

### Application of Factorial Design to Optimize a Dividing Wall Column Structure

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Designing dividing wall columns (DWC) involving multivariable problem solving is more complex than that of the conventional distillation. These variables interact with each other and need to be optimized simultaneously to obtain the best design. In this work, a practical method employing factorial design is proposed for DWC design and optimization. The optimum DWC structure can be found in a practical manner while minimizing simulation runs. The proposed method was tested in the design and optimization of NGL recovery process. Using factorial design allows interactions between variables to be identified or quantified. The DWC system designed by the proposed method decreased reboiler energy and total annual costs significantly as compared with conventional distillation.

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