ATTACHMENT 536

HEATING VENTILATION AND AIR CONDITIONING COURSE SUPPLEMENTS
AND REFERENCES

Compiled by

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2017
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1 Introduction
The following is a list of books and websites used as references to create the course Heating Ventilation and Air Conditioning.

1.1 Course outline
1.0. Introduction
2.0. Operation principles
2.1. Heating
2.1.1. Generation
2.1.2. Distribution
2.2. Ventilation
2.2.1. Mechanical or forced ventilation
2.2.2. Natural ventilation
2.3. Air conditioning
2.3.1. Refrigeration cycle
2.3.2. Free cooling
2.3.3. Packaged vs. Split system
2.3.4. Dehumidification
2.3.5. Maintenance
3.0. Energy efficiency
3.1. Heating energy
3.2. Ventilation energy recovery
3.3. Air conditioning energy
4.0. Air filtration and cleaning
Clean Air Delivery Rate (CADR) and filter performance
5.0. Energy efficiency measures with HVAC systems
5.1. Heating
5.1.1. Lowering set points
5.1.2. Replacing inefficient boilers
5.1.3. Installation of de-stratification fans
5.2. Ventilation
5.2.1. Motors
5.2.2. Fans
5.2.3. Time settings
5.3. Air conditioning
5.3.1. Temperature control
5.3.2. Variable speed drives
5.3.3. Free cooling coils
2 HVAC systems design handbook

Title: HVAC systems design handbook

Author: Roger W Haines; Michael E Myers

Year: 2010

Publisher: New York, N.Y : McGraw-Hill Education LLC

Abstract

This all-in-one working tool for every phase of the HVAC design process has been totally rewritten and revised. Heating -- Equipment and supplies -- Design and construction. Ventilation -- Equipment and supplies -- Design and construction. Air conditioning -- Equipment and supplies -- Design and construction.

Contents

Strategy guideline: HVAC equipment sizing

Title: Strategy guideline: HVAC equipment sizing
Author: Arlan Burdick; Building Technologies Program (U.S.)
Year: 2011

Abstract

This guide describes the equipment selection of a split system air conditioner and furnace for an example house in Chicago, IL as well as a heat pump system for an example house in Orlando, FL. The required heating and cooling load information for the two example houses was developed in the Department of Energy Building America Strategy Guideline: Accurate Heating and Cooling Load Calculations.
4 Refrigeration: theory, technology, and applications
Title: Refrigeration: theory, technology, and applications
Author: Mikkel E Larsen
Year: 2011

Contents

"REFRIGERATION: THEORY, TECHNOLOGY AND APPLICATIONS"; "CONTENTS";
5 HVAC Controls: Operation & Maintenance.
Title: HVAC Controls: Operation & Maintenance.

Author: Jr Guy W Gupton

Publisher: Hoboken: Taylor & Francis Ltd,

Year: 2005

Abstract

Heating. Engineering.

Contents

Book Cover; Title; Copyright; Table of Contents; Chapter 1 Basic Functions of Hvac Systems and Control Systems; Chapter 2 Hvac Equipment-to-Control Interactions; Chapter 3 Operating and Maintaining Hvac Control Systems; Chapter 4 The Mathematics of Control Systems: Controller Equations; Chapter 5 Performance Prediction in Hvac Control Systems; Chapter 6 Hvac Control System Set-Up; Chapter 7 Maintaining Electric and Electronic Control Systems; Chapter 8 Maintaining Pneumatic Control Systems; Chapter 9 Maintaining Local Loop to Bas Interfaces; Chapter 10 Hvac Control System Checkout Procedures. Chapter 11 Fine Tuning Program for Pneumatic Control Systems Chapter 12 Troubleshooting Atc Systems; Chapter 13 Tools & Fixtures for Atc System Operation and Maintenance; Chapter 14 Training Control System Operating and Maintenance Personnel; Chapter 15 Installing Hybrid Pneumatic and Direct Digital Control Systems; Chapter 16 Operating Direct Digital Control Systems; Chapter 17 Testing Direct Digital Control Systems; Chapter 18 A Short Course in Psychrometrics; Glossary of Terms; Index.
6 Refrigeration, air conditioning and heat pumps
Title: Refrigeration, air conditioning and heat pumps

Author: G H Hundy; A R Trott; T Welch

Publisher: Oxford, UK: Butterworth-Heinemann is an imprint of Elsevier,
Year: 2016.

Abstract
Refrigeration, Air Conditioning and Heat Pumps, Fifth Edition, provides a comprehensive introduction to the principles and practice of refrigeration. Clear and comprehensive, it is suitable for both trainee and professional HVAC engineers, with a straightforward approach that also helps inexperienced readers gain a comprehensive introduction to the fundamentals of the technology.

Contents
7  Air conditioning and refrigeration
Title: Air conditioning and refrigeration
Author: Rex Miller; Mark R Miller
Publisher: New York: McGraw-Hill,
Year: 2012
Abstract
Fully updated to cover the latest developments in air conditioning and refrigeration, this is a must-have resource for beginners and seasoned AC professionals alike.
Contents
8 HVAC inspection notes: inspecting commercial, industrial, and residential construction

Title: HVAC inspection notes: inspecting commercial, industrial, and residential construction
Author: G L Taylor
Year: 2005

Abstract
With to-do checklists, charts and tables with at-a-glance calculations, this work focuses on information from the SMACNA Duct Manual. It also covers: responsibility; authority; quality control and assurance; plans and specifications; shop drawings; inspector’s daily report; pre-construction meeting; equipment proposal; and progress schedules.

