

ASHRAE Research: Improving the Quality of Life

The American Society of Heating, Refrigerating and Air-Conditioning Engineers is the world's foremost technical society in the fields of heating, ventilation, air conditioning, and refrigeration. Its members worldwide are individuals who share ideas, identify needs, support research, and write the industry's standards for testing and practice. The result is that engineers are better able to keep indoor environments safe and productive while protecting and preserving the outdoors for generations to come.

One of the ways that ASHRAE supports its members' and industry's need for information is through ASHRAE Research. Thousands of individuals and companies support ASHRAE Research

annually, enabling ASHRAE to report new data about material properties and building physics and to promote the application of innovative technologies.

Chapters in the ASHRAE Handbook are updated through the experience of members of ASHRAE Technical Committees and through results of ASHRAE Research reported at ASHRAE meetings and published in ASHRAE special publications and in *ASHRAE Transactions*.

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Preface

The 2008 *ASHRAE Handbook—HVAC Systems and Equipment* discusses various systems and the equipment (components or assemblies) that comprise them, and describes features and differences. This information helps system designers and operators in selecting and using equipment. An accompanying CD-ROM contains all the volume's chapters in both I-P and SI units.

This edition includes *two* new chapters, described as follows:

- Chapter 16, Ultraviolet Lamp Systems, includes a review of the fundamentals of UVC germicidal energy's impact on microorganisms; how UVC lamps generate germicidal radiant energy; common approaches to the application of UVGI systems for upper-air room, in-duct, and surface cleansing; and a review of human safety and maintenance issues.
- Chapter 17, Combustion Turbine Inlet Cooling (CTIC), provides a detailed discussion of how CTIC is used to help improve combustion turbine performance.

Some of the revisions and additions to the remainder of the volume are as follows:

- Chapters 1 to 5 have each been revised to include new system and process flow diagrams, plus new discussion content on commissioning, building automation, maintenance management, sustainability/green design, security, and various systems (e.g., underfloor air distribution, chilled beams).
- Chapter 7, Combined Heat and Power Systems, formerly entitled Cogeneration Systems and Engine and Turbine Drives, was reorganized, as well as updated for new technology.
- Chapter 11, District Heating and Cooling, has new guidance on construction cost considerations, central plants, and distribution systems.
- Chapter 12, Hydronic Heating and Cooling, has revised text and figures on all aspects of system design, including design procedure, water temperatures, heat transfer, distribution losses, constant- and variable-speed pumping, sizing control valves, and terminal units.
- Chapter 18, Duct Construction, has new guidance for installation of flexible ducts.
- Chapter 19, Room Air Distribution Equipment, was reorganized to coordinate with its companion chapter in *HVAC Applications*, with added content on equipment for stratified and partially stratified systems.
- Chapter 24, Mechanical Dehumidifiers and Related Components, has new content on installation and service, indoor pool dehumidifiers, and application considerations for various equipment types.
- Chapter 26, Air-Heating Coils, has new text on installation guidelines.

- Chapter 27, Unit Ventilators, Unit Heaters, and Makeup Air Units, has updated content on makeup air units.
- Chapter 30, Automatic Fuel-Burning Systems, extensively reorganized and revised, contains updated information on new technology and code requirements.
- Chapter 31, Boilers, has new material on condensing boilers, burner types, and operating and safety controls.
- Chapter 32, Furnaces, has been thoroughly revised to reflect new technology and code requirements.
- Chapter 34, Chimney, Vent, and Fireplace Systems, has been reorganized for clarity and has new content on designing fireplaces and their chimneys.
- Chapter 36, Solar Energy Equipment, has been reorganized and has new content on photovoltaic systems and testing/rating.
- Chapter 37, Compressors, has been reorganized and has updates on bearings and variable-speed drive technology.
- Chapter 38, Condensers, contains revised content on air-cooled condensers, particularly on type descriptions, heat transfer, pressure drop, testing/rating, and installation and maintenance.
- Chapter 40, Evaporative Air Cooling Equipment, has a rewritten section on indirect coolers.
- Chapter 42, Liquid-Chilling Systems, has new discussion on both refrigerant selection and variable-flow chilled-water systems, as well as new and improved figures.
- Chapter 44, Motors, Motor Controls, and Variable-Speed Drives, has updates for new technology and codes.
- Chapter 48, Unitary Air Conditioners and Heat Pumps, has new content on multisplit units, variable-refrigerant-flow (VRF) equipment, certification, and sustainability.

This volume is published, both as a bound print volume and in electronic format on a CD-ROM, in two editions: one using inch-pound (I-P) units of measurement, the other using the International System of Units (SI).

Corrections to the 2005, 2006, and 2007 Handbook volumes can be found on the ASHRAE Web site at <http://www.ashrae.org> and in the Additions and Corrections section of this volume. Corrections for this volume will be listed in subsequent volumes and on the ASHRAE Web site.

Reader comments are enthusiastically invited. To suggest improvements for a chapter, **please comment using the form on the ASHRAE Web site** or, using one of the cutout comment pages at the end of this volume's index, write to Handbook Editor, ASHRAE, 1791 Tullie Circle, Atlanta, GA 30329, or fax 678-539-2187, or e-mail mowen@ashrae.org.

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