

ImPaCCt - Improved Process Performance by Process Intensification in Centrifugal Contactors

Intensifying mass and heat transfer with high centrifugal force in Rotating Packed Bed



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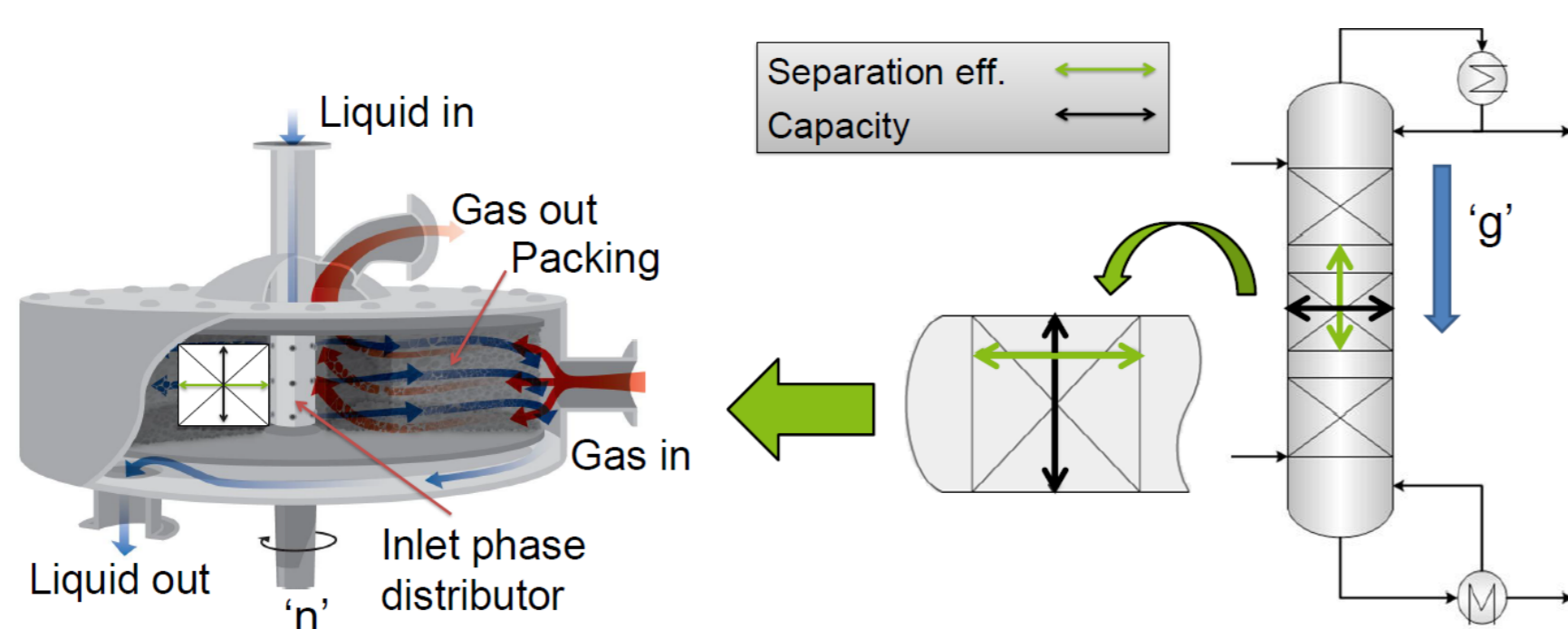
Partners DSM, Huntsman, Nouryon, TU Dortmund

Budget 2 366 k€

Duration 2015-2020

Incentive

Rotating packed bed technology replaces the gravitational acceleration with the centrifugal acceleration in order to intensify heat and mass transfer. This leads to a compact device with much higher throughputs than a conventional column. What is more, the rotational speed is an additional degree of freedom which improves the operational flexibility of the device



