

# Thermal Technology 1 Learning System

96-TT1



Thermal Technology 1 Learning System

Student Reference Guide



Interactive Multimedia

## Learning Topics:

- Introduction to Thermal Science
- Thermal Expansion
- Thermal Energy
- Thermal Properties and Heat Transfer
- Ideal Gas Law and Phase Changes
- Insulation
- Thermodynamic Laws and Cycles
- Laws of Thermodynamics
- Refrigeration Science
- Psychrometrics

Amatrol's Thermal Technology 1 Learning System (96-TT1) provides learners with the knowledge and equipment needed to comprehend the principles of modern thermal systems, such as HVAC, geothermal, refrigeration, and steam systems. As learners progress through the curriculum, they will perform experiments demonstrating principles such as the ideal gas law, linear and volumetric thermal expansion, basic temperature measurement, latent and sensible heat, specific heat capacity, conduction, convection, radiation, evaporative cooling, and basic refrigeration.

This tabletop learning system showcases a full range of components, such as a fire syringe, a vacuum hand pump, bi-metallic ball and ring, and many more on a vertical panel for easy access and inventory. These components are used in various combinations to conduct experiments that show learners physical examples of thermal concepts and build foundational knowledge that they can use in real-world applications!



## Technical Data

Complete technical specifications available upon request.

Beaker (250 mL [5], 1000 mL)  
Bi-Metallic Strip, Ball, and Ring with Handles  
Hotplate  
Specific Heat Specimens  
Nitrile Block Gloves (Small, Large)  
Fire Syringe  
Vacuum Hand Pump  
Conductive Heat Transfer Kit  
Convection Demonstration Kit  
Single Flint Lighter  
Flask Tongs  
Desk Fan  
Light, 500W Quartz  
Multimedia Curriculum (MB787)  
Teacher's Guide (CB787)  
Installation Guide (DB787)  
Student Reference Guide (HB787)  
Computer Requirements:

Please visit: <http://www.amatrol.com/support/computer-requirements/>

### Additional Requirements:

Amatrol Workstation or Equivalent: Models 82-609, 82-610, or 82-611  
Propane Gas Torch (Outside US)  
Electrical (120 VAC)  
Light, All-Purpose Machine Oil  
Water from Tap Source  
Matches  
Ice Cubes

### Additional Recommendation:

Mobile Technology Workstation (82-610)

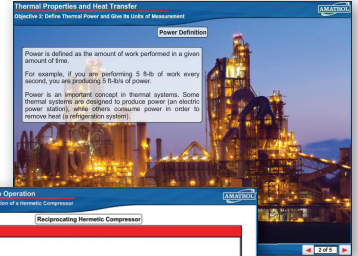
## Hands-On Skills to Reinforce Theoretical Knowledge

The best way to engage learners and reinforce theoretical concepts is to apply the concept using hands-on skills. For example, using a vacuum pump supplied with the 96-TT1, learners lower the pressure on a container of warm water until it boils, which demonstrates the relationship between pressure and a fluid's boiling point. As learners study thermal expansion, a key concept in bimetallic thermostats, they will apply heat to a bimetallic strip and observe how different metals expand at different rates. These and many other experiments engage the learner and build a solid foundation for further study in the field of thermal systems.



## World-Class Thermal Science Curriculum

Amatrol, working closely with industry professionals and educators, produced this world-class thermal science curriculum with stunning breadth and depth to give learners a comprehensive education in thermal concepts. Specific topic areas in this course include thermal energy and heat transfer, thermodynamic laws and properties, refrigeration thermodynamics, and refrigeration pump operation. This curriculum is presented in a highly-interactive multimedia format that combines a mix of text, audio, and 3D graphics and can be taken individually or delivered using a traditional classroom format. As an example of the multimedia interactions, learners study how a hermetic compressor's components are arranged within the compressor and then they can click on each part to gain an in-depth understanding of that component's role in the compressor's function.



Interactive Multimedia



Amatrol's 96-TT2: Thermal Technology 2

## Build Real-World Thermal Skills!

The Thermal Technology 1 Learning System is a fantastic lead-in to Amatrol's Thermal Technology 2 Learning System (96-TT2), which covers refrigeration, compressors, phase change, evaporators, and much more! The 96-TT2 is also available with FaultPro, the industry's only electronic fault insertion software.

## Student Reference Guide

A sample copy of the Thermal Technology 1 Learning System's Student Reference Guide is also included with the system for your evaluation. Student Reference Guides supplement this course by providing a condensed, inexpensive reference tool that learners will find invaluable once they finish their training making it the perfect course takeaway.

Additional Student Reference Guides may be purchased for your program by contacting your local Amatrol Representative.

