

CONTENTS

Contributors

ASHRAE Technical Committees, Task Groups, and Technical Resource Groups

ASHRAE Research: Improving the Quality of Life

Preface

COMFORT APPLICATIONS

- Chapter*
1. **Residential Space Conditioning** (TC 8.11, Unitary and Room Air Conditioners and Heat Pumps)
 2. **Retail Facilities** (TC 9.8, Large Building Air-Conditioning Applications)
 3. **Commercial and Public Buildings** (TC 9.8)
 4. **Tall Buildings** (TC 9.12, Tall Buildings)
 5. **Places of Assembly** (TC 9.8)
 6. **Indoor Swimming Pools** (TC 9.8)
 7. **Hospitality** (TC 9.8)
 8. **Educational Facilities** (TC 9.7)
 9. **Health Care Facilities** (TC 9.6, Healthcare Facilities)
 10. **Justice Facilities** (TC 9.4, Justice Facilities)
 11. **Automobiles** (TC 9.3, Transportation Air Conditioning)
 12. **Mass Transit** (TC 9.3)
 13. **Aircraft** (TC 9.3)
 14. **Ships** (TC 9.3)

INDUSTRIAL APPLICATIONS

- Chapter*
15. **Industrial Air Conditioning** (TC 9.2, Industrial Air Conditioning)
 16. **Enclosed Vehicular Facilities** (TC 5.9, Enclosed Vehicular Facilities)
 17. **Laboratories** (TC 9.10, Laboratory Systems)
 18. **Engine Test Facilities** (TC 9.2)
 19. **Clean Spaces** (TC 9.11, Clean Spaces)
 20. **Data Centers and Telecommunication Facilities** (TC 9.9, Mission Critical Facilities, Data Centers, Technology Spaces, and Electronic Equipment)
 21. **Printing Plants** (TC 9.2)
 22. **Textile Processing Plants** (TC 9.2)
 23. **Fire and EMT Stations and Training Academies** (TC 9.8)
 24. **Museums, Galleries, Archives, and Libraries** (TC 9.8)
 25. **Environmental Control for Animals and Plants** (TC 2.2, Plant and Animal Environment)
 26. **Drying and Storing Selected Farm Crops** (TC 2.2)
 27. **Air Conditioning of Wood and Paper Product Facilities** (TC 9.2)
 28. **Power Plants** (TC 9.2)
 29. **Nuclear Facilities** (TC 9.2)
 30. **Mine Ventilation and Air Conditioning** (TC 9.2)
 31. **Industrial Drying Systems** (TC 9.2)
 32. **Ventilation of the Industrial Environment** (TC 5.8, Industrial Ventilation)
 33. **Industrial Local Exhaust Systems** (TC 5.8)
 34. **Kitchen Ventilation** (TC 5.10, Kitchen Ventilation)

ENERGY-RELATED APPLICATIONS

- Chapter* 35. **Ground-Source Heat Pumps and Geothermal Energy** (TC 6.8, Geothermal Heat Pump and Energy Recovery Applications)
36. **Solar Energy Use** (TC 6.7, Solar Energy Utilization)

BUILDING OPERATIONS AND MANAGEMENT

- Chapter* 37. **Energy Use and Management** (TC 7.6, Building Energy Performance)
38. **Owning and Operating Costs** (TC 7.3, Operation, Maintenance, and Cost Management)
39. **Testing, Adjusting, and Balancing** (TC 7.7, Testing and Balancing)
40. **Operation and Maintenance Management** (TC 7.3)
41. **Computer Applications** (TC 1.5, Computer Applications)
42. **Building Energy and Water Monitoring** (TC 7.6)
43. **Supervisory Control Strategies and Optimization** (TC 7.5, Smart Building Systems)
44. **HVAC Commissioning** (TC 7.9, Building Commissioning)

GENERAL APPLICATIONS

- Chapter* 45. **Building Envelopes** (TC 4.4, Building Materials and Building Envelope Performance)
46. **Building Air Intake and Exhaust Design** (TC 4.3, Ventilation Requirements and Infiltration)
47. **Air Cleaners for Gaseous Contaminants** (TC 2.3, Gaseous Air Contaminants and Gas Contaminant Removal Equipment)
48. **Design and Application of Controls** (TC 1.4, Control Theory and Application)
49. **Noise and Vibration Control** (TC 2.6, Sound and Vibration)
50. **Water Treatment: Deposition, Corrosion, Fouling, and Biological Control** (TC 3.6, Water Treatment)
51. **Service Water Heating** (TC 6.6, Service Water Heating Systems)
52. **Snow Melting and Freeze Protection** (TC 6.5, Radiant Heating and Cooling)
53. **Evaporative Cooling** (TC 5.7, Evaporative Cooling)
54. **Fire and Smoke Control** (TC 5.6, Control of Fire and Smoke)
55. **Radiant Heating and Cooling** (TC 6.5)
56. **Seismic-, Wind-, and Flood-Resistant Design** (TC 2.7, Seismic, Wind, and Flood Resistant Design)
57. **Electrical Considerations** (TC 1.9, Electrical Systems)
58. **Room Air Distribution** (TC 5.3, Room Air Distribution)
59. **Indoor Airflow Modeling** (TC 4.10)
60. **Integrated Project Delivery and Building Design** (TC 7.1, Integrated Building Design)
61. **HVAC Resilience and Security** (TC 2.10, Resilience and Security)
62. **Ultraviolet Air and Surface Treatment** (TC 2.9, Ultraviolet Air and Surface Treatment)
63. **Smart Building Systems** (TC 7.5)
64. **Avoiding Moisture and Mold Problems** (TC 1.12, Moisture Management in Buildings)
65. **Occupant-Centric Sensing and Controls** (MTG.OBB)
66. **In-Room Air Cleaners** (TC 2.4)
67. Codes and Standards

Additions and Corrections

- Index** Composite index to the 2020 HVAC Systems and Equipment, 2021 Fundamentals, 2022 Refrigeration, and 2023 HVAC Applications volumes