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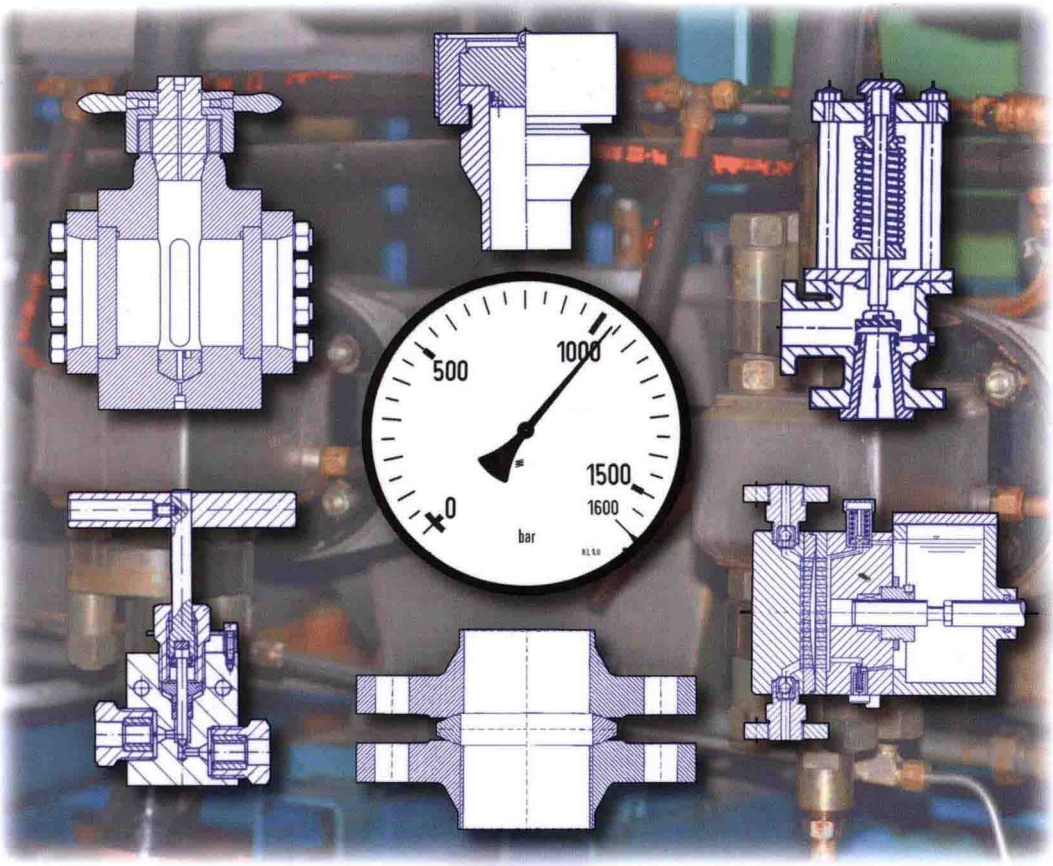
Industrial High Pressure Applications

Processes, Equipment and Safety



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Preface

In 2010, when Wiley-VCH Verlag GmbH asked me to edit a new book on high-pressure applications, the first thought that came to my mind was whether there was really a requirement for compiling such a reference book. In fact, numerous conference proceedings and even some textbooks were available that illustrated the state of the art and special applications of high-pressure processes in detail, offering support for production of innovative products. However, the application of high pressure covers many different industries – from basic material production, mechanical engineering, energy management, chemical engineering to bioprocessing and food processing. In engineering education, these applications even postulate different courses of study.

Based on this background, it is not surprising that a general and comprehensive description of industrial high-pressure processes is hardly possible. Next to basic knowledge, the aim was now to especially include overall aspects such as the need for applying high pressure, desirable and undesirable effects, and prospects and risks of high-pressure processes. In this respect, my activities on high-pressure engineering in industry and university since 1977 facilitated access to experts from various different fields of industrial applications and scientific research who were willing to contribute with their knowledge to special high-pressure applications.

The book is structured in three main parts. Part One is an introductory section dealing with the history and the engineering basics of high-pressure techniques. Part Two demonstrates classical and more recent high-pressure applications from chemical engineering, energy management and technology, bioengineering and food engineering, and manufacturing techniques. Part Three concentrated on equipment, measurement, and safety devices in high-pressure processes. The book concludes with a short survey and an evaluation of international rules that are valid for the calculation and design of high-pressure vessels.

It is my pleasure to thank all the authors for their commitment and their highly valuable and professional contributions. I also thank Wiley-VCH Verlag GmbH for consistent assistance and patience.

Hamburg, June 2012 *Rudolf Eggers*

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