

# HVAC Engineering Fundamentals: Part 1

## 1.1 Introduction

This chapter is devoted to "fundamentals"—contains principles which lay the foundation for what is to come. Starting with the original author's suggested thought process for analyzing typical problems, the reader is then exposed to a lexicon of our time: current engineering. Next follows a discussion of codes and regulations, political criteria which constrain potential design solutions to the bounds of public health and welfare, and sometimes to special interest group sponsored legislation. The final sections of the chapter offer a brief review of the basic physics of heating, ventilating, and air conditioning (HVAC) design in discussions of fluid mechanics, thermodynamics, heat transfer, and psychrometrics. Numerous classroom and design office experiences remind us of the value of continuous awareness of the physics of HVAC processes in the conduct of design work.

## 1.2 Problem Solving

Every HVAC design involves, as a first step, a problem-solving process, usually with the objective of determining the most appropriate type of HVAC system for a specific application. It is helpful to think of the problem-solving process as a series of logical steps, each of which must be performed in order to obtain the best results. Although there are various ways of defining the process, the following sequence has been found useful:

1. **Define the objective.** What is the end result desired? For HVAC, the objective usually is to provide an HVAC system which will control

# Hvac Systems Design Handbook Fourth Edition

**Hussin A.Rothana**



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