

ZONE REGULATION OF OUTDOOR AIR IN GUEST ROOMS

Comfort and luxury are two main criteria for planning facilities in hotels. A key requirement thus becomes the HVAC system that will determine the temperature and quality of indoor air in the hotel.

According to reports energy costs of a an average five star hotel consume up to 18 per cent of its revenue. HVAC systems in terms of electricity usage consumes about 40-45 per cent of this chunk.

Market trends suggest that the demand for energy resources will rise dramatically over the next 25 years. Global demand for energy sources is forecast to grow by 57 per cent in this period.

Naturally, the energy prices will also rise dramatically due to increased demand & constrained energy supply, this will impact profits due to high operating cost. So hotel managements have to take action and start implementing the energy saving procedures.

This has already started. The idea is simple, save energy, save revenue, hence more profit.

A critical area of concern for any hotel is the ventilation and regulation of outdoor air in the guest rooms, because this is one component of the total HVAC system that has to work optimally at all times.

This also is one area that encounters significant variation in demand on day to day basis, simply because of the occupancy levels.

Therefore it becomes more prudent to look at this cost head and look for more efficient ways to handle this requirements.

A. PREVALENT APPROACHES TO VENTILATION IN HOTEL GUEST ROOMS

1. A common approach in practice is to introduce unconditioned outside air directly to the air conditioning unit's return air plenum (perimeter wall installations).

However this approach can cause mould and mildew, therefore it is usually avoided in favour of other methods.

2. Alternatively transfer of conditioned ventilation air from the corridor to each guest room is the next approach.

The drawback with this approach is potential for air disbalance between the rooms and the corridor.

3. Thus, providing constant conditioned ventilation air directly to the guest room is the most commonly preferred approach.

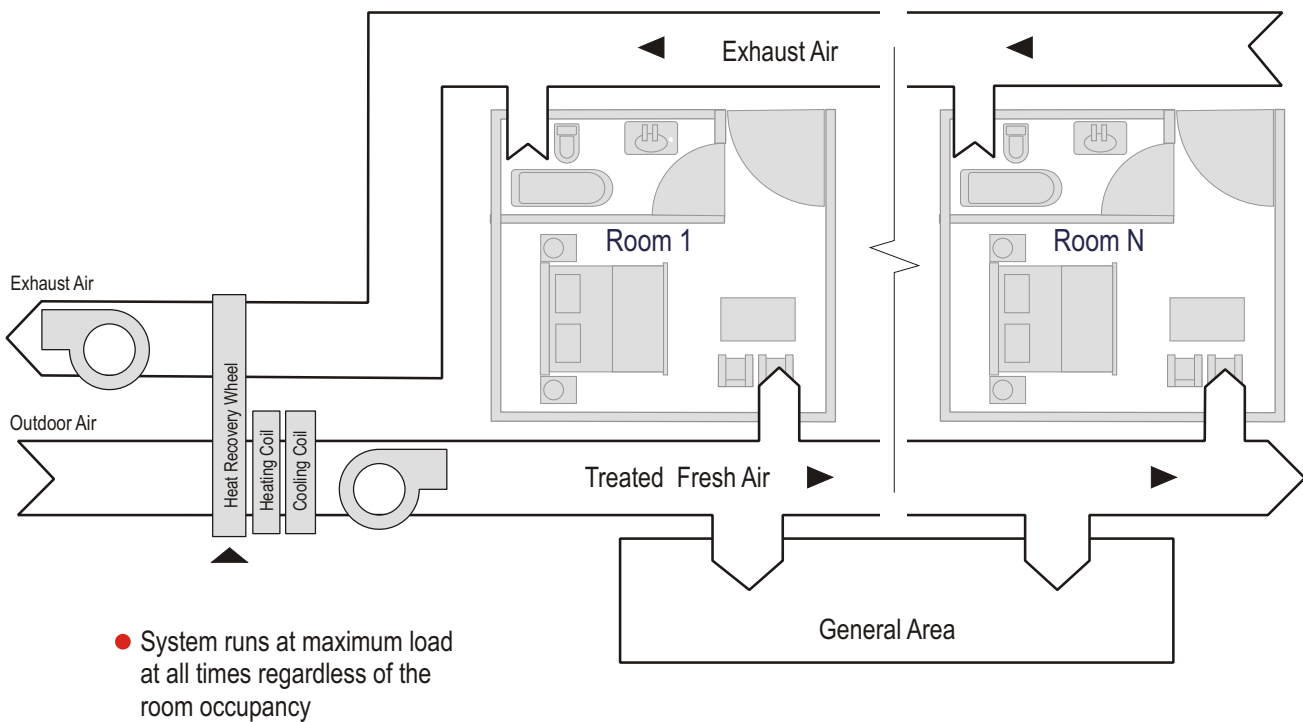
B. DISADVANTAGE OF THE PREFERRED APPROACH

While conditioned ventilation air is provided directly to the guest room, outside air is conditioned in a primary makeup air unit and distributed via a primary air duct to every guest room.

