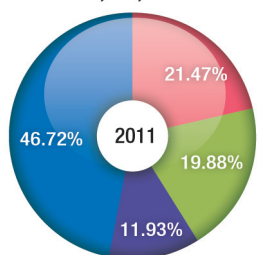


Despite a hike in prices and more stringent BEE efficiency norms, this summer may be a cool one for air conditioner makers who are projecting a 10 percent sales growth over last year.



Air Conditioners

Indian Air Conditioner Market
Total 3,144,000 Units



Brands	Sales (Units)
LG	675,000
Voltas	625,000
Samsung	375,000
Others	1,469,000

The Indian air-conditioner market in 2011 is estimated at 3.14 million units, a 19 percent decline over last year. LG and Voltas dominated the market with a combined market share of 41 percent. Samsung contributed 12 percent to the market, and Hitachi 7 percent. Other aggressive brands such as Daikin, Panasonic, Blue Star, Godrej, Onida, Videocon, Whirlpool, and Carrier were each in the 4–6-percent sales vicinity. Haier, Sharp, and Electrolux also have some presence.

Year 2011 was the first year to see declining AC sales, in the last five years. Pleasant summer and early monsoons saw poor sales in AMJ 2011 quarter, the impact of which is being felt till March 2012; some brands will be able to completely liquidate stocks only now.

The summer of 2012 may be a *cool* one for air-conditioner makers who are projecting a 3.5 million market, with a 10–12 percent sales growth in volume terms over last year. The JFM 2012 quarter is expected to close at a 6–7 percent decline in quantity. The decreased quantity would be negated by a five percent hike in prices, brought about by the increase in input prices as a result of rupee volatility

and more stringent BEE efficiency norms. March 2012 is expected to close at 450,000 units, with the marketers disappointment that if stocks were available, the market could have absorbed 50,000 units more. Year 2012 is also seeing a new product line-up from most brands.

With effect from January 2012, the Bureau of Energy Efficiency (BEE) has upgraded the energy standards of split air conditioners to a higher level in line with the *energy conservation* program. All star-rated split units will have a higher energy-efficiency ratio as compared to the same star units last year. Under the upgraded BEE labeling norms, air conditioners that were 5-star rated in 2011 will be marked as 4-star rated this year and 3-star rated in 2013. The 1-star rated ACs in 2011 will be off the market this year. Although the norms are determined to lower energy consumption, companies will have to launch products in the 5-star rated category that are compliant with these norms. Since the new BEE norms call for greater investments to make more energy-efficient products, price hike is imminent on manufacturer's front. Extra expenses now will be compensated later by the low energy spent on use of these products.

Ongoing technological advances have transformed air conditioners as products that provide health benefits as well. All major AC brands recognize the significance of building consumer awareness to promote energy-efficient and inverter-based products. Consumers are educated on finer details of air-conditioning solutions that help them in informed decision making. With change in lifestyle, the demand from tier-II and tier-III cities has increased and the same trend is expected to continue this year too. The low air-conditioner penetration of three percent is a huge opportunity for brands to increase their market share.

Today, ACs are not just machines that spew out cool air, but are also loaded with several value-added features. They may come fitted with a self-cleaning mechanism that makes the chore of cleaning the filters easier. On the other hand, they may have anti-bacteria filters that keep out germs, sensors to scan the room for occupancy and waft a cooling breeze are the other possibilities. Pre-cool technology prompts an AC to be switched on through an SMS even before one enters the home. Consumers increasingly prefer split models as they occupy less wall space and operate without creating a racket.

Global Scenario

Growth in the global AC market over the next few years is expected to be led by energy-efficient models such as inverter-based air-conditioning systems and solar-powered air conditioners. Inverter-based air-conditioning systems that are capable of offering considerable reductions in power consumption, by adjusting compressor's running speed and controlling voltage and current frequency, have been particularly gaining widespread popularity in recent years.

