

"IDEC Delivers 4°C More Cooling and adds 60% Less Moisture than DEC"

Air Conditioning and Refrigeration Journal interviewed Dhananjay Sinnarkar who founded Infinity HVAC Systems, a consulting company, in 1996. Here are some excerpts from the interview.

Journal (J): You have been associated with the HVAC industry for more than 20 years. What major changes have you seen over these years in the industrial sector?

Dhananjay Sinnarkar (DS): HVAC accounts for the majority of a building's energy consumption. The earlier days saw a lot of energy intensive air conditioning or air washers satisfying the needs of the market. However, from the turn of the century, people have been realizing the need and benefits of sustainable technologies, and this has brought about a significant shift in their preferences.

J: Could you tell us more about the shift to energy-efficient and eco-friendly technologies? What is the potential of these non-conventional technologies?

DS: With the rise in living standards across the globe, industries have seen an increase in HVAC requirements, especially air conditioners, which have led to much higher energy consumption, adding to global warming. With growing environmental awareness, the focus has been on deriving the benefits of air conditioning while reducing the impact on climate change, improving air quality and making HVAC more efficient and economical to operate. This has given a fillip to non-refrigerant based technologies like evaporative cooling, night ventilation, wind towers, earth tunnel cooling, etc., for the industrial sector. Among these, evaporative cooling has proved to be the preferred choice with low capital requirements, smaller footprint and fewer drawbacks.

J: Within evaporative cooling systems, which type of system is emerging as the preferred solution?

DS: Traditional air conditioners have the disadvantage of high capital expenditure and operating expenditure. Direct evaporative coolers (popularly called air washers) add considerable amount of moisture to the air, leading to increased relative humidity inside the area that could be harmful for the manufacturing process. Indirect Evaporative Cooling (IEC) is proving to be the preferred solution for both the industrial and commercial sectors.

IEC can also be used in conjunction with DEC to provide two stages of cooling. This Indirect Direct Evaporative Cooling (IDEC) technology delivers 4°C more cooling and adds about 60% less moisture when compared to an air washer of equivalent capacity, and less than 50% of the power consumption of a conventional air conditioning system. It is now being frequently demanded in industries.



J: Is IEC technology applicable to the industrial sector only?

DS: IEC technology, although developed for the industrial sector, is used for different applications in sectors as varied as hotels and hospitals to warehouses and factories. Customised solutions can be tailored for these sectors depending on the requirements. For instance, in a building with a central air conditioning system, 15% fresh air is required to be pumped inside the conditioned space for better productivity of the employees. Cooling this fresh ambient air (sometimes at more than 40°C) takes a huge toll on the system. This air can be 'pre-cooled' with an IEC module to around 26°C and then fed to the existing AHU/TFA/FAHU or directly into the conditioned space. This not only saves a large cooling load, but also increases the life of the compressor. Such a system has lower payback period, lower life cycle cost and smaller footprint when compared to conventional fresh air handling technologies.

J: Have you used any of these systems in your projects?

DS: Yes, in association with HMX, Bengaluru, we have provided these systems to various customers such as Forbes Marshall, Pune; Hindustan Aeronautics Limited, Nashik; and Tredegar, Pune to name a few clients. HMX's patented IDEC technology stands out in comparison to other IEC heat exchangers. I have been given to understand that HMX caters to a large clientele in different sectors, and has provided solutions from industrial shed cooling to pre-cooling of fresh air to clients such as Volkswagen, Bosch, Infosys and Sun Pharma.