



## Multitubular reactor scale-up and design

- Design of multitubular fixed-bed catalytic reactors
- Scale-up from bench to pilot and commercial
- Gas or liquid phase
- Tube-side design (number, dimensions)
- Shell-side design (baffle configuration, tube pitch, coolant flow)
- Catalyst layer optimization
- Impact of catalyst shape, size, internal structure
- Hot spot management
- Kinetics identification, catalyst deactivation
- Advice on design of experimental programs





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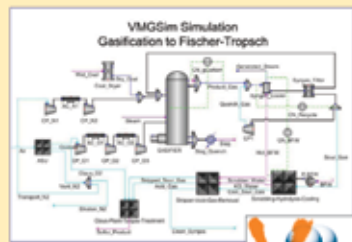
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