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# The Potential of Organic Solvent Nanofiltration Processes for Oleochemical Industry

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## ABSTRACT

Pressure-driven membrane separation processes bare the promise to significantly reduce energy requirements and operational cost compared to classical thermal separation processes. The ability of organic solvent nanofiltration (OSN) to operate at mild temperatures makes it especially interesting for oleochemical processes, such as the refinement of non-edible oils or waste oils. In this study, the potential of OSN for solvent recovery and deacidification is investigated by means of a model-based process analysis. On the basis of optimized membrane cascade configurations the OSN process is compared to the conventional reference process in terms of energy requirements and costs to judge on the competitiveness. It is shown that the energy demand for the recovery of extraction solvents can be reduced by more than 70% using an OSN-assisted evaporation process. While the operating costs are significantly reduced, the investment costs are increased in comparison to a classical evaporation process.

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