

1. Record Nr.	UNINA9910959195203321
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Titolo	Advances in rotary kiln sponge iron plant / / K.K. Prasad, Hem Shankar Ray
Pubbl/distr/stampa	New Delhi, : New Age International (P) Ltd., c2009
ISBN	1-282-38568-2 9786612385681 81-224-2892-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (186 p.)
Altri autori (Persone)	RayHem Shankar
Soggetti	Kilns, Rotary Iron, Sponge
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	<p>""Cover""; ""Preface to the First Edition""; ""Acknowledgement""; ""Glossary""; ""List of Figures""; ""List of Tables""; ""Contents""; ""Chapter 1. Introduction""; ""1.1 What is Spongs Iron and What is DRI?""; ""1.2 History of Modern Sponge Iron Making""; ""1.3 Iron Ore Reduction at a Glance ""; ""1.4 Multiple Role of a Rotary Kiln""; ""Chapter 2. Rotary Kiln Process of Making Sponge Iron""; ""2.1 Historical Background""; ""2.2 Important Features ""; ""2.3 Sponge iron Pilot of RDCIS SAIL ""; ""2.4 Features of a Rotary Kiln Sponge Iron Plant ""; ""2.5 The Indian Scene "" ""2.6 Why Should we Select a Rotary Kiln?""""2.6.1 Process Strengths""; ""2.6.2 Product Strengths""; ""2.6.3 Weaknesses of the Process""; ""2.6.4 Weaknesses of the Product""; ""Chapter 3. Thermodynamic Considerations:Feasibility of Reaction""; ""Chapter 4. Aerodynamics Inside a Sponge Iron Rotary Kiln""; ""4.1 Thumb Rules Used in Production of Sponge Iron""; ""4.2 Sources of Gas ""; ""4.3 Effects of Air Injection""; ""4.4 Limits to Gas Velocity""; ""4.5 Gas Flow Pattern""; ""4.6 CFD Analysis""; ""Chapter 5. Mathematical Modellingin Rotary Kiln Sponge Iron Making""; ""5.1 What is a Model?"" ""5.2 What is a Mathematical Model?""""5.3 How Can we Make a Useful Mathematical Model?""; ""5.4 Example of a Small Mathematical Model""; ""5.5 Roal of Coal in Rotary Kiln Sponge Iron Making Process""; ""5.6 Quantity of Protective Char""; ""5.7 Reduction of Iron Oxide""; ""5.8 Coal</p>

for Combustion"; "5.9 Waste Gas Temperature"; "5.10 Programming Based on Model"; "5.12 Segment-wise Modelling"; "5.13 Protection from the Model"; "5.14 Summary of the Modelling Process";
 "Chapter 6. Physical Movement of Solids Inside a Rotary Kiln: Charge Movement and Coal Throwing/Slinging"
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 "8.9 Role of Diffusion"

Sommario/riassunto

About the Book: Now that India is virtually the only player in this field, an elaboration is needed with respect to more fundamental understanding as well as future prospects and needs, which this edition has tried to fulfill. It can now fulfill the need of a reference textbook in alternate iron making area for undergraduate and post graduate students in Metallurgical, Production, Manufacturing, Chemical, Materials and to a minor extent Mechanical Engineering disciplines. The aim of fulfilling the needs of entrepreneurs and plant operators has not only been retained; it has been elaborated. Further, the basic aspects have been presented in a way that is lucid and simple to understand and should serve as an incentive to the operators and entrepreneurs to develop a deeper understanding of the process. The project engineering section now gives guidelines sufficient to make a project report. Opportunities available to this process and the competition it faces has also been highlighted. A chapter on reaction kinetics has been included as also a section on iron ore and pellets. Other sections included are on Aerodynamics, Auto Ignition, Coal Throwing, etc. Rest of the text has been updated to the extent possible. Some advanced features have been introduced such as Mathematical Modeling, Computational Fluid Dynamics, Reduction Mechanism, etc. to give researchers in the area of food for thought. Contents: Introduction Rotary Kiln Process of Making Sponge Iron Thermodynamic Considerations: Feasibility of Reaction Aerodynamics inside a Sponge Iron Rotary Kiln Mathematical Modelling in Rotary Kiln Sponge Iron Making Physical Movement of Solids inside a Rotary Kiln: Charge Movement and Coal Throwing/Slinging Requirement, Generation and Transfer of Heat in a Sponge Iron Rotary Kiln Reaction Kinetics Raw Materials for Sponge Iron Making Accretion or Ring Formation inside a Rotary Kiln Sponge Iron Properties: Re-oxidation and Auto-Ignition of Sponge Iron Uses of Sponge Iron Process Design, Engineering & Operational Aspects of an RK-DR Plant Other Uses of Rotary Kiln for Reduction Purposes Environmental Aspects of Sponge Iron Making in Rotary Kiln and Future Prospects

