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Simulation Of Coal Gasification Process Using Aspen Plus

Coal Gasification Simulation using FactSage 7.2 Coal Gasification Gasification Animation Coal gasification Biomass Gasification Modelling with Aspen Plus Thermochemical Conversion of Biomass to Biofuels via Gasification Aspen Plus: simulation of a biomass gasification process (straw gasification) Unveiling the Power of Coal : The Gasification Process Jindal Steel \u0026 Power, Angul Corporate Movie on Coal Gassification Process Education-UG Coal Gasification-Videos-01 amazing homemade gasifier uses wood pellets to run generator -- renewable alternative energy video C2 Coal Gasification and Liquefaction [SL IB Chemistry] Gasifier Running a 45kw Generator with a Ford 300 cubic inch 6 cylinder engine Klean Coal Gasification Technology - Integrated Gasification Combined Cycle (IGCC) Power Plant Coal Gasification How gas was made Gasification Process Biomass Gasification and Waste Gasification Coal Gasification Overview Coal Combustion/Gasification Using CFD: Part 3 (Simulation \u0026 Post Processing) Underground Coal Gasification 3D Animation Coal Combustion/Gasification Using CFD: Part 1 (Geometry) Coal Gasification Gasifiers Plant Animation Aspen Plus simulation of co-pyrolysis and gasification of plastic and biomass to syngas (part 1) C.2 Coal gasification and liquefaction (SL) GASIFICATION OF COAL Underground Coal Gasification C.2 Coal gasification and liquefaction (SL)
Quarterly Report
Steady-state Simulation of the HYGAS Coal Gasification Process
Modelling and Simulation for Coal Gasification
Multiphase Reactor Engineering for Clean and Low-Carbon Energy Applications
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Modeling, Simulation, and Equipment Operations
Indirect Coal Gasification Using Aspen-Plus® Model

Simulation Of Coal Gasification Process Using Aspen Plus *OMB No. 4245216970315 edited by*

SHEPPARD CESAR

Quarterly Report

CRC Press
The book deals with development of comprehensive computational models for simulating underground coal gasification (UCG). It starts with an introduction to the UCG process and process modelling inputs in the form of reaction kinetics, flow patterns, spalling rate, and transport coefficient that are elaborated with methods to generate the same are described with illustrations. All the known process models are reviewed, and relative merits and limitations of the modeling approaches are highlighted and compared. The book describes all the necessary steps required to determine the techno-economic feasibility of UCG process for a given coal reserve, through modeling and simulation.
Steady-state Simulation of the HYGAS Coal Gasification Process John Wiley & Sons
Skyrocketing energy costs have spurred renewed interest in coal gasification. Currently available information on this subject needs to be updated, however, and focused on specific coals and end products. For example, carbon capture and sequestration, previously given little attention, now has a prominent role in coal conversion processes. This book approaches coal gasification and related technologies from a process engineering point of view, with topics chosen to aid the process engineer who is interested in a complete, coal-to-products system. It provides a perspective for engineers and scientists who analyze and improve components of coal conversion processes. The first topic describes the nature and availability of coal. Next, the fundamentals of gasification are described, followed by a description of gasification technologies and gas cleaning processes. The conversion of syngas to electricity, fuels and chemicals is then discussed. Finally, process economics are covered. Emphasis is given to the selection of gasification technology based on the type of coal fed to the gasifier and desired end product: E.g., lower temperature gasifiers produce substantial

quantities of methane, which is undesirable in an ammonia synthesis feed. This book also reviews gasification kinetics which is informed by recent papers and process design studies by the US Department of Energy and other groups, and also largely ignored by other gasification books. • Approaches coal gasification and related technologies from a process engineering point of view, providing a perspective for engineers and scientists who analyze and improve components of coal conversion processes • Describes the fundamentals of gasification, gasification technologies, and gas cleaning processes • Emphasizes the importance of the coal types fed to the gasifier and desired end products • Covers gasification kinetics, which was largely ignored by other gasification books Provides a perspective for engineers and scientists who analyze and improve components of the coal conversion processes Describes the fundamentals of gasification, gasification technologies, and gas cleaning processes Covers gasification kinetics, which was largely ignored by other gasification books

