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## HIT REFRESH

ON ITS 50TH ANNIVERSARY, LINDSEY UEBERROTH, CEO, PREFERRED HOTELS & RESORTS REVEALS HOW THE BRAND IS EXPANDING ITS HOTEL PORTFOLIO AND REFRESHING ITS LOYALTY PROGRAMME



PRESENTS

# THE HOT AND COOL OF IT

Heating, ventilation and air conditioning solutions are stepping up to the forefront as hoteliers seek to optimise energy costs without compromising on guest comfort

BY BINDU GOPAL RAO

➔ Selecting the right HVAC solutions in a hotel environment needs to balance both longevity as well as its operational efficiency.

Typically, climate control accounts for more than half the energy cost in a hotel, irrespective whether it is limited-service or full-service property. Hence, it is important for hoteliers to implement a heating, ventilation and air conditioning (HVAC) solution that is not just energy-efficient, but is easy to maintain.

HVAC is one of the most crucial parts of any hotel operations as far as engineering is concerned, from a technical and operational standpoint. The total operation cost is called Heat, Light and Power or

HLP cost, which as per statistics is 40% of overall expenses. Hence, it is imperative to ensure that this area is well maintained. If not, it cannot only affect the output, but also impact the high input cost. Especially at the time of selecting an HVAC system this aspect should be taken into consideration.

Selecting the right HVAC solutions in a hotel environment needs to balance both longevity as well as its operational efficiency. KP Das, VP, engineering and projects, Concept Hospitality said, "We look into aspects like performance, market

survey and also technical know-how and ask for a presentation on the performance of the unit. In addition to this, we attend seminars and exhibition and collect information from consultants."

There are several things to do in a daily routine to ensure effective functioning of the HVAC system keeping mind the hotel's longevity and its operational efficiency. "We minimise hot and cold air loss via entrance by installing air curtains, which results in up to 50% in saving in our energy cost of our connected heat pumps or chillers. We use renewable energy



chilled water system while generating domestic hot water. Care was taken during installation to check the piping and insulation. BMS also aids in maintaining desired temperatures and timing of operation for the supply and exhaust fans. The terrace slabs have been provided with under deck insulation.”

Sridhar Puppala, chief engineer, Novotel Hyderabad Airport added, “Over and above the regular aspects such as space to be covered, power supply available, the operational efficiency of the product, after sales support of the brand and the cost incurred on procurement - installation - running and maintaining the unit. We also emphasize on the ‘energy efficiency’ of the HVAC unit as it is a key parameter to arrest excess energy wastage part of our sustainability initiative ‘ActingHere Planet21’.”

#### ENERGY EFFICIENCY

Hoteliers who are looking at upgrading or expanding operations are increasingly choosing to go for Variable Refrigerant Flow (VRF) and VRV (Variable Refrigerant Volume) systems with either building management system (BMS) or electronic control system for guest rooms as this drastically reduces power consumption and it is energy efficient as well. Radisson Blu Agra recently upgraded its HVAC systems and added some equipment to make it more energy efficient.

“All the air handling units (AHU) and treated fresh air units (TFA) for banquet and kitchen area have been fix variable frequency drives (VFD), and it controls the speed of the motor and in turn maintains the desired temperature. We have added a BMS to monitor HVAC and to control the required temperature accordingly,” said Chaurasia.

Peres added, “We have selected chillers with variable speed drives, maintain the right approach temperature, installed variable frequency drives for the secondary pumping system. Rooms are provided with balcony door cut off switch.”

Sunil Upadhyay, chief engineer, Sheraton New Delhi explained that

from ambient air as a viable solution for effective HVAC, for example using the heat recovery wheel to utilise the exhaust air temperature to maintain fresh air,” said Vinay Chaurasia, chief engineering officer, Radisson Blu, Agra.

Again, selection of HVAC solution depends on the topography of the place the hotel is located in. Herman Peres, chief of engineering, Le Meridien Goa, Calangute added, “Being in the coastal belt, we have selected central chilled water system operating with a low KW/Ton. We have also installed water heat pumps to aid the



➤ KP Das, VP, engineering and projects, Concept Hospitality



➤ Satyajit Kotwal, general manager, The Resort Hotel.

the HVAC system mainly consists of a chiller plant, based on the distribution system which contains a primary or secondary pump, a cooling tower along with a condenser pump. “A network of very dense pipeline takes the conditioned water or chilled water to the low side or distribution side. The low side comprises of AHUs or FCUs, which as a whole attributes to one HVAC system. After sale services are very critical so it is essential to ensure the supplier is locally available. While, there are multiple suppliers for HVAC, an important criteria for selecting the suppliers or manufacturers is that the product should yield high efficiency output,” he stated.

#### BALANCING ACT

While HVAC solutions involve cost, especially in terms of energy, hoteliers also need to walk a tight rope to ensure that HVAC cost savings do not interfere with guest satisfaction. “Our HVAC system continuously



➔ Sunil Upadhyay, chief engineer, Sheraton New Delhi.

works especially in guest room since they control the temperature depending on the guest's requirement, there is no chance of complaints," said Das "Individual thermostat controls in guest room to maintain temperature as per guests own comfort, integrating the smart guest key card with the air conditioning (fan coil unit) in the rooms, to maintain separate stipulated temperatures while the room is occupied or unoccupied and saving energy effectively by proper scheduled maintenance of the system, a poorly maintained system will result in more energy cost liability are ways in which HVAC can work without negatively impacting guest comfort," said Chaurasia.

