

How To Solve Challenges of DX Equipment in Specialized Environments

Technical Article

In today's evolving specialized health care facilities there are a number of different types of spaces that require maintaining specific air quality parameters.

In addition to hospital operating rooms and surgery suites, medical facilities have pre-operational rooms, recovery rooms, clean storage rooms for surgical instruments, restricted transitional areas outside of the operating rooms and special areas where invasive procedures take place, such as obstetrical suites.

These spaces have the following requirements:

- 1 Maintaining a temperature around 65F (as low as 60F).
- 2 Maintaining a 50% RH level.
- 3 Constant and consistent air flow.

These requirements address a variety of needs that extend beyond the basic comfort of physicians.

Maintaining these air quality standards lowers the risk of infections and by extension, medical complications and the risk of litigation.

Therefore, air quality is essential to the health of patients and the financial well-being of the entire hospital.

Problem and Complications

Maintaining the desired conditions puts significant stress on standard commercial DX air conditioning systems. In order to maintain low temperature and low humidity systems often operate at full capacity for long periods of time.

Rawal Devices, Inc. has received calls about **coil freezing** and the resulting inability to maintain the system's availability. This type of disruption is not simply uncomfortable but more importantly can lead to loss of revenue.

Another common issue is **system cycling**. This occurs when the HVAC system is attempting to maintain a low temperature. As a result of the short cycle the dehumidification may not be adequate leading to unacceptably high humidity levels in the space.

Solutions

Solutions to this issue can be implemented at various stages and at greatly varying costs.

Design Stage

Advantage: At the design stage, Chilled Water Systems and Desiccant technology are used in the most critical environments and appear to address most if not all of these issues.

Disadvantage: The drawback to these solutions is their extremely high initial cost.

Operational Stage

Advantage: At the operational stage of equipment deployment, various types of reheat have been implemented successfully.

Disadvantage: Once again, the costs associated with these solutions are high (both in terms of equipment cost and operational cost).

APR Control

The APR Control is often employed as an effective solution to a number of these problems when "**first costs**" and budgeting demand the use of direct expansion systems.

The APR Control has the ability to modulate system capacity which will maintain the system operationally, while eliminating or significantly reducing the cycling that leads to a rise in the space relative humidity.

In addition, the APR Control can keep the evaporator coil from falling below acceptable (Freezing) temperatures. Many of these applications have featured the APR Control as a solution.

If you or your customers' are working on a project with tight temperature and humidity requirements, please don't hesitate to call us at 800-727-6447 or email sales@rawal.com



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