Springer

The use of coal is required to help satisfy the world's energy needs. Yet coal is a difficult fossil fuel to consume efficiently and cleanly. We believe that its clean and efficient use can be increased through improved technology based on a thorough understanding of fundamental physical and chemical processes that occur during consumption. The principal objective of this book is to provide a current summary of this technology. The past technology for describing and analyzing coal furnaces and combus tors has relied largely on empirical inputs for the complex flow and chemical reactions that occur while more formally treating the heat-transfer effects. GrOWing concern over control of combustion-generated air pollutants revealed a lack of understanding of the relevant fundamental physical and chemical mechanisms. Recent technical advances in computer speed and storage capacity, and in numerical prediction of recirculating turbulent flows, two-phase flows, and flows with chemical reaction have opened new opportunities for describing and modeling such complex combustion systems in greater detail. We believe that most of the requisite component models to permit a more fundamental description of coal combustion processes are available. At the same time there is worldwide interest in the use of coal, and progress in modeling of coal reaction processes has been steady.

Modelling and Simulation for Coal Gasification

John Wiley & Sons

In this report is described the work effort to develop and demonstrate a software framework to support advanced process simulations to evaluate the performance of advanced power systems. Integrated into the framework are a broad range of models, analysis tools, and visualization methods that can be used for the plant evaluation. The framework provides a tightly integrated problem-solving environment, with plug-and-play functionality, and includes a hierarchy of models, ranging from fast running process models to detailed reacting CFD models. The framework places no inherent limitations on the type of physics that can be modeled, numerical techniques, or programming languages used to implement the equipment models, or the type or amount of data that can be exchanged between models. Tools are provided to analyze simulation results at multiple levels of detail, ranging from simple tabular outputs to advanced solution visualization methods. All models and tools communicate in a seamless manner. The framework can be coupled to other software frameworks that provide different modeling capabilities. Three software frameworks were developed during the course of the project. The first framework focused on simulating the performance of the DOE Low Emissions Boiler System Proof of Concept facility, an advanced pulverized-coal combustion-based power plant. The second framework targeted simulating the performance of an Integrated coal Gasification Combined Cycle - Fuel Cell Turbine (IGCC-FCT) plant configuration. The coal gasifier models included both CFD and process models for the commercially dominant systems. Interfacing models to the framework was performed using VES-Open, and tests were performed to demonstrate interfacing CAPE-Open compliant models to the framework. The IGCC-FCT framework was subsequently extended to support Virtual Engineering concepts in which plant configurations can be constructed and interrogated in a three-dimensional, user-centered, interactive, immersive environment. The Virtual Engineering Framework (VEF), in effect a prototype framework, was developed through close collaboration with NETL supported research teams from Iowa State University Virtual Reality Applications Center (ISU-VRAC) and Carnegie Mellon University (CMU). The VEF is open source, compatible across systems ranging from inexpensive desktop PCs to large-scale, immersive facilities and provides support for heterogeneous distributed computing of plant simulations. The ability to compute plant economics through an interface that coupled the CMU IECM tool to the VEF was demonstrated, and the ability to couple the VEF to Aspen Plus, a commercial flowsheet modeling tool, was demonstrated. Models were interfaced to the framework using VES-Open. Tests were performed for interfacing CAPE-Open-compliant models to the framework. Where available, the developed models and plant simulations have been benchmarked against data from the open literature. The VEF has been installed at NETL. The VEF provides simulation capabilities not available in commercial simulation tools. It provides DOE engineers, scientists, and decision makers with a flexible and extensible simulation system that can be used to reduce the time, technical risk, and cost to develop the next generation of advanced, coal-fired power systems that will have low emissions and high efficiency. Furthermore, the VEF provides a common simulation system that NETL can use to help manage Advanced Power Systems Research projects, including both combustion- and gasification-based technologies.

Multiphase Reactor Engineering for Clean and Low-Carbon Energy Applications

John Wiley & Sons

As an increasing number of professionals and graduate students enter the field of solid-based power generation, they all require an command of process and equipment, as well as the theory behind it all. However, their informational needs and understanding differ based on their experience and the task at hand. Solid Fuels Combustion and Gasification: Modeling, Simulation, and Equipment Operations, Second Edition explores evolving solid fuel combustion and gasification techniques that are leading to much lower sulfur and nitrogen oxide emissions. It also shows how to increase the efficiency of processes dealing with materials such as coal, biomass, solid residues, etc. Many of the successes of these methods are the result of process optimization resulting from mathematical modeling and simulation. This book introduces and explores these techniques, taking a moderate

