CHILLERS: OPERATION & MAINTENANCE OF CHILLED WATER SYSTEMS

It is imperative that your water-cooling systems operate at maximum efficiency. In this hands-on course you will receive the critical information needed to increase your system's reliability. Learn how chillers work and what causes their problems. Plus, you will get the most up-to-date information on the latest technology that will help you maintain your system at peak performance.

The chiller is the heart of the refrigeration system which operates best with skilled technicians maintaining it.

Gain hands-on practice and knowledge of instruments and test meters. Learn how to collect data and evaluate the operating equipment. Become familiar with approach temperature and to interpret it in terms of the system operation.

Learn preventive maintenance and troubleshooting methods to ensure the system is always operating with the most efficiency and cost savings. Receive information on the latest techniques and technology.

Upon request, we offer free 608, 410A EPA and HVAC Excellent Technician Certificate testing at the end of this class.

CLASS FORMAT:

Lab + classroom

The participant is able to "learn-by-doing" in the course; this knowledge can be transferred to the workplace.

STANDARD CLASS SIZE:

NTT recommends a course size of 12 participants for the best results.

NTT PROVIDES:

- 3 days (24 contact hours) of on-site instruction
- Textbooks and lab manuals
- Classroom consumables,
- Completion certificates
- Shipping and instructor travel logistics

CLIENT PROVIDES:

- Classroom, with easy access, of 750 square feet or greater
- Projection screen, white board and/or flip chart(s)
- A dock facility or a forklift to unload the training equipment
- A pallet jack to move the crates around after they have been unloaded may also be needed
- This equipment should be placed in the training room for the NTT instructor to test and set up prior to the start of training

SHIPPING:

3 crates at 2,500 lbs.

- 2 crates @ 38" x 52" x 81" (900 lbs. each)
- 1 crate @ 38" x 52" x 81" (700 lbs.)

NTT Training

CHILLERS: OPERATION & MAINTENANCE OF CHILLED WATER SYSTEMS

COURSE AGENDA 3-Day, Hands-On

CHILLED WATER SYSTEMS

- Synopsis
- Component overview
- System design
- Associations, codes and standards

THERMODYNAMICS

- Heat transfer theory
- Heat vs. Temperature

REFRIGERATION THEORY

- The chilled-water refrigeration cycle
- Compression cycle theory
- Absorption cooling theory

REFRIGERANTS

- Compression cycle refrigerants
- Absorption-machine refrigerants

REFRIGERATION PRIME MOVERS

- Compressors
- Absorption machines

EVAPORATORS & LIQUID COOLERS

- Types of evaporators and liquid coolers
- Evaporator (cooler) operation
- Maintenance

CONDENSERS

- Types of condensers
- Air-cooled condensers
- Water-cooled condensers

METERING (EXPANSION) DEVICES

- Metering devices
- Economizers

CONTROLS & CONTROL SYSTEMS

- Controls

CONTROL SYSTEMS PUMPS

- Pump theory
- Centrifugal pump operation
- Centrifugal pump configurations
- Pump maintenance and troubleshooting

PIPING SYSTEMS

- Copper tubing
- Steel pipe
- Valves
- Insulation of chilled water piping

CONDITIONED SPACE SYSTEMS

- Psychrometrics
- Air-cooling coils
- Fans
- Air filters

CLOSED-LOOP SYSTEM FLUIDS

- Water chemistry basics
- Corrosion inhibition
- Freeze protection using glycol fluids
- Cleaning closed-loop systems

HEAT REJECTION SYSTEMS

- Once-through (waste-water) systems
- Recirculating systems

OPEN SYSTEM WATER QUALITY

- Cooling tower water
- Cooling tower water treatment
- Water treatment equipment and systems
- Selection of a water treatment vendor

HEAT RECOVERY SYSTEMS

- Heat recovery principles

THERMAL STORAGE SYSTEMS

- Thermal storage theory
- Ice storage
- Stratified chilled water storage