

## Distillation technology – Still young and full of breakthrough opportunities

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### Summary

Considering that the chemical process industry is among the most energy demanding sectors, the chemical engineers have now embarked on a quest for shaping a much needed sustainable future. Distillation is a thermal separation method that is still widely applied in the chemical process industry as the separation technology of choice, in spite of its extremely low thermodynamic efficiency. In fact, distillation is responsible for over 40% of the energy used in the chemical industry.

This lecture reviews some of the most novel concepts of energy efficient distillation technologies: heat-pump assisted applications, heat-integrated distillation column, cyclic distillation, and dividing-wall column applications to multi-components separations, azeotropic, extractive and reactive distillation. The focus will be on key aspects – from conceptual design to practical implementation – reflecting the current technological approaches aimed to tackle the upcoming industrial challenges.

### References

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### Short CV

Tony Kiss (Anton Alexandru) was born in Transylvania, and at a young age (14 yr) he was already recruited in the National Chemistry Olympic Team of Romania. At 23 yr, he was awarded a BSc degree in Chemical Engineering at Babes-Bolyai University of Cluj-Napoca, where he worked for several years as teaching assistant in the group of Prof. Serban Paul Agachi. During that period he completed a MSc in ChemEng, graduating again as the best student. By the time he was 29, he successfully earned a PhD in Chemical Engineering, at the University of Amsterdam (UvA), under the guidance of Prof. Piet Iedema and Alexandre Dimian. After the PhD, Tony worked as PostDoc fellow at DeltChemTech (TU Delft), with Prof. Johan Grievink and Sorin Bildea, and then again as PostDoc at UvA with Prof. Gadi Rothenberg.



Currently, he works as Senior Project Leader in Separation Technology at AkzoNobel Research, Development & Innovation, acting as the key expert in distillation, reactive-separations, process intensification and integrated sustainable processes with 'green' attributes. During the last decade, he carried out more than 120 research & industrial projects, supervised numerous graduation projects, while also publishing several textbooks and book chapters, and over 50 scientific articles in peer-reviewed journals. He was rewarded for his pioneering work and remarkable achievements with the Hoogewerff Jongerenprijs 2013 – a prestigious award recognizing the most promising young scientist in NL. More information is available at: [www.tonykiss.com](http://www.tonykiss.com)