approach that is neither too narrow nor too basic, making it useful to graduate students, engineers, and professionals. It illustrates the modeling and constructive and operational aspects of equipment used in combustion and gasification of solid fuels. It was written based on the idea that developing models and computer simulators is the optimal method to acquire real and testable understanding of a subject in the area of processing. Model complexity is extended only as far as needed to achieve a reasonable representation of the equipment described in the book, and the author provides specific and carefully selected case studies that: Cover many industrial processes involving combustion or gasification of solid fuels Provide easy-to-follow examples on how to set simplifying assumptions regarding the operation of real industrial equipment Enable relatively quick introduction of fundamental equations without the need for unnecessarily complex treatments The main strategy of the book is to teach by example, and the basic methods illustrated here can be used for modeling a wide range of processes and equipment commonly found in industry. It is a carefully constructed volume which presents essential concepts that minimize the need for other texts, and it can also be used as an introduction to more complex models.

Industrial Coal Gasification Technologies Covering Baseline and High-Ash Coal Woodhead Publishing

A comprehensive and example oriented text for the study of chemical process design and simulation Chemical Process Design and Simulation is an accessible guide that offers information on the most important principles of chemical engineering design and includes illustrative examples of their application that uses simulation software. A comprehensive and practical resource, the text uses both Aspen Plus and Aspen Hysys simulation software. The author describes the basic methodologies for computer aided design and offers a description of the basic steps of process simulation in Aspen Plus and Aspen Hysys. The text reviews the design and simulation of individual simple unit operations that includes a mathematical model of each unit operation such as reactors, separators, and heat exchangers. The author also explores the design of new plants and simulation of existing plants where conventional chemicals and material mixtures with measurable compositions are used. In addition, to aid in comprehension, solutions to examples of real problems are included. The final section covers plant design and simulation of processes using nonconventional components. This important resource: Includes information on the application of both the Aspen Plus and Aspen Hysys software that enables a comparison of the two software systems Combines the basic theoretical principles of chemical process and design with real-world examples Covers both processes with conventional organic chemicals and processes with more complex materials such as solids, oil blends, polymers and electrolytes Presents examples that are solved using a new version of Aspen software, ASPEN One 9 Written for students and academics in the field of process design, Chemical Process Design and Simulation is a practical and accessible guide to the chemical process design and simulation using proven software.

Coal Combustion and Gasification

William Andrew

Low Btu gasification/combined cycle power generation (LBG/CCPG) plants and the use of dynamic simulation for developing process control guidelines are described. The formulation of mathematical relationships describing the behavior of various processes within an LBG/CCPG plant (model development) and their solution (simulation) are discussed. A simplified fluidized-bed gasifier model is used as an example. Use of the results of such simulation for developing process control system guidelines is also discussed.

Solid Fuels Combustion and Gasification CRC Press

Engineering simulations of coal gasifiers are typically performed using computational fluid dynamics (CFD) software, where a 3-D representation of the gasifier equipment is used to model the fluid flow in the gasifier and source terms from the coal gasification process are captured using discrete-phase model source terms. Simulations using this approach can be very time consuming, making it difficult to imbed such models into overall system simulations for plant design and optimization. For such system-level designs, process flowsheet software is typically used, such as Aspen Plus® [1], where each component where each component is modeled using a reduced-order model. For advanced power-generation systems, such as integrated gasifier/gas-turbine combined-cycle systems (IGCC), the critical components determining overall process efficiency and emissions are usually the gasifier and combustor. Providing more accurate and more computationally efficient reduced-order models for these components, then, enables much more effective plant-level design optimization and design for control. Based on the CHEMKIN-PRO and ENERGICO software, we have developed an automated methodology for generating an advanced form of reduced-order model for gasifiers and combustors. The reducedorder model offers representation of key unit operations in flowsheet simulations, while allowing simulation that is fast enough to be used in iterative flowsheet calculations. Using high-fidelity fluiddynamics models as input, Reaction Design's ENERGICO® [2] software can automatically extract equivalent reactor networks (ERNs) from a CFD solution. For the advanced reduced-order concept, we introduce into the ERN a much more detailed kinetics model than can be included practically in the CFD simulation. The state-of-the-art chemistry solver technology within CHEMKIN-PRO allows that to be accomplished while still maintaining a very fast model turn-around time. In this way, the ERN becomes the basis for high-fidelity kinetics simulation, while maintaining the spatial information derived from the geometrically faithful CFD model. The reduced-order models are generated in such a way that they can be easily imported into a process flowsheet simulator, using the CAPE-OPEN architecture for unit operations. The ENERGICO/CHEMKIN-PRO software produces an ERN-definition file that is read by a dynamically linked library (DLL) that can be easily linked to any CAPE-OPEN compliant software. The plug-in unitoperation module has been successfully demonstrated for complex ERNs of coal gasifiers, using both Aspen Plus and COFE process flowsheet simulators through this published CAPE-OPEN interface.

