

ULTRASONIC TANKS FOR ANTIMICROBIAL AND ANTI-BIOFILM TEXTILES AND CATHETERS

The H2020 project “[PROTECT](#)” developed a versatile platform of 3 pre-commercial lines for production of antimicrobial textiles for hospitals and public areas, and anti-biofilm medical devices and water treatment membranes. The project was coordinated by Univesitat Politècnica de Catalunya and had a duration of 54 months.

Within the EU Project, Cedrat Technologies (CTEC) delivered 2 ultrasonic tanks for one-step, simple, fast and reproducible processes for biocompatible antimicrobial and anti-biofilm nano-coating of 2D and 3D surfaces of products including, without being limited to Fabrics and Catheters.

The first ultrasonic tank, called **R2R Tank** delivered to the end-user [Klopman International](#) (Italy) is an upscale 1.5 m width version of the sonication tank 0.5 m width formerly developed under the FP7 project “[SONO](#)”. Thanks to a padder at the input and a foulard at the output, this tank provides with an ultrasonic continuous roll-to-roll (R2R) sono-chemical coating of Fabrics and membrane at speed of 2 m/min (see figure 1). The automation of the full machine has been made and delivered by [Icône](#) (France).



Fig. 1: R2R machine with 1.5 m width ultrasonic Tank for cotton Fabrics. The brown color is the coating results.

The second ultrasonic Tank, called **Batch Tank** (Figure 2), delivered to the end-user [Degania Silicone](#) Ltd (Israel) is made for ultrasonic treatment of Urinary Catheters. A batch a 100 Catheters is dispatched into a drum which is rotating around an ultrasonic sonotrode immersed into the processing bath (Figure 3). After 30 minutes of sonication process, all the Catheter tubes are both coated inside and out with antimicrobial nanoparticles.



Fig. 2: Drum filled with a batch of Catheters



Fig. 3: Batch Tank for Catheters Sonication

From those 2 ultrasonic Tanks, CTEC can develop customised versions to answer to specific requirements in terms of product or media size to be impregnated or coated with similar nanoparticles antimicrobial process developed by [BINA](#) lab from Bar-Ilan University (BIU).



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