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# AMMONIA REFRIGERATION LEVEL I

*“A Four Day Seminar Designed for the Practicing Ammonia Operator”*

This seminar is specifically directed to Plant Engineers, Maintenance Personnel, and all individuals concerned with more efficient operation of their Industrial Refrigeration Systems. Based on the RETA Course One manual, it is intended as a complete and total introductory refrigeration course, mixed with practical field examples and open forum discussion. Course information includes:



## HISTORY

A brief opening section describes the history of refrigeration from its beginning through the modern day, state-of-the-art Industrial Refrigeration Facility.

## FUNDAMENTAL ITEMS

Will include a look at the role of technicians in the Ammonia Refrigeration Industry and the basic Refrigeration Cycle and its components:

- Definitions of Refrigeration Terms
- Basic Math
- Basic Discussions of Change of State
- Cooling
- Basic Heat Profiles
- Heat Flows

## REFRIGERATION CYCLE

This section will outline the basic refrigeration cycle, including:

- System Factors: Saturation / Sub-cooling / Superheat

## PROPERTIES OF REFRIGERANTS

This chapter examines refrigerants, in areas such as:

- Cost
- Selection Factors
- Hazards
- Environmental Concerns

## REFRIGERANT TABLES

- Pressure Drop
- Superheated and Sub-cooled Refrigerants
- Condensing Temperature

## REFRIGERANT COMPRESSOR TYPES

This chapter examines the types and styles of Compressors

- Reciprocating Compressors
- Rotary Vane Compressors

- Rotary Screw Compressors
- Two Stage Compression

## OPERATION AND MAINTENANCE OF COMPRESSORS

- Duties and Responsibilities of Operators
- Log Sheets

- Slugging
- Preventative Maintenance

## LUBRICATION

This chapter looks at lubrication of the Refrigeration System

- Types of Lubricants

- Uses Of Lubricants

## EVAPORATORS

This chapter looks at Air and Liquid Cooling Units, and Defrost

- Fluid Cooling
- Installation

- Air Cooling
- Secondary Coolants

## CONDENSERS AND RECEIVERS

- Types of Condensers
- Types of Receivers

- Maintenance

## PURGERS

- Purging Issues

- Types of Purgers

## SECONDARY VESSELS

- Accumulators
- Transfer Vessels / Pumper Drums
- Flooding Drums

- Recirculation Packages
- Oil Pots
- Oil Stills

## SYSTEM DOCUMENTATION

- Flow Schematics
- Process and Instrumentation Diagrams
- Industry Guidance

- Standard Operating Procedures
- Operation and Maintenance Info.
- Introduction to PSM/RMP/ARM

## VALVES AND ACCESSORIES

- Hand Valves
- Spring Return Ball Valves
- Safety Relief Valves
- Check Valves
- Sealed Motor Valves
- Replacable Core Filters (Nominal Micron & Sub-Micron)
- Adjustable Flow Regulators
- Interrupter Valves
- Float Valves
- Thermal Expansion Valves
- Liquid Level Indicators
- Defrost Controllers

- Stop / Check Valves
  - Hand Expansion Valves
  - Hydrostatic Relief Valves
  - Gas Powered Valves
  - Strainers
  - Fixed Flow Regulators
  - Pressure Regulators
  - Float Switches
  - Solenoid Valves (Direct and Pilot)
  - Float Drainers
  - Liquid Level Controls
- As applicable!

## AMMONIA DETECTION

- Detector Types

- Detection Schemes

## ADDITIONAL AREAS

- Hands-on Standard Operating Procedure Exercise
- In-depth Question and Answer session

- Facility Tour
- Multiple tests

Seminar reservations may be made by contacting:

Wagner-Meinert, LLC  
260-489-7555

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