Underground Coal Gasification and Combustion Elsevier

An analysis of various options of coal gasification technologies with different gasification media, process parameters and coal types, as well as mathematical and thermodynamic modelling of the planned trials, have been conducted. Moreover, a pseudo-homogeneous mathematical model for the adsorption of CO2 on the CaO-rich minerals was developed. For the purpose of the experiments an ex situ reactor was constructed. The reactor was used for the simulation of real underground conditions in respect to both the coal seams and the surrounding rock layers. Large blocks of coal were prepared for the reactor by the industrial partner of the project. In total, six experiments were performed. The experiments demonstrated the possibility of coal gasification in hard coal block and

lignite, and tested the methodology of the experiment. Tests with smaller coal blocks in a pressurised reactor were also performed. Moreover, tests on the migration of heavy metals to water during the gasification process, as well as tests of the behaviour of the strata, have been conducted. The concept of the underground georeactor at a process developmen unit scale was elaborated. The location of the georeactor was chosen and an analysis of the surrounding space was carried out. The process design, together with the technical design of the generator and the monitoring system, has been carried out. After all the necessary infrastructure had been built, an underground trial in the in situ reactor in the experimental mine was conducted. The trial lasted 16 days. The underground experiment enabled the identification of potential problems related to the operation of the UCG process. After the in situ trial, the impact of the UCG process on the natural environment was analysed, as well as the impact of the UCG process on life standards, and the implementation criteria for the selected UCG technological option were elaborated. The results of the project were presented during 17 international conferences, in 15 publications in journals and one patent application.

Chemical Process Design and Simulation: Aspen Plus and Aspen Hysys Applications

Simulation of Coal Gasification Process Inside a Two-stage GasifierGasification is a very efficient method of producing clean synthetic gas (syngas) which can be used as fuel for electric generation or chemical building block for petrochemical industries. This study performs detailed simulations of coal gasification process inside a generic two-stage entrained-flow gasifier to produce syngas carbon monoxide and hydrogen. The simulations are conducted using the commercial Computational Fluid Dynamics (CFD) solver FLUENT. The 3-D Navier-Stokes equations and seven species transport equations are solved with eddy-breakup combustion model. Simulations are conducted to investigate the effects of coal mixture (slurry or dry), oxidant (oxygen-blown or air-blown), wall cooling, coal distribution between the two stages, and the feedstock injection angles on the performance of the gasifier in producing CO and H2. The result indicates that coal-slurry feed is preferred over coal-powder feed to produce hydrogen. On the other hand, coal-powder feed is preferred over coal-slurry feed to produce carbon monoxide. The air-blown operation yields poor fuel conversion efficiency and lowest syngas heating value. The two-stage design gives the flexibility to adjust parameters to achieve desired performance. The horizontal injection design gives better performance compared to upward and downward injection designs.Steady-state Simulation of the HYGAS Coal Gasification ProcessA Hybrid Computer System for the Simulation of a Coal Gasification ProcessDynamic Modeling and Simulation of a Fluidized Bed Coal Gasification ProcessProcess analysis and simulation of underground coal gasificationSimulation of the CO2 - Acceptor Process for Coal GasificationIndirect Coal Gasification Using Aspen-Plus® ModelSimulation Studies and Geometric Analysis

The book deals with development of comprehensive computational models for simulating underground coal gasification (UCG). It starts with an introduction to the UCG process and process modelling inputs in the form of reaction kinetics, flow patterns, spalling rate, and transport coefficient that are elaborated with methods to generate the same are described with illustrations. All the known process models are reviewed, and relative merits and limitations of the modeling approaches are highlighted and compared. The book describes all the necessary steps required to determine the techno-economic feasibility of UCG process for a given coal reserve, through modeling and simulation.

