

PRE-PRINT

Brunazzi, E., et al., Editorial. Chem. Eng. Res. Des. (2015)

This special issue of Chemical Engineering Research and Design features selected papers from the international conference on Distillation & Absorption held in Friedrichshafen on 14–17 September 2014. The conference was organised by DECHEMA and ProcessNet's Subject Division on Fluid Separations on behalf of the European Federation of Chemical Engineering (EFCE) and its Working Party on Fluid Separations. The first conference in this series took place in Brighton in the UK in 1960. The conferences are now held every 4 years, last in Eindhoven in 2010, and showcase the newest findings and research in distillation and absorption technology.

At the heart of most chemical plants lie separation processes based on distillation and absorption. The Distillation & Absorption conferences provide a platform for showcasing innovative research and novel developments within these technologies, ranging from measurement of thermodynamic and transport properties to intensified equipment design and operations. Distillation and absorption are used to produce both petroleum-based and bio-fuels; to treat most of our natural gas; and are a critical element in a host of processes making the chemicals and other products that we are all relying on as part of modern life. Our understanding of the behaviour of distillation and absorption processes is constantly improving, resulting in new methods of control, better process integration, higher energy efficiencies, more effective equipment, as well as novel schemes for reactive, extractive and hybrid processes. As the equipment is generally large in scale, and heavy in energy usage, there are great incentives to introduce new and improved methods and equipment to increase the efficiency and sustainability of these operations.

The Distillation & Absorption 2014 conference covered all aspects of distillation and absorption and was arranged around six traditional major

themes:

1. Basic data
2. Modelling and simulation
3. Control and operation
4. Integrated, hybrid and novel processes
5. Equipment design and revamps
6. Process troubleshooting

In addition, three special topics were also considered:

- Energy efficiency and technology – covering a holistic view of innovative separation processes and technologies leading to a reduction of energy consumption
- Mega equipment – dealing with aspects and/or problems of design, engineering, construction and operation of large distillation and absorption equipment, such as absorbers for carbon capture and distillation units for refineries
- Applications in fine, pharma and biochemical processes – considering special characteristics of distillation and absorption units for multipurpose operation or bioprocess compatible construction

A total of 163 contributions were featured during the three days, of which 58 were oral presentations (28 from academia and 29 from industry) and 105 were poster presentations (74 from academia and 31 from industry). All authors were invited to contribute extended versions of their conference contributions to this special issue. The efforts of the reviewers in processing all these manuscripts within the short time scale are greatly appreciated as it has been a difficult task to distil the submissions down to the ones featured here. We hope that this special issue will raise the awareness and interest of chemical engineers of the exciting work being undertaken within this area, and to underscore the continuing relevance of this subject to the chemical plants of the future.

Finally, we would like to highlight the challenge for the future, in terms of an

unprecedented need for technological innovation within separations based on distillation and absorption. The current level, although impressive, is still not sufficient, and real fundamental step changes will be required to meet future efficiency and sustainability demands – but we will let that be the focus of the Distillation & Absorption 2018 conference.

Elisabetta Brunazzi *University of Pisa, Italy*

Jens-Uwe Repke *TU Bergakademie Freiberg, Germany*

Eva Sorensen * *University College London, United Kingdom*

* *Corresponding author. E-mail address: e.sorensen@ucl.ac.uk (E. Sorensen)*