The fresh air intake and exhaust are installed with constant flow regulation devices to maintain desired fresh air in rooms. This calls for the HVAC system to run at a constant load.

High energy costs dictate that during no occupancy we should reset our fresh air intake and save costs.

Which is not possible using constant flow regulation devices used in such a system..



HOW TO SAVE ENERGY COSTS ?

Ideally system should receive input on occupancy status of each room, thereby reset the ventilation rate to minimum for unoccupied rooms.

For example at an occupancy rate of 40% the overall load on the HVAC system should be accordingly reduced.

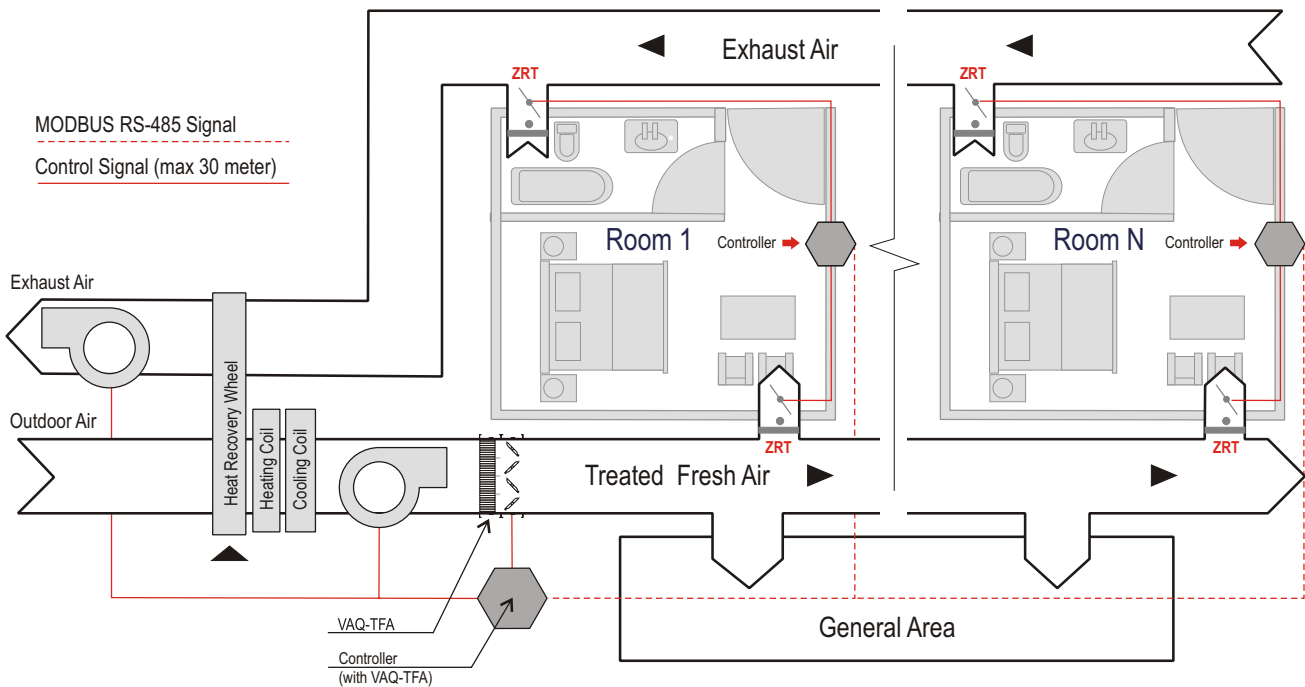
C. THE SOLUTION

Zone Control Terminal

Conaire Zone control Terminal should be used instead of constant flow regulation devices. It is very efficient pressure independent volume control.

It measures and regulates airflow as low as 5 cfm.

It can reset fresh air to desired minimum ventilation rate during non occupancy.



- System resets in real time based on the room occupancy

THIS IS HOW IT WORKS



VAQ station can be installed at DOAS supply/return air, that will regulate airflow and fan speed based on occupied zones and general area requirements.

It requires MODBUS based occupied rooms status from building management systems.

At an occupancy level of 40% the energy costs can be reduced by as much as 45%.