Hydrogen-oriented Underground Coal Gasification for Europe (HUGE) LAP Lambert Academic Publishing

Underground coal gasification (UCG) is an important technique for future coal utilization. It has the potential to be a clean technology and to tap un-mineable, deep coal deposits across the world. Commercialization of UCG has been riddled with a variety of issues, including public perception and a lack of clear comprehension about underlying physicochemical phenomena. This book will bridge the gap in knowledge and highlight the modern findings related to the complex interactions in UCG. With a focus on the chemical reactions in UCG and treating the underground coal cavity as “nature’s own chemical reactor”, various mathematical modeling studies that serve to unravel some of the mysteries of this decades-old technique will be revealed.

Monthly Catalogue, United States Public Documents John Wiley & Sons

Gasification is a very efficient method of producing clean synthetic gas (syngas) which can be used as fuel for electric generation or chemical building block for petrochemical industries. This study performs detailed simulations of coal gasification process inside a generic two-stage entrained-flow gasifier to produce syngas carbon monoxide and hydrogen. The simulations are conducted using the commercial Computational Fluid Dynamics (CFD) solver FLUENT. The 3-D Navier-Stokes equations and seven species transport equations are solved with eddy-breakup combustion model. Simulations are conducted to investigate the effects of coal mixture (slurry or dry), oxidant (oxygen-blown or air-blown), wall cooling, coal distribution between the two stages, and the feedstock injection angles on the performance of the gasifier in producing CO and H2. The result indicates that coal-slurry feed is preferred over coal-powder feed to produce hydrogen. On the other hand, coal-powder feed is preferred over coal-slurry feed to produce carbon monoxide. The air-blown operation yields poor fuel conversion efficiency and lowest syngas heating value. The two-stage design gives the flexibility to adjust parameters to achieve desired performance. The horizontal injection design gives better performance compared to upward and downward injection designs.

Membrane Reactors for Energy Applications and Basic Chemical Production CRC Press

This book presents the current carbonaceous fuel conversion technologies based on chemical looping concepts in the context of traditional or conventional technologies. The key features of the chemical looping processes, their ability to generate a sequestration-ready CO2 stream, are thoroughly discussed. Chapter 2 is devoted entirely to the performance of particles in chemical looping technology and covers the subjects of solid particle design, synthesis, properties, and reactive characteristics. The looping processes can be applied for combustion and/or gasification of carbon-based material such as coal, natural gas, petroleum coke, and biomass directly or indirectly for steam, syngas, hydrogen, chemicals, electricity, and liquid fuels production. Details of the energy conversion efficiency and the economics of these looping processes for combustion and gasification applications in contrast to those of the conventional processes are given in Chapters 3, 4, and 5.Finally, Chapter 6 presents additional chemical looping applications that are potentially beneficial,

including those for H2 storage and onboard H2 production, CO2 capture in combustion flue gas, power generation using fuel cell, steam-methane reforming, tar sand digestion, and chemicals and liquid fuel production. A CD is appended to this book that contains the chemical looping simulation files and the simulation results based on the ASPEN Plus software for such reactors as gasifier, reducer, oxidizer and combustor, and for such processes as conventional gasification processes, Syngas Chemical Looping Process, Calcium Looping Process, and Carbonation-Calcination Reaction (CCR) Process. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Modeling, Simulation, and Equipment Operations

Springer Science & Business Media
Membrane Reactors for Energy Applications and Basic Chemical Production presents a discussion of the increasing interest in membrane reactors that has emerged in recent years from both the scientific and industrial communities, in particular their usage for energy applications and basic chemical production. Part One of the text investigates membrane reactors for syngas and hydrogen production, while Part Two examines membrane reactors for other energy applications, including biodiesel and bioethanol production. The final section of the book reviews the use of membrane reactors in basic chemical production, including discussions of the use of MRs in ammonia production and the dehydrogenation of alkanes to alkenes. Provides comprehensive coverage of membrane reactors as presented by a world-renowned team of experts Includes discussions of the use of membrane reactors in ammonia production and the dehydrogenation of alkanes to alkenes Tackles the use of membrane reactors in syngas, hydrogen, and basic chemical production Keen focus placed on the industry, particularly in the use of membrane reactor technologies in energy
Indirect Coal Gasification Using Aspen-Plus® Model Momentum Press
February issue includes Appendix entitled Directory of United States Government periodicals and subscription publications; September issue includes List of depository libraries; June and December issues include semiannual index

