

Edited by Jürgen Schmidt

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Process and Plant Safety

Applying Computational Fluid Dynamics



Process and Plant Safety: Applying Computational Fluid Dynamics

Jürgen Schmidt (Editor)

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DESCRIPTION

The safe operation of plants is of paramount importance in the chemical, petrochemical and pharmaceutical industries. Best practice in process and plant safety allows both the prevention of hazards and the mitigation of consequences. Safety Technology is continuously advancing to new levels and Computational Fluid Dynamics (CFD) is already successfully established as a tool to ensure the safe operation of industrial plants.

With CFD tools, a great amount of knowledge can be gained as both the necessary safety measures and the economic operation of plants can be simultaneously determined. Young academics, safety experts and safety managers in all parts of the industry will henceforth be forced to responsibly judge these new results from a safety perspective. This is the main challenge for the future of safety technology.

This book serves as a guide to elaborating and determining the principles, assumptions, strengths, limitations and application areas of utilizing CFD in process and plant safety, and safety management. The book offers recommendations relating to guidelines, procedures, frameworks and technology for creating a higher level of safety for chemical and petrochemical plants. It includes modeling aids and concrete examples of industrial safety measures for hazard prevention.

ABOUT THE AUTHOR

Jürgen Schmidt has worked as a safety expert for more than 25 years at Hoechst AG, Frankfurt and BASF SE, Ludwigshafen, Germany. Since 2002 he lectures in Process and Plant Safety at the Karlsruhe Institute of Technology, Germany. Prof. Schmidt studied Process Engineering at the University Bochum, Germany, and at the Texas A&M University, USA. His main fields of interest are smart safety concepts (combining safety and economics), two-phase gas/liquid flow, safety devices and cyclone separators, high pressure fluid flow and condensation in natural gas pipelines. He has published more than 100 scientific articles in these areas.

Prof. Schmidt is member of the steering committee of ProcessNet's Safety Engineering Section (a group of Dechema) in Germany and chairs the working group 'Safe Design of Chemical Plants'. Currently he leads ISO's standardization working party for 'Flashing liquids in safety devices'. In addition he is member of the board in the European DIERS User Group. He has received numerous awards from the Industry

and the European Process Safety Centre.

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