



## *Become Familiar with ASHRAE HVAC Handbooks*

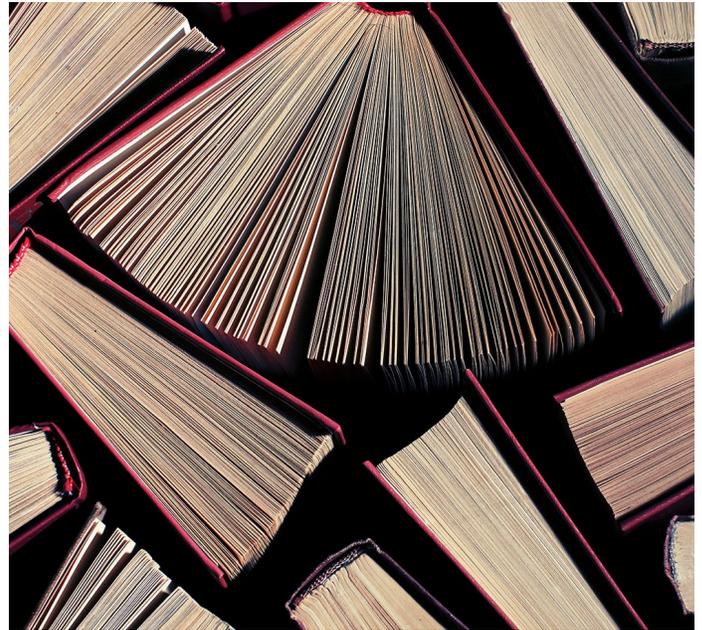
Anyone associated with asset management probably has a small library of important books to quickly reference when needed. Three mechanical and electrical categories that apply to an asset management library are:

- Building and Building Improvements
- Facilities and Other Improvements
- Infrastructure

Hopefully in this library are the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 2019 Handbook titled [HVAC Applications and 2020 Handbook HVAC Systems and Equipment](#). Unlike the National Electrical Code and the National Plumbing Code, HVAC (heating, ventilating, and air-conditioning) equipment, systems, and application are not as straight forward as electrical and plumbing building systems.

The 2020 Handbook, Chapter 1, HVAC System Analysis and Selection raises awareness to the reader that there are numerous HVAC systems available, and no single system is always the optimum system for an application e.g., K-12 schools. The location of the new building or existing building to be renovated is an obvious reason for ASHRAE providing a menu of systems to analyze and come up with the optimum HVAC solution based on whether the building is located in Florida, Ohio, or California. This specific Chapter 1 guides the building owner, facility manager, and the design engineer through the considerations to be taken into account when establishing a building program for a new facility or the renovation of an existing facility.

Goals such as initial cost, operating cost, and environmental conditions to mention just 3-thoughts to be given to the asset study are addressed in this Handbook. Other second tier categories when analyzing a building include discussion on “program goals,



additional goals, HVAC equipment and system constraints, and constructability constraints” before narrowing the building system(s) choices down to one, two, or three selection finalists.

The 2020 HVAC Systems and Equipment Handbook includes 52-chapters with the first 18-chapters highlighting systems such as, decentralized cooling and heating, central cooling and heating, applied heat pumps, heat recovery systems, steam systems, and variable refrigerant flow and guidelines to mention a few and references to where else to go look within this Handbook, as well as where to look for more detailed information needed by the HVAC design engineer. The other 34-chapters are extensions to the first 18-chapters, e.g., room air distribution, humidifiers, etc.

This chapter 1 is also a good reference for one who is trying to understand why a particular facility had certain building systems designed and installed in it. So often an individual will take on the role of asset manager and “inherit” the buildings he or she is now responsible to oversee, and both of these Handbooks should prove to

be a useful reference in beginning to understand the original design intent.

The 2019 Handbook HVAC Applications offers the asset management team useful information separated by categories as follows:

- Comfort application
- Industrial applications
- Energy-related applications
- Building operation and management
- General applications

This Handbook is dedicated to providing a technical overview of building system where the reader will also find references to other standards and guidelines such as the ASHRAE “Advanced Energy Design Guide for Small Hospitals and Healthcare Facilities” to better understand the HVAC equipment and systems in a particular building or future building program.

The 2019 Handbook HVAC Systems and Equipment also offers the asset management team useful information separated by categories as follows:

- Air-conditioning and heating systems
- Air-handling equipment and components
- Heating equipment and components
- Cooling equipment and components
- General components
- Packaged, unitary, and split-system
- General” e.g., thermal storage and codes and standards.

The technical information provides the foundation of data requiring an engineer to fill in the specific details when designing the system and/or retrofitting existing equipment and system distribution.

The 2019 HVAC Application Handbook includes 66-chapters with the first 34-chapters highlighting residential, commercial, institutional, and industrial building design guidelines and references to where else to go look for the information needed to understand and/or due-diligences when assessing an existing building, planning a new building, or renovating an existing building. This Handbook also provides overviews pertaining to operation of a facility now or in the future regarding energy usage and management, operating costs, and how to “tune-up” the HVAC

systems via testing, adjusting, and balancing, and commissioning and retro-commissioning of the building systems. This Handbook finishes up with ancillary topics such as, air cleaning for gaseous contamination, noise and vibration control, snow melting and freeze-protection, etc..

When it comes to an asset management team wanting to inventory each facility’s infrastructure these 2-Handbooks help the reader understand why a specific HVAC system was engineered for the building application so that the team can develop an understanding “why this equipment” and “why this system”. With 20-20 hindsight but no technical reference book, understanding these “whys” an asset manager will be left to assumptions instead of a better understand of the original design intent of a building.

In past *Focus on Facilities*, Asset Management columns such as September 2020 “[Basis of Design & Design Intent Documents](#)” where asset management will request that these 2-documents be developed which will be drawn upon using both the 2019 and 2020 ASHRAE Handbooks. These are just some of the many reasons for an asset management library to include these 2-books. And, for the reference reader, books today come bound or digital, based on one’s preference for reading.

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