Process analysis and simulation of underground coal gasification

CRC PressI Llc
Provides a comprehensive review on the brand-new development of several multiphase reactor techniques applied in energy-related processes Explains the fundamentals of multiphase reactors as well as the sophisticated applications Helps the reader to understand the key problems and solutions of clean coal conversion techniques Details the emerging processes for novel refining technology, clean coal conversion techniques, low-cost hydrogen productions and CO2 capture and storage Introduces current energy-related processes and links the basic principles of emerging processes to the features of multiphase reactors providing an overview of energy conversion in combination with multiphase reactor engineering Includes case studies of novel reactors to illustrate the special features of these reactors
Simulation and Economic Evaluation of Coal Gasification with SETS Reforming Process for Power Production William Andrew
In view of limited liquid fuels, in terms of crude oil reserves and to reduce the use of constantly and rapidly diminishing natural gas reserves, researchers are attracted towards Fisher Tropsch reaction. Aspen Plus(r) has become reliable, acquainted and recognized processes modeling software, extensively in practice for coal and biomass gasification processes. It contains different physical property packages that are useful for solid handling. Aspen Plus(r) model has been proposed to develop a better understanding of the process for geometric analysis of gasifier. This simulation presents an alternate technology for conventional coal gasification to improve the performance of process by varying geometry of gasifier. The Purpose of this study, is entirely focus on the production of synthesis gas from coal, through a process of indirect gasification and using only steam as the gasifying medium. The book serves as reference material for students, engineers and scientists working in the area of syngas production and coal gasification
Simulation of Coal Gasification Process Inside a Two-stage Gasifier CRC Press
The ongoing discussion about reaching the "peak-oil point" (maximal delivery rate with conventional methods) emphasizes a fundamental change of the frame conditions of oil-based basic products. The alternative with the largest potential is the use of coal. Coal gasification is the production of coal gas (a mixture of mainly hydrogen and carbon monoxide) from coal adding agents like steam/water and oxygen, which can be used in a number of industrial processes (e.g. hydroformulation and Fischer-Tropsch process). Many different kinds of coal do naturally occur, and due to shrinking natural resources, there has been a substantial gain of interest in poor, ash-rich coal. Beside the quality of coal, there is a number of other parameters influencing the efficiency of coal gasification, such as temperature, pressure, and reactor type. Although several books dealing with the subject of gasification have recently been published, few are strictly focussed on coal as feedstock. This monograph provides the reader with the necessary chemical background on coal gasification. Several types of coal (baseline coal and ash-rich coal) are compared systematically, pointing out the technological efforts achieved so far to overcome this challenge. Using a new, innovative order scheme to evaluate the gasification process at a glance (the ternary diagram), the complex network of chemistry, engineering, and economic needs can be overviewed in a highly efficient way. This book is a must-have for Chemical and Process Engineers, Engineering Students, as well as Scientists in the Chemical Industry.
A COMPUTATIONAL WORKBENCH ENVIRONMENT FOR VIRTUAL POWER PLANT SIMULATION John Wiley & Sons
Besides being one of the best Clean Coal Technologies, fluidized beds are also proving to be the most practical option for biomass conversion. Although the technology is well established, the field lacks a comprehensive guide to the design and operating principles of fluidized bed boilers and gasifiers. With more than 30 years of research and industrial experience, Prabir Basu answers this pressing need with Combustion and Gasification in Fluidized Beds. This book is a versatile resource that explains how fluidized bed equipment works and how to use the basic principles of thermodynamics and fluid mechanics in design while providing insight into planning new projects, troubleshooting existing equipment, and appreciating the capabilities and limitations of the process. From hydrodynamics to construction and maintenance, the author covers all of the essential information needed to understand, design, operate, and maintain a complete fluidized bed system.

It is a must for clean coal technology as well as for biomass power generation. Beginning with a general introduction to fossil or biofuel conversion choices, the book surveys hydrodynamics, fundamentals of gasification, combustion of solid fuels, pollution aspects including climate change mitigation, heat transfer in fluidized beds, the design and operation of bubbling and circulating fluidized bed boilers, and various supporting components such as distributor grates, feeding systems, and gas-solid separators.

Dynamic Simulation of Coal-based Combined Cycle Plants for Development of Process Control Guidelines

Includes glossary of terms.