Phenomena based Methodology for Process Synthesis incorporating Process Intensification - DTU Orbit (10/01/2019)

**Phenomena based Methodology for Process Synthesis incorporating Process Intensification**

Process intensification (PI) has the potential to improve existing as well as conceptual processes, in order to achieve a more sustainable production. PI can be achieved at different levels. That is, the unit operations, functional and/or phenomena level. The highest impact is expected by looking at processes at the lowest level of aggregation which is the phenomena level. In this paper, a phenomena based synthesis/design methodology incorporating process intensification is presented. Using this methodology, a systematic identification of necessary and desirable (integrated) phenomena as well as generation and screening of phenomena based flowsheet options are presented using a decomposition based solution approach. The developed methodology as well as necessary tools and supporting methods are highlighted through a case study involving the production of isopropyl-acetate.

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