Batch distillation optimization

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Context

Batch distillations at industrial scale are often not optimized and run empirically.

Project goals:

- Adapt a pilot-scale rectification column at to model the performance of an industrial column (scale-down and validation)
- Develop and test new process control strategies to optimize the process
- Implement the developed strategy at the industrial partner (scale-up and fine-tuning)

Results

The distillation process was scaled down and reproduced on a pilot-scale column.

A novel process control strategy was developed and tested.

The strategy was implemented at the industrial site and resulted in:

- a reduction in average batch time
- increased purity in distilled fractions
- less intermediate fractions that need to be redistilled

Pilot-scale rectification column at HEIA-FR

Conclusion

Distillation is a very energy-intensive process.

The proposed strategy leads to significant energy savings and reduced CO_2 emissions.

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