Typical Hospital Operating Surgical Suite Application Guide

General Design Considerations:

- From a moisture load perspective, surgical suites are quite similar from one to the next. They are generally similar in physical size, air change rates, number of people in the room, and fresh air requirements.
- After running a couple load calculations, one will find that about 90% of the moisture load in a Surgical Suite is from the fresh air, ventilation requirements. This means that all space load calculations, regardless of accuracy, will only affect the load by small percentages. This is assuming good to average construction methods were used to build the room and moisture envelope.
- Supply air that is 3-5 grains drier than the space condition is generally sufficient to maintain the space.
**Detailed Design Considerations:**

**VENTILATION:**
There are two options to choose from unless you are given input.

- Most “for profit” hospitals use 20 air changes per hour of total air with 4 air changes per hour being outside air by the 2010 FGI and ASHRAE Standard 170 – 2008 guidelines. For example, the outside is 395 CFM and the total supply will be 1975 CFM per room.
- VA and Federal hospitals typically use 15 air changes per hour of 100% outside air for a room size of 625 ft² with 9.5 ft ceiling height. In this example, the outside air is 1485 CFM.

**OUTSIDE AIR / AMBIENT:**
- Use 0.4% Summer Dehumidification design day grains and MCDB values.

**ADJACENT SPACE CONDITION:**
- If no data is given, one can assume 75°F and 50% RH.

**CONTROL SPACE CONDITIONS:**
- 2010 FGI (Facility Guideline Institute) guidelines and ASHRAE Standard 170 - 2008 recommendations are 68 to 75°F and 20 to 60% RH.
- Doctors are requesting lower temperatures.
- Most common requested room condition is 62°F, 50% RH, 41.3 Gr, 43.2°FDP.

**ROOM SIZE:**
- Rooms are typically 550 – 625 ft² with 9 to 9.5 ft high ceilings.
- As more equipment is being used in Surgical Suites, room sizes are growing.

**PERMEATION:**
- Recommended to use a vapor barrier or vapor barrier paint on the walls and ceiling of the space. If this is not known then it is recommended to assume “Vinyl Acrylic Paint”.
- It is very important that the Surgical Suite has walls going all the way to the ceiling. This may be unusual for the hospital. They may be used to using an open plenum above the walls. If this is the case, then the moisture load will increase dramatically since all the adjacent spaces are essentially open to the operating room from a water vapor perspective.

**PERSONNEL:**
- One “seated” – (low rates) this is the patient.
- One “standing” – this is the observer.
- Two “light work” – these are the attending physicians or nurses.
- One “moderate work” – this is the doctor performing the surgery.