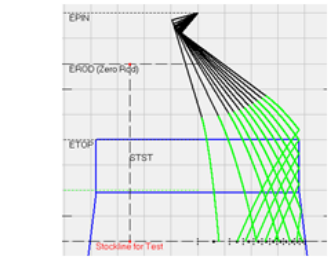
Blast Furnace Shaft CFD Model

User Interface Software for Blast Furnace Shaft CFD Model

THE PROBLEM

In recent years, improving the blast furnace efficiency and lowering the consumption of metallurgical coke is become increasingly important for iron making industry. Advanced in-house blast furnace shaft Computational Fluid Dynamics (CFD) in-house code has been previously developed for design and trouble shooting of the blast furnace. The user-friendly interface is important for the user to specify the input condition, geometry, and monitor the CFD simulation. Therefore, current effort has been focused on the development of the preprocessor and postprocessor for the in-house CFD code.

Name	Sym.	Unit	Value
Throat Top Elevation	ETop	m	32
Tuyere Elevation	ETuy	m	5
Throat Height	H1	m	2.1
Stack Zone Height	H2	m	16.5
Belly Height	H3	m	2
Bosh Height	H4	m	4.5
Tuyere Zone Height 1	HTuy1	m	1.5
Tuyere Zone Height 2	HTuy2	m	1
Tuyere Zone Height 3	HTuy3	m	1.4



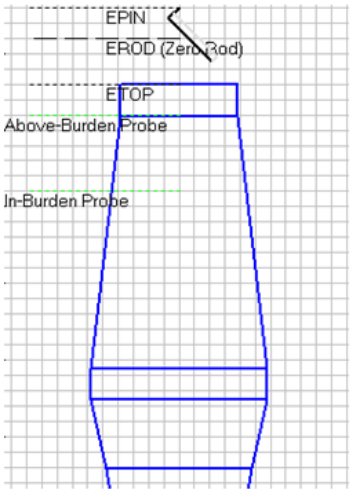


Fig.1. Geometry and charging setup

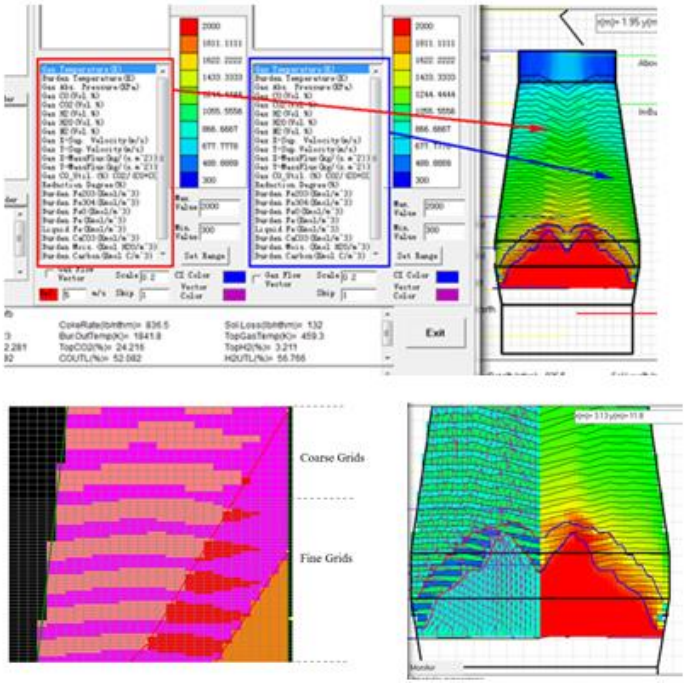


Fig.2. Visualization and analysis of the CFD results

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THE PROJECT

The objective is to develop user interface software for blast furnace shaft CFD model. The in-house blast furnace shaft CFD model has been intergraded to the interface software and a communication port has been setup between the CFD model and the interface software. The interface software is used to input furnace geometry, burden distribution, operation condition in a user-friendly environment. The CFD simulation is monitored and controlled through the interface software. The CFD results can be displayed and visualized in the interface software for analysis.

THE OUTCOME

The Graphic User Interface (GUI) for pre-processing and post-processing of the blast furnace shaft CFD code has been completed. The user interface software enhanced the usability and user-friendly of the blast furnace shaft CFD code.

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