



POLK STATE
Corporate College

Industrial Ammonia Refrigeration and Certification Training

Ammonia Refrigeration: Level I

8:00 am – 5:00 pm

\$1039.00

The Refrigeration Basics Course

This four-day seminar is specifically designed for the practicing ammonia refrigeration operator and is directed toward plant engineers, maintenance personnel, and all individuals concerned with more efficient operation of industrial refrigeration systems. Based on the *Refrigerating Engineers and Technicians Association (RETA): Industrial Refrigeration I Manual*, this course is intended as a comprehensive overview of introductory refrigeration, including practical field examples, and supplemented by an open forum for discussion. The course includes a history of refrigeration from its beginning to modern, state-of-the-art industrial refrigeration facilities. Additionally, the role of the industry technician is covered, along with essential topics and equipment as listed below:

- The Refrigeration Cycle
- Definitions of Refrigeration Terms
- Basic Math
- Overview of Changes in State
- Cooling
- Basic Heat Profiles and Heat Flows
- Cycle Factors: Saturation, Sub-Cooling, and Superheating
- Properties of Refrigerants: Cost, Hazards, Environmental Concerns, and Other Selection Factors
- Refrigerant Tables: Pressure Drop, Super-Heated and Sub-Cooled Refrigerants, and Condensing Temperature
- Types and Styles of Compressors: Reciprocating, Rotary-Screw, and Rotary-Vane Compressors; Two-Stage Compression

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- Operation and Maintenance of Compressors: Duties and Responsibilities of Operators, Slugging, Log Sheets, and Preventative Maintenance
- Lubrication of a Refrigeration System: Types and Uses of Lubricants
- Air and Liquid Cooling Units and Defrost: Installation, Fluid and Air Cooling, and Secondary Coolants
- Condensers: Types and Maintenance
- Receivers: Types and Maintenance
- Purgers: Various Types and Issues
- Secondary Vessels: Accumulators, Transfer Vessels, Pumper Drums, Flooding Drums, Oil Pots, Recirculation Packages, and Oil Stills
- System Documentation: Flow Schematics, Process and Instrumentation Diagrams, Industry Guidance, and Standard Operating Procedures
- Introduction to OSHA's Process Safety Management (PSM) Protocols, the EPA's Risk Management Program (RMP), and the Ammonia Risk Management (ARM) Program
- Valves: Hand, Spring-Return, Safety-Relief, Sealed-Motor, Float, Interrupter, Stop-Check, Hydrostatic-Relief, Thermal-Expansion, Gas-Powered, Fixed-Flow, Solenoid (Direct and Pilot), and Hand-Expansion Valves
- Regulators: Fixed-Flow, Adjustable-Flow, and Pressure Regulators
- Additional Accessories: Strainers, Replaceable Core Filters (Nom-Micron and Sub-Micron), Defrost Controllers, Liquid-Level Indicators and Controls, and Float Drainers
- Ammonia Detection: Detector Types and Detection Schemes
- Hands-On Exercises in Standard Operating Procedures
- A Facility Tour
- Multiple Tests to Ensure Acquisition of Information
- In-Depth Question and Answer Sessions to Assist with Comprehension

Course reservations may be made by contacting:

Wagner- Meinert, LLC
260-489-7555

www.wagner-meinert.com

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