



HVAC Industry in India

– an Overview



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Introduction

Heating, Ventilation and Air Conditioning (HVAC) are now a very important part of a nation's economy and development. Their applications are spread across industrial, commercial and residential usage and are the backbone of healthcare, education, retail, IT and ITES, infrastructure including airports and metros, electronics and other manufacturing set-ups and several other areas. India is progressing in all these spheres and hence the role and responsibility of the HVAC industry is all the more important. With the advent of smart cities, the need for efficient, environment friendly and commercially viable technologies is the need of the day. Globally, the HVAC industry has growth rates of 5% whereas in India the growth rate is nearly 10% CAGR.

Residential Segment

The HVAC industry in India is divided into two basic segments – residential and commercial. The residential segment, popularly known as room ACs, has been growing well as the need for thermal comfort is increasing, aspirations are on a high, and affordability continues to improve. Its reach is now spreading across Tier 2 and 3 towns as the power situation improves and consumer loans are much easier to avail. Still, its penetration level in India stands at a meagre 4-5% as compared to the developed world average of 30%. Hence, the residential segment is going to witness a steady growth for many years to come. Currently, this segment has been growing at an average of 10-15% CAGR, though 2017 was not a very good year with only about 5% growth. The industry is very confident of a big bounce-back in 2018, and all are very optimistic.

Energy Efficiency

One of the biggest drivers for improvement of energy efficiency in this segment is the BEE star labelling program. This is by far one of the most successful programs launched by the Government, and the results are for all to witness. The market share of 5-star products is multiplying the fastest and the consumer of today walks into a retail counter and asks for a product as per the star rating. With effect from January 2018, the program covers inverter air conditioners also and is now based on a Seasonal Energy

Efficiency Rating (SEER) designed for Indian conditions. In 2017, the share of inverter air conditioners was approximately 25% of the total sale, and manufacturers expect this share to increase to 40% in 2018. It is very clear that the future of this segment is going to be inverter air conditioners of high efficiency.

Skill Gaps

One of the biggest challenges in front of this industry is the availability of trained work-force for installation and service spread all across the country, especially in smaller towns. Courtesy the Montreal Protocol and the Kigali Amendment, refrigerants are being changed repeatedly with phase-out of HCFCs and now HFCs. Though manufacturers are investing in technology and conducting research for various new refrigerants, the need is to provide the right training to the teams handling these refrigerants at points of installation. ISHRAE and several other organizations are trying to bridge this gap but much more effort and investment is needed in this sphere.

Commercial Segment

On the commercial front there are various categories of products ranging from the packaged and ducted splits to VRF to chillers. The expectations from this segment are very high since, as the saying goes, 50% of India is yet to be built. Most new commercial projects need HVAC, and this is spreading to smaller cities also. It is said that India's urban population would increase by 40% in the next 15 years and the requirement of HVAC will follow suit.

VRF Air Conditioners

In the commercial segment, the fastest growing category is the VRF with growth rates estimated to be in the 15% plus range, while ducted and packaged AC market has seen some stagnation recently. The chiller market has been growing, though the last year saw some manufacturers with single digit or near zero growth also. The VRF category has amongst the highest number of manufacturers and continues to see the highest traction. Many ducted AC projects are upscaling and getting converted to VRF, whereas on the upper end many chiller jobs are also getting converted to VRF.



VRF as a product category has found applications across user segments from residential to commercial. With many condominium projects pre-installing air conditioners in the apartments, VRF sales have boomed with large ticket orders coming in. High-end residences prefer using VRF. In the commercial segment also, hotels up to 150 keys, offices and showrooms prefer VRF to save on power and reap other benefits like diversity and the range of indoor units available. Some healthcare applications have also started using VRF for non-critical areas. The education segment is a large user of this product category. With the expected growth in hospitality, education, healthcare and office infrastructure, this segment is expected to grow in double digits for many years to come. There are several manufacturers in this segment spanning the entire spectrum spread all across the country.

