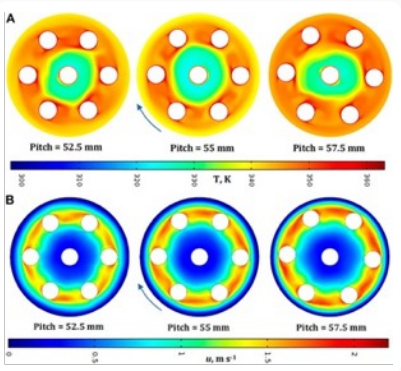
KATAKEM

HOW CHEMISTS CAN SAVE TIME AND ACCELERATE THE SCALE-UP WITH ONEPOT, THE FIRST FULLY-AUTONOMOUS BATCH REACTOR.



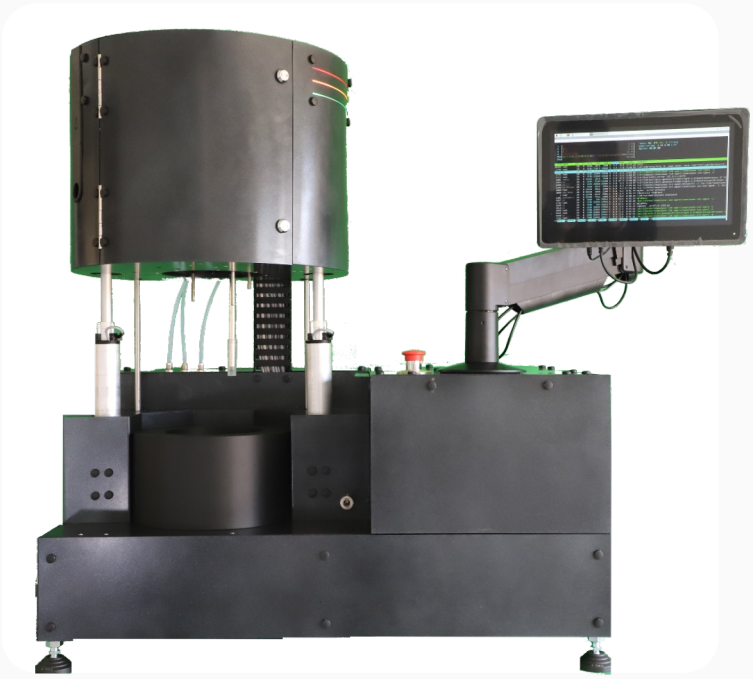


Katakem is an Italian startup created in 2019 by founders from academia with years of laboratory experience: Marco Francardi, a physicist by training, and Manuela Oliverio, an associate professor in organic chemistry at UMG. They identified a technological gap in chemical laboratories: the need for more automation in the development phase to get more reproducible results and help chemists save important time.



Starting from this, they designed OnePot: a batch reactor to which chemists can delegate all the manual operations. Once the chemist has designed the process on the computer, the robot doses the reagents (liquid, solid, and gaseous), measures pH and weight, mixes, heats up and cools down, extracts the product, and cleans itself.

OnePot integrates the Matrix in-Batch technology: a series of sensors discretises the volume in a 3D matrix and each point is monitored and heated individually.



Currently, there are two versions of OnePot based on the working volume they can manage: 150ml to 1L and 450ml to 5L.

The data produced and collected by OnePot during the execution of any process enables the digitization of a chemical recipe.

Digitization and automation, combined with a controlled environment and no interactions with the surroundings, allow very high reproducibility of processes.

Moreover, chemists can share their recipes in seconds with other laboratories equipped with OnePot so that their results can be instantly replicated: the faster their knowledge is spread, the faster progress happens.

Finally, chemists can scale up their processes quickly and seamlessly thanks to the Matrix in-batch Technology: when the volume increases, the Matrix scales up accordingly.

References

[1] Francardi, M., and Oliverio, M. (2021). Reattore chimico – N° 102020000008245. Rome: Italian Office of Patents and Trademarks. 16 May 2022. PCT/IB2021/053094. Chemical Reactor. 15 apr 2021.

[2] Caravella A, Francardi M, Romano S, Prenesti G and Oliverio M (2022) Optimization of temperature distribution in the novel power-to-heat matrix-in-batch OnePot© reactor. Front. Energy Res. 10:964511. doi: 10.3389/fenrg.2022.964511