CAHU P.T.H.

The main principle of the CAHU is to be able to generate and replicate various atmospheric conditions and simulate different altitudes from the available ambient air supply.
The CAHU is able to monitor and adjust pressure, temperature and humidity. Combinations of all of these conditions can be achieved and controlled.

CAHU-P.T.H. Pressure Temperature and Humidity Control

The system will now be explained in the order of the process components.

The Air filter is used to filter out any large particulates from the air supply prior to entry into the CAHU cooling coil. These would potentially block the cooling coil and reduce its efficiency.

The cooling coil is fed with chilled water or water/glycol at a fixed rate. The cooling coil is used to cool the in-cell air. As the temperature of the intake air is reduced the air becomes saturated and the excess water vapour condenses onto the coil. This water drains off the fins in the cooling coil and is collected in a tank below the coil.

The Humidifier is used to add steam, and hence increase the humidity, of the process air, this is necessary to achieve control over the process air humidity. The steam is introduced to the process air with a Steam Lance.

The heater battery consists of a number of heating elements, (typically 3x2kW elements) which can be switched on to give four combinations (0,2,4,6kW) to heat the air passing over them. The three elements are mounted in a section of ducting through which the process air passes.

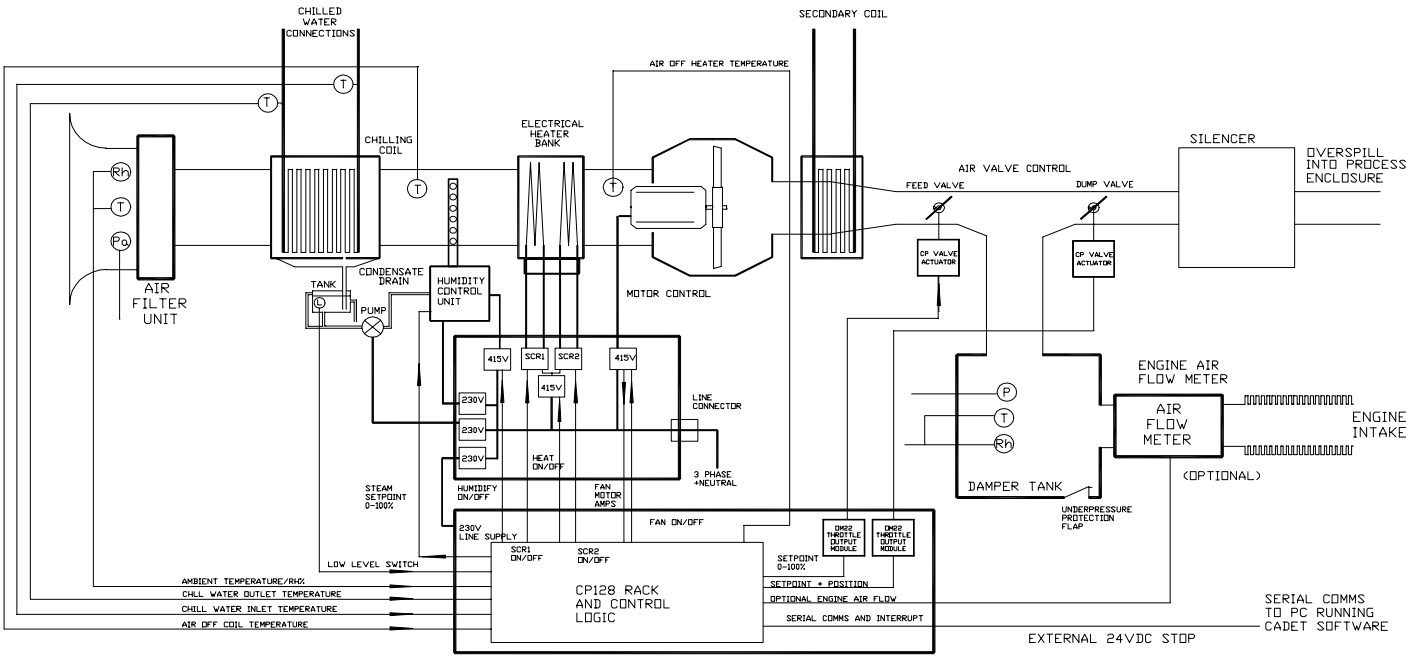
Air flow is created using a fan. In the CAHU-850-PTH a high velocity centrifugal fan is used. The fan is capable of raising the combustion air pressure by approximately 120mBar (12kPa) above the air inlet pressure. This fan has a separate 4kW motor and is belt driven.

A Secondary cooling Coil is used to remove any heat added by the action of the fan on the air, this is fed with a chilled water supply, control is manual using a hand operated by-pass valve.

The air flow passes into a final delivery plenum. Two butterfly valves regulate the plenum pressure, one regulates inlet flow and one regulates the dump flow to atmosphere, and hence can adjust the pressure in the plenum. A third outlet port is connected to the engine air intake, via an Air Mass Meter (see below).

There is an under-pressure relief valve which allows for the potential situation of the fan failing or a blockage in the system. The characteristics of an engine will cause it to keep “pulling/demanding” air from the CAHU, the under-pressure valve will open if this situation arises. This allows the engine to draw air from the atmosphere, even though it may not be of the required conditions, it will eliminate potential harm to the engine and CAHU.

The final stage of the system is for the conditioned air to pass through an Air Mass Meter, the reading from this meter is fed back into CADETv12 and logged. This is the mass of air that actually passes into the engine.



P.T.H. 850 Example Performance:

System Design Flow Rate	1000 m3/Hr
Pressure Gain Max	120 mBar @ 450 m3/Hr
Pressure Gain @ Max Flow	105 mBar @ 900 m3/Hr
Humidifier	5-20 kg/Hr
Cooling Coil Capacity	5-30 kW
Example Temp Drop	45 Deg C In to 8 Deg C Out
Air Mass Meter	0-850 kg/Hr (other ranges available)

Please ring with your particular requirements or details of the conditions you wish to achieve and we can discuss in more detail.

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