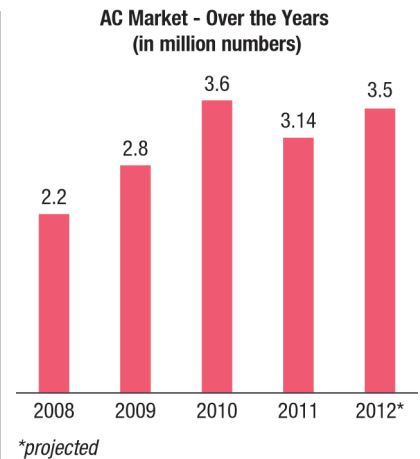
While almost all air-conditioning systems currently produced in Japan are inverter-based models, adopting these products in other regional markets, although currently minimal, has been gradually increasing, thereby adding volume to the market. Increasing ef-

forts on improving consumer awareness on energy conservation and environmental well-being will create considerable demand for these products over the next few years. Emerging standards on energy efficiency will also drive adoption of inverter-based air-conditioning systems across the globe.

Another major factor that is expected to steer the market in the next few years is the rapidly growing replacement need, particularly in mature markets such as the United States and Europe. Given the growing focus on energy conservation, the demand for replacing old air-conditioning systems with new energy-efficient models will be on the rise, thereby adding to market gains. Replacement demand is also generated by the consumers' need to replace their existing air-conditioning systems with quieter and more feature-rich models. Robust growth projections for AC market in developing countries such as China and India is expected to prop up global growth patterns over the next few years.

The AC market in China has been rapidly expanding centering on regional cities and is seen as the No. 2 market in scale behind the United States, with a market of approximately 1.9 trillion yen in 2010, occupying 18 percent of global demand according to estimates. According to China Household Electrical Appliances Association (CHEAA), the sales of air conditioners dropped 12 percent in China's 24 cities in 2011.

LG Electronics was recently named the Best Product Supplier of the Year at the 2011 Big Project and BGreen Awards in Dubai. The Big Project and BGreen Awards recognize best practice in corporate environmental responsibility. LG received the honor for the performance of its newest VRF (variable refrigerant flow) air-conditioning system, the *Multi V III*. The new *Multi V III* commercial air conditioner showcases the latest energy-saving and environment-friendly technology in the manufacturing of central air-conditioning systems. The *Multi V III* boasts three key consumer benefits



– higher energy efficiency, larger capacity, and longer piping design. The unit's energy efficiency, boosted by LG's unique V-Scroll inverter, *Cyclone* sub-cooling circuit, and new refrigerant distributor delivers a COP (coefficient of performance) level of 4.6 for heating and 4.3 for cooling – some of the highest in the industry. LG's new *Multi V III* can help building owners reduce their operational costs and be environment-friendly while still providing reliable cooling in extremely hot and humid regions.

Samsung Electronics has released its new air-conditioner model for the year 2012. Dubbed *Smart air conditioner Q*, the product emphasizes the cooling system as well as the air purifier and dehumidifier functions, according to the company officials. The company plans to achieve a growth of more than 15 percent in the AC market this year. The brand claims to sell 40 percent of its air conditioners in Korea, while 60 percent are sold overseas, with the United States being the biggest market.

Daikin Industries Ltd. has announced the establishment of Daikin Air-conditioning (Suzhou) Co. Ltd. to manufacture residential and light commercial use air conditioners. Production is scheduled to start from April 2012 at a planned capital investment of approximately 15 billion yen (1.2 billion yuan). Production capacity for residential and light commercial use air conditioners at the new company is

expected to achieve 1.5 million units on an annual basis to become Daikin's largest air-conditioner production base in scale. The company will work to strengthen and enhance manufacturing in China and ensure a stable supply of products needed for further expansion in the Chinese market.

Haier has successfully developed the application of its new-generation *fluorine-free conversion of broadband technology*.

Powmatic Limited is set to enter the UK air-conditioning market working with the same partner/supplier – Midea Air Conditioning – focusing on the commercial installer sector. Midea has grown from a domestic manufacturer to a global giant, whose group income last year was in excess of USD 20 billion.

