they operate in the Czech Republic and trade mostly throughout Eastern Europe. They pride themselves on manufacturing innovation and have been awarded several patents for hip joints and ligament apparatus.

No room for error

Since Beznoska implants end up in the human body, there can be no compromise on cleaning of the devices during the manufacturing process. The devices must be 100% clean, as the smallest amount of contamination could cause a toxic burden for the patient, or failed integration of the implant, leading to loosening. Both scenarios could result in repeat surgery. From a manufacturing perspective, anything less than a positive result during periodic process evaluation leads to delay in product finishing and can cause additional costs to remedy.

The old regime

Previously, the cleaning regime for orthopaedic implants used a combination of alkaline and acidic industrial, water-based degreasers, cleaning the implants at elevated temperatures in an ultrasound bath. This was followed by rinsing in clean water and drying with compressed air, all operations being performed manually.

The old regime was a very labour intensive process, requiring lengthy preparation at the start of each shift. An improved system was sought to simplify the whole process, and also improve the working environment for operators.

The new process

Now, an operator places the newly manufactured parts onto a tray, which is automatically grabbed by a robotic arm and transported into the 90 litre cleaning tank of the new MEG machine. The tank is divided into two sections. In the first one, parts are pre-cleaned in vapours of 3M™ Novec™ 72DA Engineered Fluid at a temperature of 42°C. The robotic arm then moves the tray into the second section. Here the tray is completely immersed in Novec fluid and the ultrasound is started, with tray movement applied for better cleaning.



The new MEG machine with 90 litre tank



Parts are pre-cleaned and then immersed in 3M™ Novec™ 72DA Engineered Fluid for rigorous cleaning

After the cleaning cycle the tray is elevated above the fluid level, where cooling coils are located. Here, the quickly evaporating 3M™ Novec™ 72DA Engineered Fluid condensates back into the tank. In the last step, the robotic arm moves the tray back to a loading/unloading area where an operator removes the clean parts. Tests are used to verify the cleaning efficiency and check all substances are removed from part surfaces.

Jiri Bichler, Head of Production at Beznoska was responsible for the switch to the new cleaning regime using 3M™ Novec™ 72DA Engineered Fluids. He comments: “Our main motivation was to improve the working environment at Beznoska, and the new regime has been well accepted. The machine is very easily operated and the whole process performs very well. For any MedTech companies who intend to improve the quality, safety or overall process of their cleaning regime, Novec fluids are definitely worth considering.”



Parts are tested to ensure there are no traces of oils or compounds remaining.

Smart. Safe. Sustainable.

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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Electronics Materials Solutions Division

3M United Kingdom PLC,
3M Centre, Cain Rd,
Bracknell RG12 8HT,
United Kingdom
0800 0320841
www.3M.co.uk/novec

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Beznoska
www.beznoska.com
t: +420 312 660 670
e: mailbox@beznoska.cz