

Myles,

Please see below an explanation of the HVAC System and its purpose at the Duaris House facility in East Grinstead.

HVAC System for Duaris House

The general purpose of an HVAC (Heating, Ventilation, and Air Conditioning) system in an ISO Class 7 cleanroom is to control environmental conditions to maintain the required level of cleanliness, temperature, humidity, and pressure.

The HVAC system is an integral part of achieving the required ISO standard to enable production of vitamins and supplements.

Breakdown of the HVAC's main functions:

1. Air Cleanliness and Filtration

- The HVAC system delivers air through HEPA (High Efficiency Particulate Air) or ULPA (Ultra-Low Penetration Air) filters to remove airborne particles.
- In an ISO Class 7 cleanroom, the maximum allowable particle count is 352,000 particles ($\geq 0.5 \mu\text{m}$) per cubic meter, so filtration efficiency and air change rate are critical.

2. Airflow Control and Distribution

- The system ensures unidirectional or turbulent airflow patterns that minimize particle buildup.
- It provides high air change rates (we are currently targeting 30 per hour) to continuously dilute and remove airborne particles.

3. Temperature and Humidity Control

- It maintains a stable and comfortable environment for both personnel and sensitive processes (we are currently targeting 17–23°C and 40–60% RH).
- Proper control helps prevent static electricity, condensation, or material degradation.

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4. Pressure Differentials

- The HVAC maintains positive pressure in the cleanroom relative to adjacent less-clean areas to prevent ingress of airborne particles.
- Differential pressures are typically ≥ 5 Pa between cleanliness levels (We are currently targeting ≥ 10 -15Pa).

5. Particulate Control

- The HVAC system continuously removes airborne particles, controls airflow direction, and ensures environmental stability to support compliance with ISO 14644-1 standards.

To summarise, the HVAC system in an ISO Class 7 cleanroom provides clean, filtered, temperature and humidity-controlled air, maintains pressure gradients, and ensures airflow patterns that collectively reduce airborne particulate concentration and maintain the desired cleanliness level.

Please let me know if there are any issues.

Many thanks,

Liam Burr

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