

Trainer Instructions: Refrigeration and Air Conditioning

From: Energizing Cleaner Production – a Guide for Trainers, UNEP/InWEnt, 2007

Title	REFRIGERATION AND AIR CONDITIONING
Objective	To obtain an understanding of refrigeration and air conditioning, including the types of related equipment, how to assess their performance and the main areas for energy conservation.
Minimum duration and approach	<ul style="list-style-type: none"> ▪ 1.5 session (2 hours), including the quiz ▪ Recommended approach: spend the full session (1.5 hours) on the PowerPoint presentation. As there is no workshop exercise for this equipment, ask participants to complete the quiz on their own, and discuss the results after the break in a separate session. ▪ Presentation: 50 slides ▪ Textbook chapter: 21 pages
Contents	<ul style="list-style-type: none"> ▪ Introduction ▪ Types of refrigeration and air conditioning ▪ Assessment of refrigeration and air conditioning ▪ Energy efficiency opportunities
Assessment of participants	<ul style="list-style-type: none"> ▪ Pose questions during the presentation. For example, ask participants to name the five loops of heat transfer at the end of the introduction. ▪ Take the quiz with 10 multiple choice questions. ▪ There is no workshop exercise for this session.
Other comments	<ul style="list-style-type: none"> ▪ As refrigeration and air conditioning differ so much from the other equipment, it takes more time to go through the session. In addition, there are a lot of energy efficiency opportunities that require more time to explain. ▪ If time is limited then the quiz questions can be answered as a group at the end of the session. ▪ Note that the agenda assumes that the quiz for the Refrigeration and Air Conditioning session is combined with the quiz/workshop session for Compressors and Compressed Air Systems. ▪ Unfortunately there are not case study options from the GERIAP project. Case study options from other sources (an overview of databases and websites of cleaner production and energy efficiency options is available on www.energyefficiencyasia.org and can be included in this session as illustrations of how to find other companies that reduce energy consumption and costs.