

# Distillation

## Old process, new prospects

### Potential for Optimization

Due to the high popularity and applicability of distillation the knowledge of this process is relatively high. However, in most cases high capacity increase and complete process optimization is still possible. By re-calculating your column with real physical properties and current operation data it is possible to identify potential improvements like capacity increase. Integrated modeling of the process, e.g. pinch analysis, can further improve energy efficiency. To provide an optimal solution we specify column internals, like liquid distributors or structured packing, independently of the vendor.

Not all that influences a distillation can be calculated and modeled. In some cases a scale-up study in the laboratory is essential to reliably evaluate the process. The experimental trials are in general important and sometimes even necessary if product behavior (e.g. foam formation, smell, color) in complex systems have to be described. The experimental trials are also carried out to validate the simulation calculations.

We can help you as well to choose the optimal operation method, whether it is a batch or continuous process, or up- or downwards batch distillation.

### Example: Downwards Batch-Distillation

In comparison to the conventional, upwards batch distillation, the feed tank in the downwards batch distillation is placed at the top of the column. The distillate flows completely into the feed tank and than is refluxed back to the column, while the bottom product is continuously removed. Therefore the reboiler's hold-up is very small. The advantages of downwards batch distillation is a very high purity of the bottom product. Also high temperature sensitive compounds can benefit from the downwards operation mode, because the compounds do not have to be exposed to the high temperature in the reboiler during the entire process.

### Project examples

- Solvent recycling
- Bottleneck removal and capacity increase
- Evaluation of system's real behavior
- Column optimization
- Revamp of ester hydrolysis by reactive distillation
- Removal of smell-causing compounds by steam stripping
- Comparison of up- and downwards batch-distillation

### Interested? Contact us!

Engineering & Consulting

PD PA SE&C EC

[team-ec.industry@siemens.com](mailto:team-ec.industry@siemens.com)

Tel.: +49 (69) 797-84500

### Your Benefit

- Energy saving
- Higher product quality
- Capacity increase e.g. by different internals
- Safe scale-up
- Optimized process

### Our range of services

- Property data evaluation as the basis for process design / re-design
- Scale-up capability study in laboratory scale
- Feasibility study and process development
- Validation of simulations
- Study of product behavior
- Process design package
- Engineering Procurement Construction