The biggest challenge in this category is the requirement of trained and skilled engineers for design and project execution. Though the market has expanded exponentially, availability of trained manpower remains a challenge for most companies. There are several re-sellers, installers and service providers in the market who have not received the right training and do not have adequate manpower to service the product in the market.

The VRF category needs standardization, certification and testing labs to ensure that the correct product reaches the market. In this regard, ISHRAE has written and launched a Standard for testing and rating of VRF products in close alliance with Refrigeration and Airconditioning Manufacturers' Association (RAMA). We are sure this standard will prove beneficial for the industry and the users.

Chillers

Chillers as a product category have been seeing a steady growth over the last few years, with the number of manufacturers limited as compared to some other categories. The technology has been improving largely towards higher efficiency products and larger equipment size. The emphasis on large infrastructure projects by the Government of India has resulted in major benefits for chiller manufacturers. From airports to metro stations, large steel plants to hospitals, IT parks to manufacturing facilities, malls to hotels – all commercial customer segments are potential users of chillers. This segment has always been standardized to a very large extent, as there are global bodies in the business of certification of these products. The Bureau of Indian Standards (BIS) has published a testing standard for chillers specific to Indian conditions; this document was developed jointly by ISHRAE and RAMA.

Other Equipment

There is a large industry that supports and benefits from the growth in the HVAC market, supplying air handling units, cooling towers, pumps, valves and fittings, air distribution products, insulation, etc. This industry has a combination of Indian manufacturers and some international companies. All these products are required in various central plant projects, and their growth rates have been near 10%.

Ventilation is a very large segment of this industry and constitutes approximately 20% of the total central air conditioning

market. It has applications across all user segments with a large emphasis on fire and life safety. Car park ventilation, staircase pressurization, smoke evacuation, etc. are mandated by most fire authorities, and clients are also increasingly becoming aware of the necessity of installing such products. Ventilation is also used for improvement in thermal comfort and indoor air quality, especially in factories, large public spaces, tunnels, kitchens, etc. The level of certification in the industry has witnessed manifold increase with most manufacturers now going for certification by international bodies. ISHRAE as an association also works very closely with this industry to increase awareness and impart education.

Non-Conventional Technologies

Several alternate non-conventional air conditioning technologies also available, which are slowly finding a user base – geothermal cooling, evaporative cooling, radiant cooling, thermal storage, district cooling, desiccant cooling, etc. The Government needs to encourage these technologies as all of them result in lower greenhouse gas emissions and far higher energy efficiencies.

Certification

One of the biggest challenges facing this industry is lack of standardization and absence of certification for companies and professionals. From designers to installers and service providers, there is no way to classify them based on their level of operations and infrastructure. Moreover, there is no licensing requirement for anyone operating in this industry as a contractor. HVAC is not only required for comfort but has a major impact on life safety, health, power requirement, greenhouse gas emissions and carbon footprint. Hence, the need for certified professionals and organizations is a must. ISHRAE runs a program called ISHRAE Certified Professionals (ICP) to educate and train, and then to certify, individuals in various activities.

Conclusion

Government has yet not recognized HVAC as an industry and hence we miss out on several schemes especially in the sphere of skill development. This industry is now worth close to INR 200 billion and has a huge employment base spanning unskilled workers to high end qualified engineers. The construction industry could be the largest employer in India by 2022, and HVAC is a very large component of the construction industry. HVAC is no longer a luxury – it is the need of the hour for improving productivity, health, quality of life and life safety. The industry is poised for very high growth in the years ahead and thus will generate major employment and revenue for the economy.

HVAC is also a major player for improvement in ozone depletion, global warming and greenhouse gas emissions. The industry and ISHRAE are working together hard to improve technologies, increase awareness levels, provide the correct education and ensure that the future is green and clean. The organization of ACREX by ISHRAE, where global HVAC players display their products and solutions, is a part of this ongoing effort. ❁