

Press release

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Excellence Award in Fluid Separations presented for innovative contribution to tray efficiency optimization

Dr. Vineet Vishwakarma is the winner of the 2022 Excellence Award in Fluid Separations of the European Federation of Chemical Engineering (EFCE). His thesis on "*Experimental and numerical investigations for an advanced modelling of two phase flow and mass transfer on column trays*", completed at TU Dresden, Germany, under the supervision of Professor Dr. Uwe Hampel, was unanimously selected by the international jury as the best submission. The jury described the candidate's thesis as outstanding, showing a balanced mix of experimental and theoretical work and also praised the author's solid publication track record. (photo right: Vineet Vishwakarma presents his Award lecture).



Distillation is the leading thermal separation technology that is carried out in millions of tray columns operating globally. Despite being the biggest energy consumers and the largest single investments in separation industry, these columns will remain in service in the future due to unavailability of any industrially viable alternative. However, rising energy costs and the climate emergency drive the need to urgently improve the efficiency of separation processes globally. In his thesis, Vineet Vishwakarma addresses a derivation and validation of an improved predictive model for calculating tray efficiencies at typical operating conditions for distillation and absorption/desorption columns. The flow conditions and the residence time distribution of the gas and liquid flow on the trays were characterised both in theoretical models and experiments. Vineet Vishwakarma built a unique advanced measurement device and applied advanced modelling to phenomena he observed experimentally. The custom-built devices enabled him to measure phenomena that are difficult to measure and to develop an improved and reliable experimental and numerical methodology for estimating tray efficiencies.

Nominating him for the Award, Prof. Hampel wrote: "The contribution work is truly outstanding, considering the experimental analysis and the model development. The model is a clear improvement and has the potential to significantly improve tray design in the future (also by combining it with CFD)."



The award was presented on 21 September 2022 at the 12th International Conference on Distillation and Absorption held in Toulouse, France, on 18-21 September 2022. (see photo; l-r: Armin Rex (Evonik), Vineet Vishwakarma, Harry Kooijman (Working Party Chair))

Vineet Vishwakarma obtained his Bachelor of Engineering in Mechanical Engineering from the Yeshwantrao Chavan College of Engineering, Nagpur, India, and his Master of Technology in Nuclear Engineering and Technology from the Indian Institute of Technology, Kanpur, India. He then moved to Germany where he obtained his PhD from TU Dresden, followed by the position of Postdoctoral Research Associate at the Helmholtz-Zentrum Dresden-Rossendorf. Since June 2022, he holds the position of Postdoctoral Research Fellow at the University of Michigan, Ann Arbor, USA.

The 2022 Excellence Award in Fluid Separations is generously sponsored by **Evonik Industries AG**.



Related links

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

EFCE Working Party on Fluid Separations (https://efce.info/WP_FS.html)

12th International Conference on Distillation and Absorption (<http://da2022.org/en/index.html>)

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 www.efce.org

About the sponsor

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €13.1 billion and an operating profit (adjusted EBITDA) of €2.15 billion in 2019. Evonik goes far beyond chemistry to create innovative, profitable and sustainable solutions for customers. More than 32,000 employees work together for a common purpose: We want to improve life, today and tomorrow.