

2008 ashrae environmental guidelines for datacom equipment

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ASHRAE Recommendations for Data Centers: Ensuring Optimal Environment for Sensitive Equipment**

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) provides comprehensive guidelines to create and maintain ideal thermal and environmental conditions for data processing environments. These recommendations ensure the efficient operation and extended lifespan of critical IT equipment.

ASHRAE Thermal Guidelines

ASHRAE's thermal guidelines focus on controlling temperature, humidity, and airflow to minimize equipment failures and data loss. The recommended temperature range for data centers is between 64°F (18°C) and 74°F (23°C). Humidity levels should be maintained between 40% and 55%.

ASHRAE Environmental Guidelines

Beyond thermal control, ASHRAE provides guidelines for other environmental factors that can impact data center operations, including:

- **Air Quality:** ASHRAE recommends maintaining indoor air quality (IAQ) to minimize the risk of contaminants entering and damaging equipment.
- **Lighting:** Proper lighting is essential for visibility during maintenance and troubleshooting. ASHRAE recommends illuminance levels of 500 lux (46 foot-candles).

- **Noise Control:** Excessive noise can interfere with equipment operation and employee productivity. ASHRAE recommends limiting noise levels to 45 dBA.

Temperature and Humidity Standards for Data Centers

ASHRAE has published several versions of its thermal guidelines for data centers, with the latest being the 2022 edition. These guidelines provide specific recommendations for temperature and humidity ranges based on equipment manufacturers' specifications and industry best practices.

ASHRAE Standards for Warehouses

While ASHRAE's guidelines are primarily focused on data centers, they also provide recommendations for other critical environments, including warehouses. These recommendations address temperature, humidity, air quality, and other factors that can impact the storage and handling of sensitive goods.

ASHRAE Standard 90.4: Energy Standard for Data Centers

ASHRAE Standard 90.4 is specifically designed to promote energy efficiency in data centers. This standard provides guidance on energy-efficient design, construction, and operation of data centers, including HVAC systems, lighting, and power distribution.

ASHRAE Data Center Commissioning

Commissioning is a process to verify that a data center is built and operated in accordance with design specifications. ASHRAE provides a framework for data center commissioning with three levels of assessment:

- **Basic Commissioning:** Verifies that systems are installed and operated as designed.
- **Intermediate Commissioning:** Includes performance testing and documentation.
- **Advanced Commissioning:** Monitors and analyzes system performance over time to identify and correct issues.

By adhering to ASHRAE recommendations and standards, data center operators can create and maintain a controlled environment that optimizes equipment performance, minimizes downtime, and enhances overall reliability.

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