

Optimization of Energy Intensive Industrial Processes with Particular Reference to the Electric Arc Furnace

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Research project 'OpenProcess'

- Melting of steel scrap is a highly energy intensive process.
- Due to its high complexity, only few complete system models are known.
- Physics based modeling of the different subsystems and their interaction.

- Models from different engineering domains are needed.
- Local resolution (PDE) is reached by lumped elements and finite difference method.
- This approach results in big systems of equations (several thousand) and corresponding computation time.

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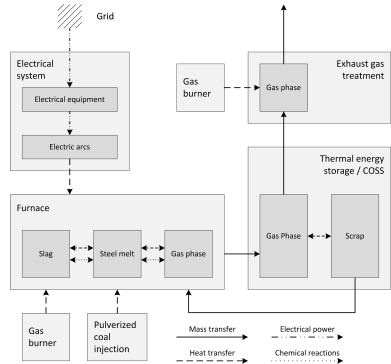


Figure 1: Breakdown into subsystems

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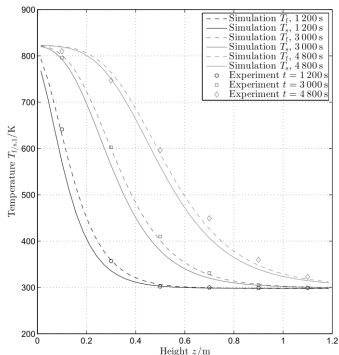


Figure 2: Validation of thermal energy storage model

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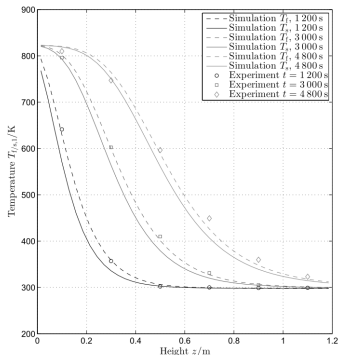


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