Contents
Mechanical general shop drawings ductwork mechanical insulation heating systems inspection ventilating, air supply and distribution system equipment vents ductwork and mechanical insulation refrigeration and air conditioning equipment controls testing painting operating instructions and guarantees
9 Air conditioning system design

Title: Air conditioning system design

Author: Roger Legg

Publisher: Cambridge, MA: Butterworth-Heinemann, an imprint of Elsevier,

Year: 2017

Abstract

Air Conditioning System Design summarizes essential theory and then explains how the latest air conditioning technology operates. Load calculations, energy efficiency, and selection of technology are all explained in the context of air conditioning as a system, helping the reader fully consider the implications of design decisions. Whether users need to figure out how to apply their mechanical engineering degree to an air conditioning design task or simply want to find out more about air conditioning technology for a research project, this book provides a perfect guide.

Contents

Front Cover; Air Conditioning System Design; Copyright; Dedication; Book Opening Quote; Contents; Foreword; Acknowledgments; Bromley 2017 RCL; Chapter 1: Properties of Humid Air; Atmospheric Pressure; Dry Air and Water Vapour; Vapour Pressure; Saturated Vapour Pressure; Superheated Vapor; Relative Humidity; Ideal Gas Laws; Dalton's Law of Partial Pressures; General Gas Law; Density of Air; Moisture Content; Saturation Moisture Content; Percentage Saturation; Specific Volume; Relationship Between Air Density and Specific Volume; Dry-bulb and Wet-bulb Temperatures; Dry-bulb Temperature Wet-bulb Temperature The Psychrometric Equation; Dew-Point Temperature; Specific Enthalpy; Humid Specific Heat; Adiabatic Saturation Temperature; Tables of Properties; The Psychrometric Chart; References; Chapter 2: Air Conditioning Processes; Mixing of Two Air Streams; Sensible Heating Coils; Cooling Coils; Sensible Cooling at Constant Moisture Content; Sensible Cooling With Dehumidification; Cooling Coil Contact Factor; Humidifiers; Adiabatic Humidifiers: Recirculation of Spray Water; Spray Humidifiers as Heat Exchangers-No adiabatic Processes; Sprayed-Cooling Coil Adiabatic Humidifiers: No Recirculation of Spray Water Steam Humidifiers; Direct Steam Injection; Pan Steam Humidifier; Adiabatic Dehumidification; Air Conditioned Space: Room Process Lines; Room Ratio Lines; Chapter 3: Indoor Design Conditions; Thermal Comfort; Indices of Thermal Comfort; Comfort Requirements; The Comfort Equation; Other considerations; Pleasant Indoor Environments; Dry-bulb Temperature; Relative Humidity; Air Movement; Mean Radiant Temperature; Space Conditions for Other Requirements; Indoor Design Condition Envelopes; Measurement of Space Conditions; References Chapter 4: Outdoor Air Design Conditions Frequency of Occurrence of Outdoor Air Conditions; Summer Design Conditions from Frequency Tables; Winter Design Conditions; Design Conditions for the United Kingdom; World-Wide Data; Outdoor Air Condition Envelopes; Points to Note; References; Chapter 5: Room Heat Gains, Air Diffusion, and Air Flow Rates; Heat Gains; Storage Effect of the Building Structure; Reduction of Heat Gains; Windows; Glazing Area; Shading Devices; Internal Blinds; Types of Glass; Walls and Roofs; Infiltration of Outdoor Air; Lighting; Air Diffusion; Cooling Mode; Heating Mode Common Terms Used in Air Diffusion Outlet Grilles and Diffusers; General Rules for Positioning Grilles
and Diffusers; Supply Outlets; Exhaust Outlets; Air Volume Flow Rate; Air Supply for Summer Cooling; Latent Heat Gains; Winter Heating; Total Air Flow Rate; Variable Air Volume; Minimum Ventilation Rates for Normal Occupancy; Air Movement Control; Smoke Control Escape Routes; References; Chapter 6: All-air Systems; Systems Using 100% Outdoor Air; Summer Operation; Winter Operation; System Using Adiabatic Humidification; Year-Round Operation of Plant; System Using Steam Humidification
10 Fundamentals of HVAC systems
Title: Fundamentals of HVAC systems
Author: Billy C Langley
Publisher: Lilburn, GA: Fairmont Press,
Year: 2000
Abstract
Contents
Air Conditioning and Psychrometrics --
Heat Load Calculation Factors --
Residential Heat Load Calculations --
Residential Equipment Sizing and Selection --
Residential Equipment Location --
Commercial Heat Load Calculation --
Commercial Equipment Sizing and Selection --
Commercial Equipment Location --
Refrigerant Lines --
Duct Systems and Designs --
Duct Pipe, Fittings, and Insulation --
Indoor Air Quality --
Measuring the System Velocity; Adjusting the Airflow --
System Cost Estimating.