Ammonia Refrigeration Systems

This is a four-day, lecture-based course that covers the basic mechanical refrigeration cycle, the different refrigerants available, major refrigeration system components, system operation, service, and troubleshooting with a focus on ammonia systems. This is a technician-level course for both operating and maintenance personnel, providing the knowledge base necessary to work on ammonia refrigeration equipment.

I. Refrigeration Fundamentals
   · The Refrigeration Cycle
   · Physical Properties Of Various Refrigerants
   · Refrigerant Performance Tables
   · Compressor Types
   · Cooling Units
   · Lubrication
   · Secondary Refrigerants

II. Ammonia Systems
   · Ammonia Refrigeration Plant Safety
   · Basic Ammonia Refrigeration Principles
   · Component Identification

III. Operation of Industrial Ammonia Refrigeration Systems
   · Starting the System and Putting On-Line
   · Operate the System and Achieve Stability
   · Purging Non-Condensable Gases
   · Changing Operating Parameters
   · Determining the System Load
   · Determining Operating Efficiencies
   · Automated Operation
   · System Shutdown
   · Pumpdown Procedures

IV. Sub-Systems and Components
   · Compressors
   · Evaporators
   · Pumped Liquid Recirculation Systems
   · Condensers and High-Pressure Receivers
   · Two-Stage Systems and Defrost Systems
   · AC Frequency Drives
   · Sensors: Temperature, Pressure, and Liquid Levels: Use and Calibration

V. System Installation and Maintenance
   · Compressor Installation Fundamentals
   · Compressor Alignment
   · Compressor Service and Maintenance
   · Evaporative Condensers
   · Unwanted Liquid Slop
   · Oil Filling and Draining Procedures
   · Installing a Gauge Manifold
   · Removing Refrigerant
   · Pressure Testing
   · Evacuating a System
   · Charging a Repaired System
   · Evaluate Repair