PEGASUS DATA CENTER CLEANING

Keeping the Data Center Running Optimally

Steps to Data Center Operational Efficiency

The role the data center plays in business operations continues to grow in importance. Minimizing the cost to run a data center has assumed a commensurate level of importance in the eyes of data center operators. Facilities that run as efficiently as possible benefit from lower costs that can be passed on to customers, creating a competitive advantage. Inefficiently managed data centers force prices up and undercut profitability.

In burgeoning geographies for data centers such as Phoenix, Silicon Valley, Los Angeles, Salt Lake City, Irvine and other parts of the country, reducing costs while maintaining high levels of service is a hot topic, with good reason. A 15,000 square foot data center spends about $100,000 on electricity per month. At Pegasus Cleanroom Services, we estimate that a typical data center spends more on electricity than hardware. In fact, according to a recent study by IDC, every dollar spent on a server requires an additional 51 cents in power and cooling costs. Thus, a slight increase or decrease in power and electrical consumption can have a huge impact on a data center's bottom-line. But many data centers either operate inefficiently or are unaware of small adjustments they could make to improve operational efficiencies and reduce costs.

Why are Data Centers Inefficient?

A variety of factors can affect the efficiency of data center operations including optimal power and electrical output, airflow, hot and cold aisle configuration, thermal efficiency, and temperature. Power Usage Effectiveness, or PUE, measures the amount of power going into a data center to cool IT equipment versus how much is actually being used to power the equipment. In inefficient data centers, a lot of electrical power that cools the air is wasted due to how the data center is constructed.

A recent study by The Uptime Institute found that the average cooling capacity of a data room is typically 2.5 times more than what is required. Moreover, the study also revealed that roughly 60% of cool air is lost due to bypass airflow, or the equivalent of nine average computer room cooling units. That is, air goes to the wrong places and/or goes back up into the hot air exhaust and is wasted. There are simple ways to determine if air is being supplied and distributed with minimal waste of air and power or not. Thermal Incapacity analyzes whether a data room is setup correctly or not to make optimal use of air and power.

Airflow Best Practices, Not More AC Units

Every data center manager knows that cool air is supposed to go into the front end of a server and exit out the back. While managers are aware of this, in practice many do not position their servers correctly. In fact, of the 20 data centers we service monthly 80-90% do not have their servers positioned correctly to ensure proper, efficient airflow. A lot of cool air misses the server completely and goes up into the exhaust. The result of efficient airflow, of course, is the ability to consistently maintain desired temperatures and reduced power consumption and costs.

Too often, when data center operators run into an issue with cooling their facility they simply buy another air conditioner to solve the problem. However, 80-90% of the time a simple reconfiguration the room and airflows using best practices and the right products will maximize airflow and reduce wasteful bypass airflow. For example, HotLok Blanking Panels can seal equipment and increase the efficiency of cooling system. And, KoldLok Grommets can reduce costly bypass airflow, hotspots, and improve PUE.

Another tool to consider is Containment Curtains, which isolate and control airflow. Anything that makes airflow more efficient reduces power and electrical costs. Another side benefit of better efficiency is a reduction in the data center's carbon footprint, which contributes to a company's green strategy.

It's Not Cool to Waste Cool Air

Another very solvable issue that detracts from the efficiency of data centers is the incorrect arranging of servers into hot and cold aisles. Servers used to all face the same way on a rack, but that meant that hot air from one server blew into the cool air of another. Now DC managers know that hot aisles should face each other and cool aisles should face each other. This way, cool air enters a server and hot air exits out the back and the server is properly cooled. Unfortunately, too many data centers still do not arrange hot and cool aisles correctly to maximize their usage of cool air.

Other common ways that cool air is lost is via:

- perforated tiles
- tiles in the wrong places
- usage of too many perforated tiles
- open holes in floors
- holes that aren't properly sealed
- HVAC units not working at capacity
- inefficiently functioning HVAC units that lose energy

Taking the Data Center's Temperature

Very recently, the conventional wisdom in the industry supported a data room temperature in the 60 degree range. That has changed. Guidelines from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) now peg the standard industry temperature to safely cool IT equipment at 80.6 degrees. Nonetheless, we consistently that find a high percentage of data centers are colder than they need to be. A lot of data center managers continue to operate their facilities under the old temperature guidelines. Clearly, maintaining a cooler temperature than is necessary requires power, which costs money and drive up operational expenses.

The Data Center Efficiency Audit

It is critical for data centers to operate as efficiently as possible. Improving operational efficiency is often much easier than many data center managers might anticipate. As a value-added service to our cleanroom Services, Pegasus Cleanroom Services' has its on-site crew provide a free Thermal Efficiency Audit for all of our data center customers. We'll provide visual evidence of the thermal efficiency issues we identify, and enumerate simple remedies that are not costly.

Pegasus Cleanroom Services has worked with over 100 data centers, including the biggest most recognizable private and public data center providers in the industry in several counties of Los Angeles, and San Diego, and throughout California, Oregon, Arizona, Washington and even Canada. We understand how critical operational efficiency and controlling contamination is to the success of data centers, medical device, nanotechnology, pharmaceutical, biotech and semiconductor companies. Expertly trained technicians, and the latest technologies, are employed to make 100% certain that cleanroom environments exceed the industry's highest regulations for contamination control, cleanroom control, maintenance and safety in line with federal and ISO standards compliance. For a Thermal Efficiency Audit or Cleanroom Audit, contact Pegasus Cleanroom Services at 800-734-3878 or visit www.pegasusdatacentercleaning.com to learn more about our services, expertise and experience.