Ongoing Concerns & Challenges In the Hospitality Industry

* Health & Hygiene
* Energy Conservation

WHY DO YOU NEED TO
Treat Fresh Air in

HOTELS **RESTAURANTS**

Bar & Pubs
Discotheques
Conference / Banquet Halls
Restaurants

To

- **Avoid Smoke Build up**
- **Odour Control**
- **Maintain IAQ**
- **Keep Utility/Airconditioning Bills down**

BACKGROUND:

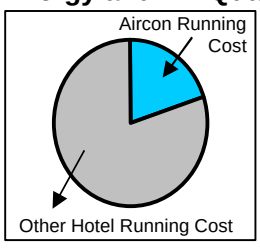
The hospitality industry is one of the fastest growing industry today with more and more people traveling for business as well as leisure. *(barring the current world situation, which all of us hope will end soon).*

India, today, offers hotel facilities at par with world standards and has the capability to cater to all the hotel infrastructural needs of the inbound tourist as well the business visitor.

Indoor Luxury, Outdoor Freshness

All hotels vie with each other to provide the best amenities and comfort to their guest .In order to keep pace with world standards the Hospitality Industry in India is striving to adopt world standards on "**Health and Hygiene as well as Energy Conservation**".

Energy and Air Quality Management



Air conditioning, **air quality** and their management are of key concern to the Hospitality Industry. With energy costs skyrocketing, it is generally seen that these factors alone contribute to approximately 15% - 20% of the **total cost** of running a hotel. Thus, almost all hotels try and control aircon tonnage by cutting back on outdoor air quantity.

The after effects are all too familiar to hoteliers ... stuffiness, lingering smell of smoke and food in restaurants, bars, discotheque, rooms and

corridors, furnishing and carpets smelling musty... though most do not identify the source of the problem as "lack of fresh air".

Cutting back on outdoor air results in re-circulation of the conditioned air, which is cool but stale with smoke, food odours, bacteria, virus and mould, etc. This creates a choking and suffocating feeling.... The general feeling of uneasiness... what is termed as the "***Sick Building Syndrome***".

*The term "**Sick Building Syndrome**" first employed in the 1970s, describes a situation in which reported symptoms among a population of building occupants came to be temporarily associated with their presence in that building.*

Studies have proved that the level of contaminants in the indoor air can often be several times higher than outdoor air. "The solution to the problem of pollution is dilution" or increased ventilation, runs contrary to the energy conservation guidelines followed by air-conditioning designers for hotels.

However, new standards and guidelines being dictated by ASHRAE Standard 62-1999 "***Ventilation for acceptable Indoor Air Quality***" (IAQ or Indoor Air Quality, as defined by ASHRAE (American Society of Heating Refrigeration and Air-conditioning Engineers), is that which provides acceptable comfort level to

80% of the people exposed to it.)

The standard mandates minimum 20 cfm (33 CMH) per person of fresh air in a conditioned space, which in a hotel translates to

* Fresh Air/room ... 40-50 cfm
* Banquets ... 4000-8000 cfm
  (Banquet hall of 200-400 capacity)
* Restaurant ... 2000 cfm
  (Average 100 covers)

In over simplified approach, a typical 200 room hotel, would require to treat:

* Room	200x50	...	10,000 cfm
* Banquet Hall	2x8000	...	16,000 cfm
* Restaurant	3x2000	...	6.000 cfm
	Total	**...**	**32,000 cfm**

In a typical high humid and near high humid areas, that prevail in most metro's and other such locations, the VLI (Ventilation Load Index, is the total load generated by **each cfm** of fresh air brought from outside into the conditioned space, over the course of 1 year) for cities like Calcutta, Bombay, Madras is 20.5 Ton-hrs/scfm/ year which approximates 20.5 KWH/scfm/year.

This can translate to very heavy energy costs if proper energy conservation, through energy management and recovery is not incorporated.

For the above typical hotel considered, this translates to a load of

32,000 x 20.5 = 6,56,000 KWH/year.

Therefore, energy consumption is equivalent to 6,56,000 KWH of load, are taken at Rs.5 per KWH, this translates to **Rs-32.80 lacs**.

Thus, proper fresh air treatment, which allows for more fresh air as well as saves energy, is need for the day.

Check list for hotel . . . . . hotel rooms

* A minimum of 60-70 cfm fresh air is required per room to preserve furnishings and to maintain fire safety standards.
* This translates to a separate air handling unit for each floor which results in high utility bills.
* The answer to the problem is simple!

Use a Eco-Fresh Treated Fresh Air Unit incorporating Energy Recovery.

<u>Current trends:</u>

People prefer cool and dry air!

The impact of indoor humidity on people has been neglected for decades. Ventilation rates

required to obtain a certain perceived air quality, have been also assumed to be independent of humidity. It has been generally accepted that pollutants from indoor air sources viz. from human beings, tobacco smoke, VOCs, etc., need to be diluted with outdoor air to a level perceived acceptable by the people. Thus, treating outdoors for humidity control has not been the focus of designers. However, recent studies at various international forums have shown that perceived Indoor Air Quality (IAQ) is strongly influenced by both ***humidity*** and ***temperature*** of air we inhale! Increased awareness of IAQ and health consciousness has resulted in increased concern for methods used to treat fresh air.

Treating fresh air with rotary desiccant dehumidifiers to control humidity

Conventional treatment of air, where air is cooled, condenses the water, which tends to create health problems due to mold, mildew and bacteria formation.

Using a rotary desiccant dehumidifier to precondition air is preferred in serve industry or similar areas where 100% fresh air is required to be treated.

The fresh air is either precooled partially and then passed through a rotary desiccant dehumidifier, where the moisture content is reduced to the desired level. This air is passed over a heat exchanger coil fed with a cooling tower and/or chilled water to bring down the temperature to the desired level.

Such treatment units are more cost effective, more hygienic and the problem of mold, mildew formation and bacteria growth is totally eliminated. Also, additional advantage is elimination of usage of CFC based system to a large extent.

Payback of such system range between 1 year to 3 year.

Back to the Crux . . . . . .
IAQ Plus Energy Conservation

Today, almost, all hotels all over the world, including S.E. Asia are using energy recovery devices (Heat Wheels) a standard design approach for the large quantity of fresh air

required to be handled by the A/C system in the hotel.

Some hotels in India have also begun to take this direction. But the real advantage will come if there is a concerted and mandated requirement that not only the amount of fresh air be used / provided for **Health & Hygiene** (Std 62- 1999) but also energy conservation equipment installed to recover 80% of energy required to treat / condition such large quantities of fresh air.

India is not only producer but also a significant exporter of such Energy Recovery Wheels, and therefore availability of equipment is not a limiting factor.

The equipment for energy conservation **does not** add to project cost because **additional cost** of energy conservation equipment is **less** than the cost that would be saved in reduction of chiller capacity and associated cost.

This is a unique example and opportunity in energy conservation, where there is not only reduction in energy cost but also saving in project cost due to reduced chiller capacities.

Energy recovery in treating fresh air in the Hospitality Industry with the aid of energy conservation through energy recovery wheel makes it possible to

* Conserve Energy
* Enhance Health and Hygiene

By mandating energy conservation in a Hotel, almost 80% of this energy is recoverable and can be and should be saved.