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Nota di contenuto	Cover; Related Titles; Title Page; Copyright; List of Contributors; Chapter 1: Fundamentals of Vacuum Technology; 1.1 Introduction; 1.2 Fundamentals of Vacuum Technology; References; Chapter 2: Condensation under Vacuum; 2.1 What Is Condensation?; 2.2 Condensation under Vacuum without Inert Gases; 2.3 Condensation with Inert Gases; 2.4 Saturated Inert Gas-Vapour Mixtures; 2.5 Vapour- Liquid Equilibrium; 2.6 Types of Condensers; 2.7 Heat Transfer and Condensation Temperature in a Surface Condenser; 2.8 Vacuum Control in Condensers; 2.9 Installation of Condensers; 2.10 Special Condenser Types Further ReadingChapter 3: Liquid Ring Vacuum Pumps in Industrial Process Applications; 3.1 Design and Functional Principle of Liquid Ring Vacuum Pumps; 3.2 Operating Behaviour and Design of Liquid Ring Vacuum Pumps; 3.4 Selection of Suitable Liquid Ring Vacuum Pumps; 3.5 Process Connection and Plant Construction; 3.6 Main Damage Symptoms; 3.7 Table of Symbols; Chapter 4: Steam Jet Vacuum Pumps;

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	 4.1 Design and Function of a Jet Pump; 4.2 Operating Behaviour and Characteristic; 4.3 Control of Jet Compressors 4.4 Multi-Stage Steam Jet Vacuum Pumps4.5 Comparison of Steam, Air and Other Motive Media; Further Reading; Chapter 5: Mechanical Vacuum Pumps; 5.1 Introduction; 5.2 The Different Types of Mechanical Vacuum Pumps; 5.3 When Using Various Vacuum Pump Designs in the Chemical or Pharmaceutical Process Industry, the Following Must Be Observed; References; Chapter 6: Basics of the Explosion Protection and Safety-Technical Requirements on Vacuum Pumps for Manufacturers and Operating Companies; 6.1 Introduction; 6.2 Explosion Protection; 6.3 Directive 99/92/EC; 6.4 Directive 94/9/EC; 6.5 Summary ReferencesFurther Reading; Chapter 7: Measurement Methods for Gross and Fine Vacuum; 7.1 Pressure Units and Vacuum Ranges; 7.2 Directly and Indirectly Measuring Vacuum Gauges and Their Measurement Ranges; 7.3 Hydrostatic Manometers; 7.4 Mechanical and Electromechanical Vacuum Gauges; References; Further Reading; Chapter 8: Leak Detection Methods; 8.1 Definition of Leakage Rates; 8.2 Acceptable Leakage Rate of Chemical Plants; 8.3 Methods of Leak Detection; 8.4 Helium as a Tracer Gas; 8.5 Leak Detection with Helium Leak Detector; 8.6 Leak Detection of Systems in the Medium-Vacuum Range 8.7 Leak Detection swithout Need of a Mass Specifications of Helium Leak Detectors; 8.10 Helium Leak Detection in Industrial Rough Vacuum Applications without Need of a Mass Spectrometer; References; Further Reading; European Standards; Chapter 9: Vacuum Crystallisation; 9.1 Introduction; 9.2 Crystallisation Theory for Practice; 9.3 Types of Crystallisers; 9.4 Periphery; 9.5 Process Particularities; 9.6 Example - Crystallisers; 9.4 Periphery; 9.5 Process Particularities; 9.6 Example - Crystallisation of Sodium Chloride; References; Chapter 10: Why Evaporation under Vacuum?; Summary 10.1 Introduction
Sommario/riassunto	Based on the very successful German edition and a seminar held by the German Engineers' Association (VDI) on a regular basis for years now, this English edition has been thoroughly updated and revised to reflect the latest developments. It supplies in particular the special aspects of vacuum technology, applied vacuum pump types and vacuum engineering in the chemical, pharmaceutical and process industry application-segments. The text includes chapters dedicated to latest European regulations for operating in hazardous zones with vacuum systems, methods for process pressure control and regulati