

The Value of Ventilation

Heating, Ventilation and Air-Conditioning Systems (HVAC) are changing as they gear up to meet the challenges of a post pandemic era.

By Bindu Gopal Rao



◆ Continued urbanisation and India's tropical climate with rising temperatures now make the need for thermal comfort a necessity in India.

◆ Treated air units with active carbon filters provide fresh air in each room while UV lights kill germs in the ducts, for ductable AC units

The HVAC sector in India is expected to expand at an annual rate of over 15.8 per cent from 2021 to 2030 as per PS Market Research report. This growth is driven by increasing urbanisation, higher disposable incomes, and government policies that are conducive to growth.

NOVEL NUANCES

Johnson Controls India has recently unveiled a broad selection of HVAC products engineered to optimise energy efficiency and cut costs. This includes a variety of revolutionary products for the Indian market, such as YORK YZ, YH, and YK chillers with advanced scroll compressors, oil-free scroll compressors, air-cooled condensers, inverter-driven compressors, integrated heat recovery, integrated cooling and ventilation, integrated gas heating, advanced inverter-driven compressors, integrated heat pumps, integrated air conditioners, and integrated air-cooled condensers. The YORK YZ Magnetic Bearing Chiller, a revolutionary HVAC system, is the world's first variable-speed chiller featuring a hermetic, lubrication free, magnetic-bearing compressor, offering unparalleled efficiency, dependability, and ease of maintenance using Zero ODP, Zero GWP R-1233ZD refrigerant.

POST PANDEMIC IMPACT

The effects of the COVID-19 pandemic on the HVAC industry have been profound. The structural changes that were brought about during the pandemic necessitated innovation to move in a certain direction. "The reduction in expenditure, restrictions on physical movements,



TECH TALK

Smart technology is becoming an increasingly popular feature in the HVAC industry, leading to trends which allow users to monitor and control their systems remotely. Geothermal heat pumps are also becoming more popular due to their energy efficiency and suitability for mild climates. Ductless Mini-Split Systems are great for smaller homes or spaces without ducts and offer greater zoning control than traditional systems. With regulations around energy efficiency getting tightened, there is a significant intervention of technology for driving maximum efficiency out of existing air conditioning equipment in large buildings and for carrying out advanced prognostics to ensure minimised downtime. “Customers are slowly getting aware of advanced IoT solutions for remote monitoring of their air-conditioning equipment. In addition, IAQ and integrated building solutions are the key expectations of customers. Also, the upcoming Quality Control Order (QCO) and the new e-waste policy will ensure uniform manufacturing/disposal standards, bringing all manufacturers at parity. All these measures are being taken by the government to promote sustainable practices in the country, and to ensure that there are no scopes for miscommunication by different brands in the customer lifecycle journey,” says Chirag Bajjal, Managing Director - India, Commercial HVAC, Carrier. Carrier has been working relentlessly in this regard



Sreekesh MK, General Manager, Basis of Design (HVAC), Johnson Controls India



Chirag Bajjal, Managing Director - India, Commercial HVAC, Carrier



coupled with the increased demand for safe air conditioning, while throwing a wrench in the industry, also spurred innovation. Moreover, since the pandemic, there has been an increased sensitivity and consciousness around sustainability and climate change, a huge part of which relates to HVAC systems. This has also determined the direction in which the industry has been propelled, particularly with respect to innovation,” says Sreekesh MK, General Manager, Basis of Design (HVAC), Johnson Controls India. HEPA (High-Efficiency Particulate Air) filters can capture 99.97 per cent of airborne particles that are 0.3 microns or larger in size, including bacteria and fungi. Ultraviolet (UV) lights are used to disinfect air and surfaces in a space by killing bacteria and fungi.

Commercial or centrally air-conditioned buildings now have relatively more energy efficient chillers in a basement and cooling towers typically on the roof but space use in these areas is compromised inhibiting one’s ability to either have more roof-top solar or simply even a garden.

