

## **Practical Training Course: Application and Safe Handling of Carbon Dioxide as a Refrigerant**

This two day course covers the basics of carbon dioxide (CO<sub>2</sub>, R744) as a refrigerant and explains how it should be safely handled and applied. The course is presented in conjunction with the Danish Technical Institute, which has carried out significant research work into the use of CO<sub>2</sub> as a refrigerant and in its practical application.

The following theory and practical topics are included:

- Explanation of pressure enthalpy charts;
- Basics of CO<sub>2</sub> as a refrigerant
- Hazards associated with CO<sub>2</sub>;
- How to handle CO<sub>2</sub> safely;
- Installation, service and maintenance procedures for CO<sub>2</sub> systems;
- Outline of design of CO<sub>2</sub> systems:
  - Cascade sub critical
  - Trans critical
  - Other design issues.
- Materials used with CO<sub>2</sub>
- Piping and vessels;
- System construction and components;
- Retail and other commercial systems with CO<sub>2</sub>;
- Trans critical system options;
- Practical exercises:
  - Trans critical system showing optimisation of head pressure on interactive ph chart
  - Charging and discharging CO<sub>2</sub> .
- Virtual site visits - various commercial applications using CO<sub>2</sub> as a sub critical and trans critical refrigerant.

High quality course notes will be provided by Cool Concerns and the DTI. The venue for this course is Cool Concerns' training centre in the West Midlands.

### **Training providers**

The Cool Concerns training is provided by the working directors – Jane Gartshore or Stephen Benton. Between us we have a wide and varied range of practical experience within the refrigeration and air conditioning industry.

We provide training that “hits the spot” – it is relevant, informative and fun with the emphasis on practical information presented in high quality theory presentations with plenty of opportunity for questions and discussion. One of us will accompany delegates on the Danish part of the training.

The DTI has a wide range of experience with CO<sub>2</sub> and has excellent portable practical equipment. They have good contacts with industry in Denmark, where the use of CO<sub>2</sub> in areas such as supermarket refrigeration is well advanced. The DTI carry out research into refrigeration, including energy reduction and the use of CO<sub>2</sub> as well as providing training.