LP Management Services, Inc.
Specializing in Safety, Health and Risk Management Consultation

Data Center Computer Room Cooling Best Practices

Having a broad and high level understanding of current Data Center HVAC Best Practices and how they apply to the specific site and mission goals increase reliability and improve energy efficiency. This class presents a detailed discussion on computer room environmental requirements, air flow optimization, complementary IT solutions to computer room thermal problems and central chiller plant operational considerations. This class presents the current ASHRAE environmental guidelines and associated HVAC recommendations, air flow practices that improve conditions for IT equipment and reduce overall HVAC energy consumption, discusses important new IT load management strategies and their relationship and influence facilities power and cooling, and finishes with some discussions on operating strategies employed in the central chiller plant.

Duration: 8 Hour Program

Computer Room Environmental Requirements
ASHRAE and TC9.9
2008 ASHRAE Thermal Guidelines
ASHRAE Recommended Guidelines and Protocols
ASHRAE Thermal Report
Humidity Concerns, Requirements and Controls
Thermal Transients and "Coupling"
Heat Transfer Paths – IT to Ambient
Ventilation & Room Pressurization
Localized High-Density Cooling Solutions

Air Flow Optimization
Hot / Cold Air Stream Separation
Perforated Tiles, Static Pressure vs. Flow
Air Flow Concerns
Load Density "Rules of Thumb"
Variable Volume Systems
Ducted Overhead Systems
Air Handling Units vs. Computer Room Air Handlers

IT Solutions to Computer Room Thermal Problems
IT Hardware Power and Heat Generation Trends
Server Utilization vs. Power Consumption
Thermal Runaway
ASHRAE Environmental Guidelines
Load Density vs. Speed of Transient
IT Equipment Thermal Limits
Infrastructure Recovery Sequence of Events
Thermal Transients
Complementary IT Solutions
Power-Down Computer Hardware Trends

Chiller Plant Operational Considerations
Air Cooled vs. Water Cooled Chillers
Thermal Storage Capabilities
Uninterruptable Cooling Solutions
Plant Optimization
Economizers Usage