The Voltas PureAir Inverter AC is a 5 star energy efficient option.

by constantly introducing high-efficiency products and IoT solutions in the Indian markets. With its AdvanTEC division, Carrier has been working with a lot of corporate clients, trying to educate them on the importance of lifecycle costs, digital connectivity of plant rooms, and optimised running of systems.

ENERGY EFFICIENCY

Alternatively, a far superior alternative for thermal comfort is District Cooling which is widely adopted globally and is still in its infancy in the Indian HVAC industry. “A District Cooling System (DCS) aggregates cooling demand across buildings to supply cooling in the form of chilled water from a central plant to buildings through a network of underground insulated pipelines. Offering far better energy efficiency and eliminating need for high-side air-conditioning systems, district cooling effectively addresses the above challenges whilst reducing lifecycle costs for cooling, power demand and harmful effects on



Sudheer Perla, Country Head, Tabreed India.



Syed Hidayath Ali, APAC Director - BD & Channels at 75F



Preetu Muley Pandey Founder, Chief Interior Designer, Pree D'fine

the environment. Depending on local circumstances, DCS can rely on a variety of energy sources other than grid electricity such as waste to energy (W2E) and captive solar plants to allow access to cheaper electricity. Using DCS in conjunction with thermal energy storage can further reduce power infrastructure. By utilising natural water sources such as lakes, rivers, and seawater for heat rejection, it can significantly reduce the load on chillers and bring down power consumption,” says Sudheer Perla, Country Head, Tabreed India.

NOW TRENDING

HVAC systems have undergone a significant transformation in recent years. The most notable trend is the move towards more energy-efficient systems. “This is being driven by both government regulations and the increasing cost of energy. Other

trends include the use of more environmentally friendly systems and the development of smarter controls that can better manage the HVAC system. Green building technology is being adopted by architects and builders, which has resulted in an increase in the installation of smart meters, thermostats, and sensors to help cut energy costs. Geothermal heating and cooling systems, which elimi-

nate the need for petroleum-based electricity, are also growing increasingly popular. Instead, modern heat pumps use ground and water energy to heat and cool buildings. Thermally propelled air conditioners are already in the works,” says Syed Hidayath Ali, APAC Director - BD & Channels at 75F. Antimicrobial nano coatings have the capacity to capture and deactivate viruses and bacteria. “Solutions such as UVGI with proper selection of required dosage/energy to achieve a minimum 90 per cent kill rate are being used extensively. Special anti-viral, anti-bacterial (MERV 13) filters could be provided to reduce parasite load in the conditioned areas. Duct cleaning



◆ Latest developments in HVAC products focus on improving indoor air quality in innovative new ways.



at regular intervals is also an effective measure of reducing the parasite load. The smart HVAC designs come along with sensors in Perimeter Cooling. This means that buildings have different systems that communicate. For example, occupancy sensors manage interior temperature and humidity levels, along with the lighting. Say, for instance, if one part of a building doesn't face direct sunlight, then the system will blow less in such areas during the summer and heat more during the winter," says Rakesh Tripathi, Head - Commercial Air Conditioning Business, Voltas Ltd.

SUSTAINABILITY MATTERS

As we become more aware of our environmental impact, it's no surprise that people are exploring new ways to power their HVAC

◆ A District Cooling System (DCS) aggregates cooling demand across buildings to supply cooling in the form of chilled water from a central plant to buildings through a network of underground insulated pipelines.

systems while reducing energy consumption. From solar power to geothermal energy, there are many innovative ways to keep your home or office cool and comfortable without breaking the bank. Preetu Muley Pandey Founder, Chief Interior Designer, Pree D'fine, says, "One exciting development is the use of chilled beams, which uses a water-based cooling system to provide energy-efficient cooling in commercial and industrial buildings. These systems are not only more sustainable than traditional AC units, but they can also provide better air quality and a more comfortable work environment." Now, air conditioning can also help you save money by reducing your energy consumption and lowering your utility bills. And with new and innovative technologies emerging all the time, there are plenty of ways to make your HVAC system even more efficient and cost-effective. 