



# **Sustainability in the Process Industry: Integration and Optimization (Green Manufacturing & Systems Engineering)**

*Jiri Klemes, Ferenc Friedler, Igor Bulatov, Petar Varbanov*

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## Improve the energy efficiency of process industry practices

*Sustainability in the Process Industry* explains process integration and optimization and discusses applications for improving the energy and water efficiency of industrial as well as nonindustrial energy users. Approaches for adapting these methodologies to include the integration of waste and renewable energy sources are covered. This authoritative text contains eight industrial-based case studies and nine testing examples with developed solutions. Details on software tools are also included in this practical guide.

- Optimization goals and application areas within sustainable industrial process design and integration
- Formulating sustainable tasks as optimization problems
- Improving energy efficiency through process integration
- Heat exchange and heat recovery
- Water/mass integration
- Minimizing water use and efficient generation
- New, relevant process integration research results
- Process optimization frameworks, including mathematical programming and P-graph and S-graph frameworks
- Applications of process integration, modeling, and optimization software tools

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