Objective

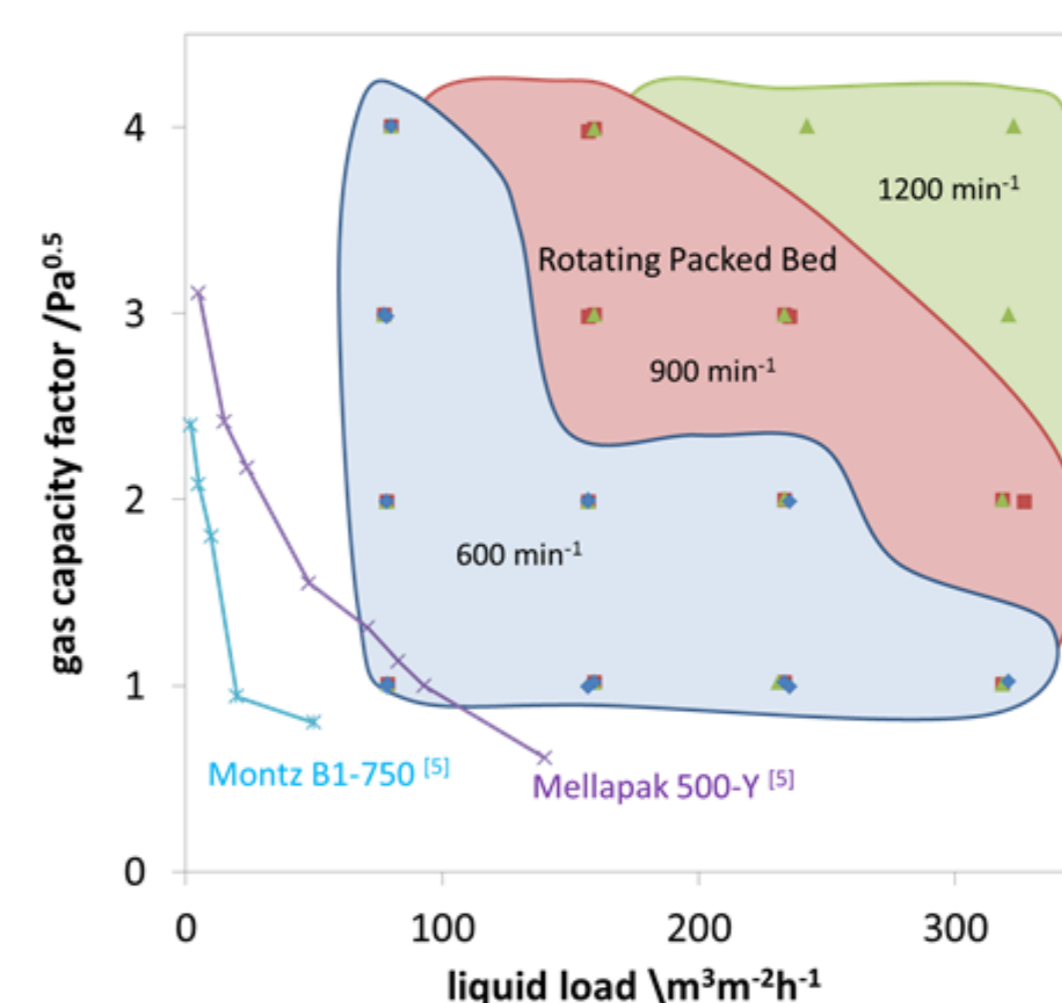
The key objective of the project is to evaluate and quantify the potential of RPBs to improve production processes by:

- Developing a fundamental knowledge and understanding of RPBs
- Developing appropriate scaling rules for RPBs
- Experimental investigation of industrial case studies

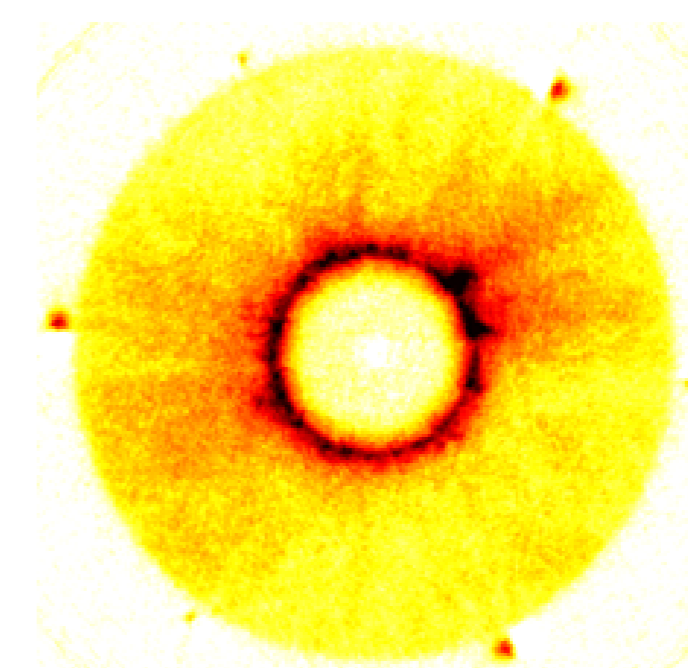
Approach

Investigation of several unit operations, such as absorption, distillation and gas stripping. This also includes an analysis of the most feasible design of the RPB for different functionalities and phenomena.

Results



Comparison of an operating window of the RPB packing to conventional column packings



Gamma computer tomography scan of the RPB packing during operation (in cooperation with Helmholtz Zentrum Dresden-Rossendorf)

The project resulted in a set of guidelines for:

- Liquid-Liquid mixing
- Absorption
- Distillation
- Packing design

Next steps

The project resulted in the founding of ProSpin company specialised in RPB technology and ROTOR group uniting TU Dortmund and TU LODZ in work on high gravity technologies



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