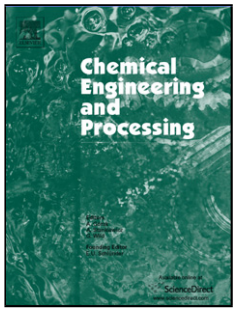


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# Modifications of the adsorption-catalytic system for organic impurities removal

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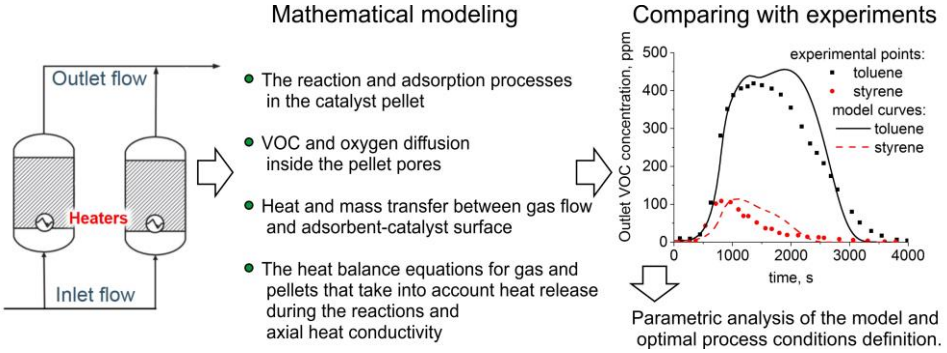
Graphical abstract




Highlights

- The mathematical model for adsorption-catalytic process for VOC abatement proposed
- The model describes the bench experimental results with a good accuracy
- The process improvements reduce the energy consumption by 2 orders at least
- Optimal pellets are 6-12 mm spheres/cylinders with adsorption capacity of 1.5-2 wt%
- The process looks advantageous in treatment of lean vent gases with high flow rate

## ABTSTRACT

The study was dedicated to optimization of the adsorption-catalytic process for abatement of volatile organic compounds (VOC), combining the adsorption of VOC at ambient temperature in the bed of the oxidation catalyst with the periodical regeneration of the catalyst by oxidation of adsorbed species at elevated temperature. The detailed mathematical model, accounting for