Satyajit Kotwal, general manager, The Resort Hotel (K. Raheja Corp Group of Hotels), Mumbai added, "We have a strict schedule of Perpetual Maintenance Management System, which we follow religiously. It is not only to control the HVAC Cost but the breakdown cost of all the machines as well. Even with the changing season we do play with the settings of systems so that there should be energy saving and same time guest satisfaction is not impacted."

Proper selection and maintenance of pump, VFD on all electrical motors like pump, AHU and cooling tower fan, keeping the approach of the plant/heat exchanges as low as possible by using automatic tube cleaning systems, routine cleaning of FCU, AHUs, coil and foil cleaning and smart technologies for rooms, which sense the occupancy levels and in



➔ In the case of multiple chillers, software can manage the start/on/off modulation automatically based on the indoor requirement and outdoor conditions

case of no-occupancy switch back to energy saving mode are some ways in which Sheraton New Delhi is maintaining a well-organised system wherein they save on wastage and costs.

#### VENDOR SELECTION

Internationally branded products find more favour among hoteliers as they come with standards of service and quality. Again, there are myriad HVAC options that need to be considered while constructing a new property or renovating existing one. "Proper load designing of HVAC cooling according to the area, avoid laying of ducts in open areas like terrace and ensuring all ducts should be properly insulated and checked for any air leakage are some key factors. Also, avoid temperature loss by proper air sealing of the areas and proper insulation of the chilled and hot water pipelines. Installing energy efficient hot water production systems with heat pump technology will reduce the energy load of the system and installing hot water boiler which run on natural gas to avoid burning diesel fuel which is less efficient and more expensive to operate," said Chaurasia.

The basic criteria for selecting suppliers remain value for money, quality, reliability and most importantly service. "We look at the after sales support, AMC costs and local avail-

ability of critical spares, etc. We also look at the IKW/ TON when selecting the chillers, prefer CTI certified cooling towers," said Peres.

Puppala explained, "In the HVAC space there has been in increasing concentration on energy efficiency and several companies are engaging their R&D teams in coming up with solutions that will conserve energy at the same time provide effective coverage and maintain standard thermostat levels. There is also a greater focus on finding more compact and space friendly units that have higher performance or have dual utility. Primarily the three main points that one must consider while selecting a vendor are the EER (energy efficiency ratio) of the unit to be around 0.5, overall comparison of procurement, installation, running and maintenance cost and after sales support that the company provides for the unit."

#### TECH TALK

There are several technological innovations are seen in HVAC systems space. Freon free gas, which protects ozone, is now available in the market but is a relatively expensive option. "Dosing the nano fluid in hot water and chilled water close circuit system to increase the system efficiency and reduce the cost is what we are working on the feasibility for our property before installing the

system. We are also doing a feasibility study of using reflective UV film up to 95% to avoid ultraviolet rays hitting our façade area and guest room glass in order to reduce the heat transfer," said Chaurasia.

Naturally while upgrading, hoteliers are looking to opt for new age technologies. Peres explained, "During planned renovations we upgrade the low side items such as thermostats, FCUs, AHUs, look to improve the indoor air quality." In terms of technology, it has evolved since the last 10-15 years.

There was a time when the capacity of per ton of cooling system was 1.5 to 1.6 kilowatts per units. However, the same is 0.53 to 0.48 which has reduced significantly. In fact, today hoteliers have progressed to EC motors, which are readily available and more efficient by delivering the same output in a much lower consumption of electricity. Chillers are now VFD (i.e very soft start chillers) operated/manufactured.

With the rampant growth in technological implementations, today, we have software's which can pro-



☛ Sridhar Puppala, chief engineer, Novotel Hyderabad Airport.

gram a number of equipment at one go. In the case of multiple chillers, software's can manage the start/on/off modulation automatically based on the indoor requirement and outdoor conditions. "These software can maintain high efficiency levels by adjusting the set points, maintaining the load sharing between multiple chillers. They can also adjust the operations of fans in cooling towers, pump operation as well and set a command to ensure the other chillers start. This software takes the responsibility of the entire process

as they understand the need of the hour and attend to it in a seamless manner. Instead of placing the entire load on a single plant the load is well distributed to avoid machine overload. The chiller plant in the HVAC system, has two heat exchanges: the condenser and the evaporator. If the water quality in these two areas is well maintained this can increase the efficiency levels as well. Automatic tube cleaning systems is another technological innovation that has been implemented, leaving no room for scale formation," said Upadhyay.

Besides the technical selection, the efficiency of the system is also fairly dependent on the user or the maintenance team. There are certain maintenance schedules that needs to be followed. For instance, alignment, filter and coil cleaning on regular intervals play a vital role in maintaining the efficiency and the output of the system. Hoteliers realise that energy costs can make or break the bottom line and hence are evaluating their HVAC solutions to be able to strike the right balance between being cost effective and guest efficient. ■



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