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Home \W\ Hvac book \W\ ASHRAE DESIGN GUIDE for CLEANROOMS, Fundamentals, Systems, and Performance ASHRAE Design Guide for Cleanrooms provides the information needed for successful cleanroom projects. Designers, builders, owners and cleanroom operators will find this book an indispensable resource. The guide begins with fundamentals such as cleanroom classification and airflow, standards and guidelines for cleanroom design, and sources of contaminants within cleanrooms, including separate chapters on airborne particulate contaminants, surface particulate contaminants, airborne molecular contaminants, liquid-based contaminants, and microbial contaminants. From there, further chapters discuss recommendations on the design of environmental control systems, covering planning and concerns such as contamination control, site selection and service requirements, critical flow arrangements, architectural considerations, internal environmental quality, external emissions control, and outdoor air intake, and safety. Further chapters discuss electrical, control and lighting systems, as well as the use of computational fluid dynamics (CFD) to assist in cleanroom design. Finally, the dedicated chapters cover cleanroom testing and certification, qualification, commissioning and cleanroom needs in specific types of facilities, such as semiconductors and electronics, pharmaceuticals, biotechnology and healthcare, and food processing. PART 1 – CLEANROOM BASICS 1 · Introduction 2 · Airborne particulate contaminants 3 · Surface particulate contaminants 4 · Airborne molecular contaminants 5 · Contaminants of liquid origin 6 · Microbial contaminants PART 2 – DESIGN OF CLEANROOMS AND ENVIRONMENTAL CONTROL SYSTEMS 7 · Planning and Basic Considerations 8 · Basic requirements 9 · General considerations on the internal design conditions of sand 10 · Electrical systems for clean rooms 11 · Cleanroom control systems 12 · Design of lighting systems for clean rooms 13 · Computational fluid dynamics for cleanroom design 14 · Cleanroom Utilities 15 · Services PART 3 – TESTING, CERTIFICATION, COMMISSIONING AND QUALIFICATION OF CLEANROOMS 16 · Commissioning in a clean room 17 · Qualification of CleanSpace PART 4 – DESIGN OF CLEAN ROOMS IN SELECTED SECTORS 18 · Cleanrooms in semiconductor and electronics industries 19 · Cleanrooms in pharmaceutical and healthcare facilities 20 · Cleanrooms in food and beverage industries published 2017 Part number:448 1 units of measurement. Note: This ASHRAE Design Guide for Cleanrooms provides the information needed for successful cleanroom projects. Designers, builders, owners and cleanroom operators will find this book an indispensable resource. The guide begins with fundamentals such as cleanroom classification and airflow, standards and guidelines for cleanroom design, and sources of contaminants within cleanrooms, including separate chapters on airborne particulate contaminants, surface particulate contaminants, airborne molecular contaminants, liquid-based contaminants, and microbial contaminants. From there, the guide proceeds to specific recommendations on the design of environmental control systems, covering planning and concerns such as contamination control, site selection and service requirements, critical flow arrangements, architectural considerations, internal environmental quality, external emissions control, and outdoor air intake, and safety. 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The guide begins with fundamentals such as cleanroom classification and airflow, standards and guidelines for cleanroom design, and sources of contaminants within cleanrooms, including separate chapters on airborne particulate contaminants, surface particulate contaminants, airborne molecular contaminants, liquid-based contaminants, and microbial contaminants. From there, the guide proceeds to specific recommendations on the design of environmental control systems, covering planning and concerns such as contamination control, site selection and service requirements, critical flow arrangements, architectural considerations, internal environmental quality, external emissions control, and outdoor air intake, and safety. Further chapters discuss electrical, control and lighting systems, as well as the use of computational fluid dynamics (CFD) to assist in cleanroom design. Finally, the dedicated chapters cover cleanroom testing and certification, qualification, commissioning and cleanroom needs in specific types of facilities, such as semiconductors and electronics, pharmaceuticals, biotechnology and healthcare, and food processing. This design guide is divided into four parts, each containing multiple chapters:Fundamentals of the cleanroom Design and environmental control systems Testing, certification, commissioning and qualificationDesigning clean rooms in selected industriesThe cleanrooms and associated technologies commonly used in modern microelectronics, semiconductors, pharmaceuticals, biotechnology, nanotechnology, medical device, life sciences, aerospace, Optics, Automotive, Healthcare, Biosecurity Laboratory and Food Processing industries, covering virtually all major high-tech sectors where contaminants present in the air or indoor surface can adversely affect the production process or scientific research. Cleanrooms require much lower levels of contaminants than commercial spaces, and although non-contamination cannot be fully achieved, cleanrooms designed, operated and controlled with ultra-low concentrations of these contaminants to meet specific process requirements for indoor air cleaningTHE ASHRAE Cleanroom Design Guide offers a practical and comprehensive approach to the theories, the fundamentals, performance, control, testing and industrial applications of cleanrooms. DownloadATHRAE Cleanroom Design Guide: Fundamentals, Systems, and PerformanceASHRAE Cleanroom Design Guide: Fundamentals, Systems, and Performance

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