The Strategic University Steel Technology and Innovation Network Presents

Task 5: Intelligent Steel Production

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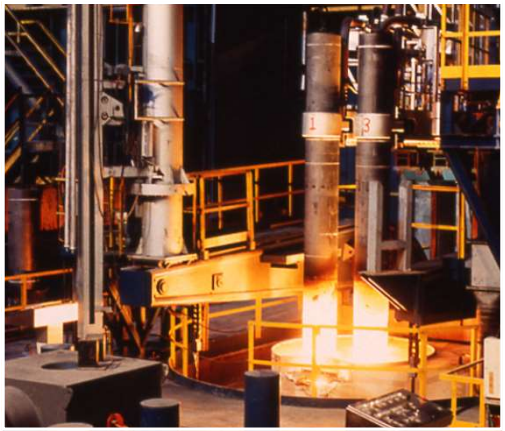
Unit Processes

- Fast computation
- Improve performance
- Parameter variation
- Verify accuracy

In-depth Investigation of Mechanisms

Through-Process Model



- In-line optimisation
- Identify bottlenecks
- Link between individual processes

Material / Cost / Energy Flow Diagrams

Process Optimisation

- Generate database
- Verify accuracy of predictions
- Optimise production

Optimize Production with respect to critical quantity

Unit Processes

- Vary input parameters to assess quality of model predictions
- Improvement of predictive accuracy
- Development of fast algorithms
- Example of Ladle Metallurgical Processes

"In-depth investigation of Process Steps"

Through-Process Modelling

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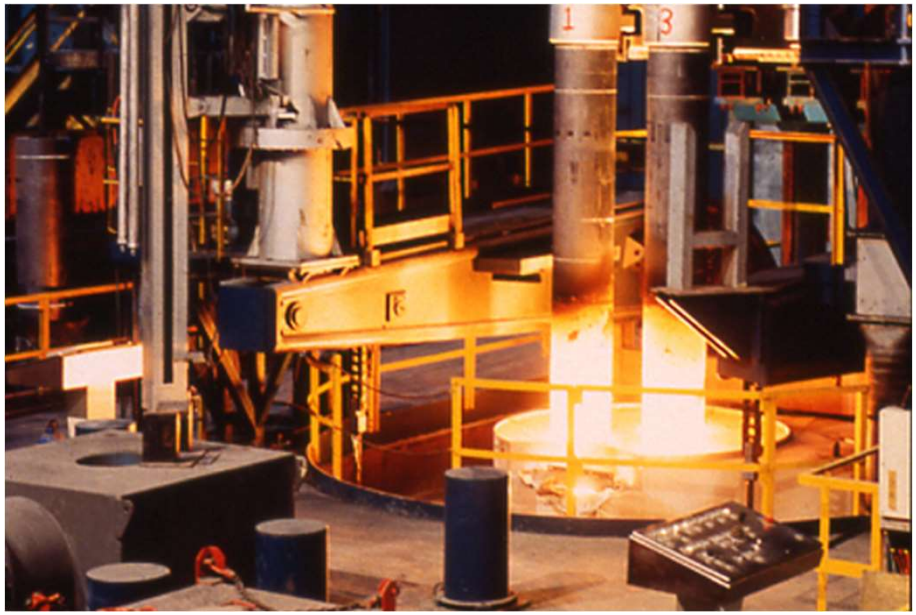
- Links between data from process steps and the process chain
- Building of a Material Flow Analysis database
- In-line optimisation thanks to fast process models
- Identify most critical processes

"Development of Process Diagrams for Flow of Material / Energy / Cost"



Process Optimisation

- Verify accuracy of processes and process steps
- Flexible critical parameter (cost, energy, corrosion loss, emissions, time) optimisation
- Optimise production in case of planned maintenance and breakdown of a unit

“Optimise Production

with respect to

Critical Quantity”

Results and Application

Development of a *Series of Process Models*, able to *connect and share information* between them *in real-time*. The critical parameter can be freely chosen and may help improve:

- cost efficiency
- emissions
- corrosion losses
- time management

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