Optimization of Reactors

ORTOMATION.IO
OPTIMIZING YOUR WORLD

Sector: Multiple

Why chose **ORTO** for this application?

There are many challenges to using traditional real-time optimization technologies on reactors units:

- Process dynamics can be highly non-linear
- Process dynamics may be hard to model

ORTO self-learning optimization naturally handles non-linearity ensuring the optimum is always found. The easy-to-use design significantly improves return on investment and reduces the expertise needed.

The technology is more scalable, enabling optimization to be applied to a small scope and then expand easily over time to capture increased savings.

Business Objective

The objective of reactor optimization is to find the most cost-effective operating condition, by balancing product yields, energy efficiency and throughput.

Typical Optimization Objective Function

Maximize operating profit which may be optimizing trade-off between energy efficiency, product yields and feed rate whilst pushing up to hydraulic and space velocity, heat transfer and quality limits.

By manipulating:

- Reactor temperatures
- Additive reactant flows
- Operating pressure

Subject to the following constraints:

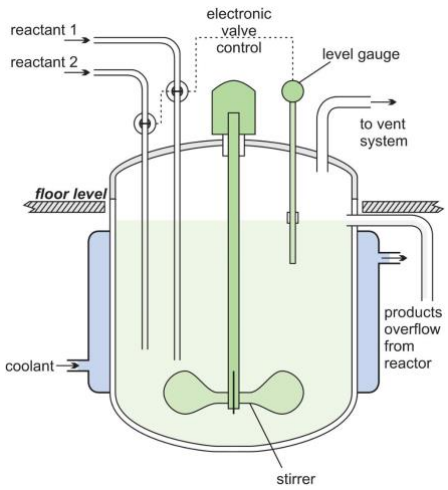
- Reactor temperature limits
- Product quality limits
- Reactor hydraulics or downstream hydraulic limits
- Heat transfer limits (usually determined from valve positions)

Solution

On small reactors units, 3 agents will be sufficient. On larger reaction systems more than 5 agents may be required.

Benefits

The minimum benefit will higher value product yields of between 2-5%. Energy efficiency savings of 3-10% may also be achieved.



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