Constraints vs Criteria in

HVAC DESIGN

Indoor growers have two clear environmental goals: 1) control temperature and 2) control humidity.

To approach these goals growers can start with these questions:

- How much heat (sensible load) needs to be removed or added?
- How much moisture (latent load) needs to be removed or added?
- When do we need to remove or add heat and moisture?

With this in mind, growers can begin to calculate HVAC needs with an engineer or other consultant.

To get the best HVAC system for your operation, inform your engineer of sizing and designing criteria and constraints.

Looking for more explanation? Check out the HVAC webinar with engineer Dr. Nadia Sabeh.

SIZING

Criteria (needs)

1) What are you growing?

2) What type of facility are you growing in?

3) How are you growing (benches, racks, pots, tanks, etc.)?

4) Where is your facility located?

5) What Temp/RH are you trying to achieve?

6) How much heat generated by lights, people, other equipment?

7) How much moisture transpired by plants and evaporated by irrigation system or aquaponics tanks?

8) Do you have a construction budget?

DESIGN

Criteria (desires)

- Achieves operating set points
- Cost: CapEx vs. OpEx
- Precision of control
- Simplicity/Complexity
- Maintenance
- Reliability & Durability
- Air distribution/uniformity
- Pest/pollen exclusion
- Future flexibility
- Redundancy
- Efficiency/sustainability
- CO2 enrichment
- Odor control
- Noise
- Preferred manufacturer
- Integration (fish, mushrooms, etc.)

Constraints

1) Space – where to put the

equipment?

2) Are there any structural limitations?

3) Utility service – electric, gas, water?

4) What are the utility rates?

5) Property line and neighbors?

6) Codes and regulations?

HOW TO THINK REALISTICALLY ABOUT THESE CRITERIA

Dr. Nadia Sabeh hosts an online planning session to inform farmers of HVAC issues and processes here.

In this webinar, gain a better understanding of:

- Types of systems used for heating, cooling, humidity control, and air filtration/purification, along with the associated capital and operating expenses for these systems.
- What information is required to calculate the size of an HVAC system
- How the unique design criteria and constraints for each project affect the final HVAC selection
- The reasons there is no one-size-fits-all HVAC solution
- Examples of systems used for different projects

Watch the webinar now!