

Thermal Science eLearning | Refrigeration, Compressor & Evaporator Skills

Thermodynamic Laws and Cycles - WX11604-XE03XEN-E2

Objective 13: Describe Three Principles of Refrigeration Science

The Three Principles of Refrigeration Science

So far you have learned about a number of concepts related to thermal systems. We now bring these concepts together as three principles which apply to any refrigeration system:

- Absorption/Rejection of Heat through Phase Change
- Direction of Heat Transfer
- Conductivity of Heat Transfer Materials

Click on each refrigeration system principle for more information.

This page is interactive. Click here to show the instructions.

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eLearning Course: M11604

Amatrol's Thermal Science eLearning introduces the functions of thermal systems, thermal energy and heat transfer, thermodynamic laws and properties, refrigeration thermodynamics, and refrigeration/heat pump operation. The online multimedia training course takes learners through key topics and skills in temperature measurement, pressure measurement, thermal expansion, thermal system power, enthalpy and phase change, gas laws and phase equilibrium, phase diagrams, refrigeration science, vapor-compression refrigeration, and vapor-compression heat duty. These concepts are very necessary in order to fully understand thermal system design and operation.

Teach Thermal Basics

How Do Heat and Cold Affect Thermal Systems?

Thermal systems deal with concepts known as heat and cold. When someone says it is hot outside or that ice cream is cold, we understand what they mean. However, heat and cold have a more precise technical meaning when used to describe thermal systems. Heat and cold are comparative terms of something's energy content. The terms "heat" and "hotness" refer to the effects we feel from high energy content. Therefore, heating up a house means that we have added energy to it. In the opposite sense, cold and coldness are the effects we feel from low energy content. When we turn on the air conditioner to cool down a house, we are really removing heat energy from the room.

Interactive eLearning

Interactive, Engaging Multimedia for Thermal Science eLearning Brings Learning to Life

Amatrol's extensive, thorough [multimedia](#) covers thermal systems basics. Interactive screens paired with instructive graphics teach an array of thermal topics from heat transfer to refrigeration thermodynamics. With the optional hardware, learners can then apply this theoretical knowledge to immediate hands-on skills. For example, learners study the Ideal Gas Law and its importance and then calculate gas properties using this law. This combination of theory and practice ingrains concepts in a learner's mind and makes more advanced topics easier

to comprehend. (References [T7081](#))

Additional Info

Requirements:

- Computer (See [Computer Requirements](#))

Referenced Equipment:

- Thermal Science Learning System ([T7081](#))
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