Technology Trends

With the globalization of air-conditioner selling, it is important for manufacturers to adopt advanced technologies and market dynamics of this device. Breakthroughs have been achieved in some aspects, such as power saving, low noise, environmental protection, and so on.

Direct current inverter technology. The conventional device is controlled by switches, which makes fast refrigeration/heating difficult to implement. The direct current inverter technology aims to solve speed overshoot issues. This type of air conditioner is controlled by digital signal processing, using advanced controlling technologies and direct current frequency conversion rotary compressor. The digital signal processing is in a position to control temperature accurately to save time and power. The closed-loop controlled circuit of the interior flow fan makes the entire method stable.

Network control technology. The controlling interface of Internet is added to the existing inverter air conditioner. The remote control and remote diagnosis can be had through the Internet. Meanwhile, the centralized control is also optimized by this technology. The

controlling signal is transmitted by telephone lines or optical fiber cables. The signal is displayed on the screen to implement remote control, remote diagnosis, or software updating.

Noiseless technology and replacement technology for refrigeration material. Noiseless technology optimizes the interior construction of the device, imitating the flow direction of natural wind and minimizing the noise level. The replacement technology for refrigeration is under study to safeguard the environment much better. The material used in traditional devices is harmful to ozonosphere and should be forbidden all over the world.

Air supply technology and wellness technology. The super air supply system is applied in advanced devices. The airflow control technology can also supply air from each direction. The application of the wellness technology creates a new idea, namely, negative oxygen ion, noiseless, antiseptis, and other technologies.

Refrigerants

With the world's craze to go *green*, there is a new law being implemented in the way air conditioning is used. The existing law which is also referred to as Freon is what is termed R-22. The R-22 refrigerant is being supplanted by the R-410A refrigerant which is a much more environment-friendly and energy-conserving system.

R-22 is a refrigerant that was used in most residential air-conditioning systems until just a couple of years ago. It is considered a greenhouse gas which results in a dangerous byproduct that adversely affects environment. The copper lining that R-22 uses will need to be changed because it uses mineral oils that break down into harmful carbons that are speculated to be causing global warming crisis. R-410A will use artificial oil that will be able to withstand at much higher temperatures than R-22.

The old piping has mineral oil deposits throughout the piping and this is what the new law is aimed at improving and replacing. If the piping is not

supplanted, it will wreak havoc with the new law because it will not be able to take the pressure of R-410A and will develop deposits on the compressor walls and damage the metering device.

China's two leading air conditioner manufacturers, Gree and Midea, have released their research and application results of alternative refrigerant products. Gree announced the completion of the world's first hydrocarbon refrigerant R-290 on split-type air conditioner demonstration production line. Key products of Midea using R-290 have passed quality testing and manufacturing standards, and are ready to be commercialized. Both Gree and Midea have exhibited their new R-290 products at major international HVAC shows.

Besides big air-conditioner companies, hydrocarbon technologies are also encouraged by industrial associations. In December 2011, the China Household Electrical Appliances Association (CHEAA) issued China's first technology roadmap for home appliances industry for replacing hydrochlorofluorocarbons (HCFCs) with new refrigerants. By 2015, the roadmap plans to reduce the consumption of HCFC-22 by 10 percent compared with the average amount of 2009 and 2010.

More importantly, CHEAA aims to realize the industrialization of hydrocarbon technology and complete the replacement of HCFC-141b among companies producing refrigerators, freezers, and electric water heaters. It calls upon the industry to widely adopt low GWP refrigerants and blowing agents such as CO₂ and R-290. By 2020, the use of R-744 (CO₂) as natural refrigerant in production of freezers will meet requirements of restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS). Overall, by 2015, the roadmap aims to increase refrigerator energy efficiency by 20 percent along with another 15 percent by 2020 based on 2015. ■

Based on research conducted by TVJ in March 2012