

# Utah ASHRAE January 6<sup>th</sup> Tech Session/Lunch Meeting

**Date:** Friday, January 6<sup>th</sup>, 2012

**Presenter:** Julian R. de Bullet, Formerly Director of Industry Relations, McQuay International and ASHRAE Distinguished Lecturer

## Technical Session

### Chiller Plant Design Fundamentals

This is a primer course for advanced chiller plant design courses. It covers the basics of the components such as pumps, piping, cooling towers etc. that are used to construct a chiller.

### Overview of Constant Flow Chiller Plant Design

This course takes the design through the pros and cons of single chiller, parallel, series and series counterflow chiller plant design. It compares operating cost as well as performance.

### Overview of Variable Flow Chiller Plant Design

We will focus on primary/secondary and variable primary flow chiller plant design as influenced by ASHRAE Standard 90.1. The material will cover pros and cons, design parameters and control issues. Next we will discuss low delta T syndrome. We will explain what it is and why it happens. Then we will discuss how to correct it.

## Lunch & Presentation

### Variable Refrigerant Flow Systems

The seminar will discuss the concept of multiple outdoor inverter driven compressors serving numerous indoor units while varying the refrigerant flow to meet individual zone requirements. The concept has been successfully applied for more than 20 years in Europe and Asia and is rapidly gaining acceptance in North America. A typical VRF system uses ductless indoor units, but new applications can apply ducted indoor fan coils and even water cooled applications. A comparison will be made between simple chilled water systems and VRF hybrid applications. Finally, energy savings will be compared to more conventional systems.