

Press release

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2025 Process Intensification Award for Industrial Innovation goes to KHIMOD

EFCE, its Working Party on Process Intensification and the sponsor EUROPIC are pleased to announce that the 2025 Process Intensification Award for Industrial Innovation has been awarded to "*Manifolds for milli-structured pack bed heat exchanger reactors: MIP[®] Multi Injection Process*" developed by KHIMOD, France.

Over the last 20 years, the fine chemicals and pharmaceuticals industries have been moving from batch to continuous production, such as for the three-phase hydrogenation. At large scale, this process is mostly conducted continuously. For small to mid-size production runs, an alternative to batch is the use of milli-structured pack bed reactors. These offer several benefits in terms of process intensification but have limitations regarding scale-up. KHIMOD's MIP[®] technology helps overcome this using a new manifold for milli-structured reactors. This allows the scale-up of continuous liquid-gas reactions, such as hydrogenations, FischerTropsch synthesis and many others that are key for the development of low carbon footprint fuels and for the industrial reshoring of chemical production to European countries.

The manifold consists of a stack of machined plates and can therefore be completely open, which is an important requirement for the cleaning and inspection. It comprises a double distribution network, one for liquid and one for gas. Computational Fluid Dynamics simulation and experiments using Resistance Temperature Detectors and chemical reactions show that it provides uniform flow distribution for both liquid and gas.

KHIMOD specializes in decarbonising hard-to-abate sectors applying flow chemistry to fine and speciality chemicals production. The company's technology is based on a novel heat exchanger-reactor that uses diffusion bonding.



Besides the heat-exchanger reactors, KHIMOD designs and manufactures turnkey systems and delivers related services for the production of e-methane, e-methanol and e-fuels, allowing H₂ transformation and CO₂ reuse and valorization. The company has been involved in power-to-gas projects such as Jupiter1000 and Methycentre and the production of Sustainable Aviation Fuels (Avebio).

The award will be presented on 5 June 2025 at the 9th European Process Intensification Conference - EPIC 9, which will be held in Athens, Greece, on 4-6 June 2025. KHIMOD colleagues involved in the innovation are invited to give a presentation following the handover of the certificate and medal.

The 2025 Process Intensification Award for Industrial Innovation is generously sponsored by the **European Process Intensification Centre** – **EUROPIC**. europic

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Related links

EFCE media centre (http://www.efce.info/News)

EFCE Working Party on Process Intensification (<u>https://efce.info/WP_PI.html</u>)

9th European Process Intensification Conference -EPIC 9 (<u>https://epic-2025.com/</u>)

Notes to media

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About chemical engineers

Chemical, biochemical and process engineering is the application of science, maths and economics to the process of turning raw materials into everyday products. Professional chemical engineers design, construct and manage process operations all over the world. Oil and gas, pharmaceuticals, food and drink, synthetic fibres and clean drinking water are just some of the products where chemical engineering plays a central role.

About EFCE

Founded in 1953, The European Federation of Chemical Engineering (EFCE) is a non-profit-making association, whose object is to promote co-operation in Europe between non-profit-making professional scientific and technical societies in 30 countries for the general advancement of chemical engineering and as a means of furthering the development of chemical engineering. See <u>https://efce.info</u>

About the sponsor

EUROPIC's mission is to support its members by structurally addressing the global trends and challenges facing the process/chemical industry by accelerating knowledge and technology transfer in the field of process Intensification (PI) and its application in the real world. EUROPIC's products and services are inextricably linked with tackling specific global challenges such as: sustainability, digitalisation, manufacturing of new advanced materials and modularization. It is a unique industry-driven platform set up in 2009 by a coalition of major European businesses. See https://europic-centre.eu/