

Ultrasound cleaning system washes away wasteful practices in the food industry



A completely new kind of conveyor belt cleaning rig, developed by an FP7 consortium including SinapTec, a member company of EARTO member ASRC, is helping Europe's food industry SMEs reduce their environmental impact and improve their global competitiveness. By coupling ultrasound with low water pressure delivery, the LOWTEV washing system removes bacteria, cuts energy and water use and increases productivity - and has the potential to achieve similar results in industries such as pharmaceuticals and engineering.

Stringent cleaning of conveyor belts is vital for any business involved with bakery and confectionery, salads and sandwiches, fruits and vegetables and cooked and uncooked meats. Washing equipment must prevent the spread of biofilm created by microorganisms such as bacteria, yeast and mould, a task that has traditionally involved high volumes of water, heat and chemicals. A new approach was clearly needed to reduce the use of all three at a time when the balance between water demand and availability is reaching a critical level in many areas of Europe and 230,000 small food firms are seeking smart cost-saving solutions.

The LOWTEV system reduces the volume of water used for cleaning by 60-80% and achieves water, energy and productivity savings estimated to be worth between €10,000 and €37,000 per factory per year

Bubble breakthrough

The LOWTEV (Low Temperature and Lean Volume Cleaning System) collaborators combined their expertise in food science and processing, system design, ultrasonics, automation and engineering to devise a system based on a novel ultrasound transducer capable of cleaning and sanitising surfaces with low pressure water, which they then integrated with an automated monitoring system. The transducer develops tiny bubbles with core

temperatures of over 1000°C which act like millions of tiny brush bristles to thoroughly clean even the greasiest of conveyor belts.

Rapid returns

The project achieved its primary goal of reducing the amount of cleaning water needed to achieve relevant food safety and quality standards - by as much as 80%. As the water used doesn't have to be hot, energy consumption is cut too. The technology even removes the need for chemicals altogether and protects against foodstuff contamination including allergic proteins as well as biofilms. With its faster clean cycle time and lower labour costs, the system can increase productivity by 10% per line per year. The value of all the system's benefits add up to a return on investment in less than 12 months.

'We have now extended the project as a 'demonstration action' with seven partners, including four user companies who will be validators for this technology in their respective trades - fruit and vegetables, bread and sandwich fillings, cooked and fresh meat and fresh fish' Pascal Tierce, SinapTec

Market ambitions

After testing a prototype in industrial configurations, the team has now moved on to a full-scale demonstration project, LOWTEV II. This will see the system implemented in an industrial environment for commercial validation. Once the industrialisation process is complete, SinapTec intends to take the system to market. Estimating that it could capture 3% of the European market, SinapTec believes that 500 systems could be sold within the next five years at a total cost of over €10 million.



SinapTec is an independent SME with over 25 years' experience in the development of innovative ultrasound solutions for use in research and industry. Approved as a private research and technology organisation by OSEO, the French innovation agency, SinapTec designs and develops solutions in collaboration with clients - and its intuitive NexTgen platform also allows them to manage the development of their own ultrasonic solutions.
www.sinaptec.fr

The Association of Contract Research Structures (ASRC) is made up of 40 private research and technology organisations across France. It is dedicated to delivering innovative solutions for businesses and government agencies to improve efficiency, productivity and competitiveness in many sectors including health, food, energy, materials, transportation, logistics, IT, defence and security.
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