Compressed Air Course Description

Compressed air is typically the most expensive utility at any plant site and is vital to the operation of most industrial facilities. Poor design and maintenance can make compressed air systems a major area of energy waste. Many plant engineers are concerned with the reliability and quality of their compressed air supply, but do not focus on the operating costs.

The compressed air training course will cover the fundamental operation of each component of a typical compressed air system including all common types of compressors, moisture removal equipment, piping systems, and air-using devices. Focus will be on the energy management, quality assurance, design decisions, and maintenance issues. The course is presented from the point of view of the system manager, the operator, and the system assessor.

Participants will learn to make informed decisions in selecting new compressed air equipment and how to optimize the energy efficiency of their existing compressed air systems. Many actual case studies will be presented from the compressed air surveys conducted by the instructor. This compressed air systems course has evolved from the many compressed air surveys conducted by the instructor and his experience in assessing compressed air systems. The course has four main categories each with many subcategories:

- Compressed air *generation*
- Compressed air *conditioning*
- Compressed air *use*
- Compressed air *distribution*

The category of ***generation*** is one of the most important focus areas and is where many opportunities for savings are found. This category focuses on the operating characteristics of the main air compressor types and most importantly how these compressors are controlled. The generation section is critically important because when a compressor operates at part load (and this is generally the case) the efficiency can decrease dramatically. Measurements required for proper energy management will be identified.

The category of ***conditioning*** is also an area where a tremendous amount of savings opportunity is typically found. This category centers on the operation of compressed air dryers, filters, and aftercoolers. The major types of dryers operate in vastly different ways and produce compressed air with significantly different dew points. These operating characteristics provide cost savings opportunities in many systems. In this category liquid removal devices will also be discussed.

The category of ***use*** investigates appropriate and inappropriate compressed air use. This category investigates the operating costs of the compressed air users and tries to identify more cost effective utilities than compressed air. This section of the course also provides common techniques employed to reduce appropriate compressed air consumption.

The category of ***leaks*** covers methods of finding leaks and estimating the leak amount to allow an economic loss to be connected to the leak. Also presented are maintenance activities aimed at managing the compressed air system to minimize leak loss.

For each of the categories the presentation goes into the details of the equipment and the theory of operation. Measurements required for proper management and troubleshooting are identified in each section of the course. All of the management activities are connected to their economic impact.