

Sponge Iron Rotary Kiln Simulator Innovation Labs

The key challenges in sponge iron production are maximizing kiln productivity and minimizing fuel consumption, and enhancing kiln campaign life by reducing accretion while utilizing low quality coal from different sources. Tata Consultancy Services' (TCS) Sponge Iron Rotary Kiln Simulator addresses these challenges through model-based optimization and control.

About the Simulator

Our Sponge Iron Rotary Kiln Simulator is a tool based on a fundamental mathematical model for direct reduction of iron ore by coal in a rotary kiln. The model uses ore and coal properties such as particle size distribution and chemical analysis along with kiln geometry and air profile as inputs. Heat and mass balances, reactions between different phases are included in the model for predicting the gas and solid temperature and composition profiles along the length of the kiln, degree of metallization and waste gas analysis. A user friendly GUI makes it easier to use the simulator and helps train operators and equips them to derive greater productivity in kiln operations.

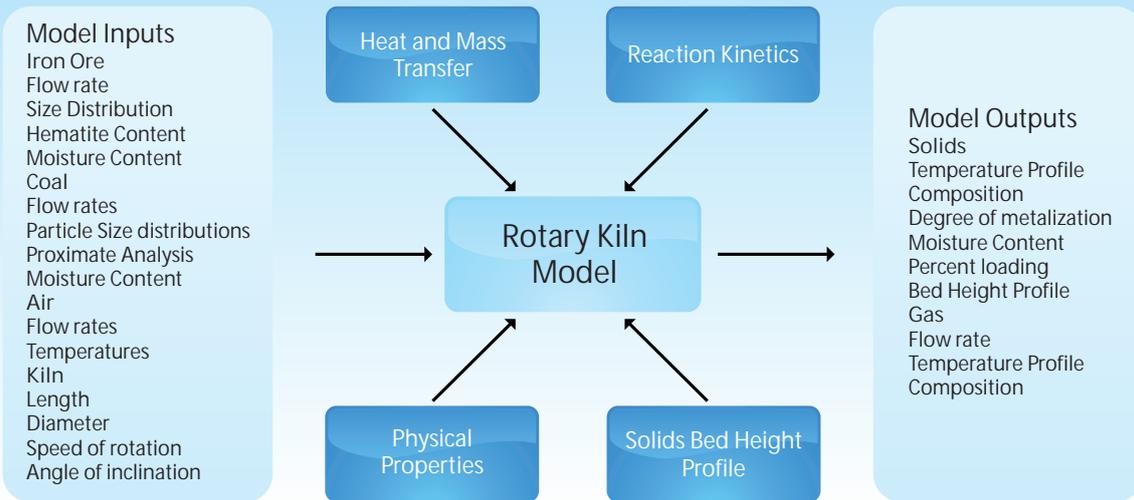
The measurement of kiln internal temperature profile becomes inaccurate with time due to accretion. Our simulator can act as a soft sensor to predict the inside temperatures along kiln length and help your plant operators take appropriate decisions to run the plant in an optimized manner.

Benefits

With the help of our offering, you can enhance the productivity of your manufacturing process through model-based optimization. Facilitating process control, this solution brings the following benefits:

- Increased kiln productivity;
- Enhanced kiln campaign life;
- Improved energy efficiency by optimized coal consumption;
- Reduced raw material consumption;
- Tool for training operators.

Structure of the rotary kiln model



Why TCS

At TCS we understand the strategic, tactical and operational business issues involved in this industry. We therefore leverage our knowledge acquired through R&D initiatives to build solutions that will help you meet your business goals, for the present and future. Our business-balanced approach to technology deployment, resources and skills make us your partner of choice. These are supported by state-of-the-art tools, technology, knowledge base and a global network of TCS Innovation Labs. We bring to the engagement :

- A solution that has brought to customers measurable benefits such as:
 - Reduction in energy consumption upto 15 % in batch annealing;
 - Increase the life of refractory lining of Kaldor furnace by 70 % thereby enhancing the productivity by 10 %;
 - Improvement in the quality of product by reducing the cracking in continuous casting.
- Strong R&D expertise and experience: The Sponge Iron Rotary Kiln Model has evolved from TCS Innovation Labs-TRDDC which is one of the earliest and biggest software engineering labs in Asia. The lab uses advanced modeling and simulation tools to deliver economically viable and environmentally acceptable solutions.
- Cross functional expertise: The lab's interdisciplinary team of researchers works closely with its industrial partners and clients to deliver implementable solutions in a timely and cost-effective manner.

About Tata Consultancy Services (TCS)

Tata Consultancy Services is an IT services, business solutions and outsourcing organization that delivers real results to global businesses, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled services delivered through its unique Global Network Delivery Model™ recognized as the benchmark of excellence in software development.

A part of the Tata Group, India's largest industrial conglomerate, TCS has over 100,000 of the world's best trained IT consultants in 50 countries. The company generated consolidated revenues of US \$5.7 billion for fiscal year ended 31 March 2008 and is listed on the National Stock Exchange and Bombay Stock Exchange in India. For more information, visit us at www.tcs.com

Contact

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