# Article information:

工业规模高炉中滚道动力学和焦炭燃烧的改进CFD-DEM建模 - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S1385894722061575?via%3Dihub>

# Article summary:

1. Developed an advanced CFD-DEM to study the phenomena in industrial-scale blast furnaces.

2. Advanced CFD-DEM can more reliably capture raceway morphology and reduce 78.14% of computational cost.

3. Lower wind speed, higher bed temperature, and higher oxygen mass fraction can improve furnace efficiency.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides a detailed overview of the development of an advanced CFD-DEM model for studying phenomena in industrial-scale blast furnaces, and quantifying the effects of key operating parameters on dynamic raceways and coal combustion performance. The article also provides a comprehensive list of relevant equations, variables, acronyms, and Greek symbols used in the model for readers’ reference.

However, there are some potential biases that should be noted when reading this article. First, the authors do not provide any evidence or data to support their claims about the improved accuracy and reduced computational cost of their model compared to other models. Second, while the authors discuss how lower wind speed, higher bed temperature, and higher oxygen mass fraction can improve furnace efficiency, they do not explore any potential risks associated with these changes or discuss any counterarguments that may exist against them. Finally, while the authors provide a comprehensive list of equations used in their model for readers’ reference, they do not explain how these equations were derived or what assumptions were made when developing them.

# Topics for further research:

* CFD-DEM model accuracy
* Computational cost of CFD-DEM model
* Risks associated with lower wind speed
* Risks associated with higher bed temperature
* Risks associated with higher oxygen mass fraction
* Derivation of CFD-DEM equations

# Report location:

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