

# Indian UPS and Inverter Industry Growing Slowly but Steadily

The UPS and inverter industry in India is expected to grow slowly but steadily. It has some interesting technology trends in its pipeline too. In this report, we explore what is exactly driving this industry, new market and technological trends, challenges faced in India and future expectations with respect to industrial and small office/home office use

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**D**ue to shortage of power in the country, back-up power system market is undoubtedly growing with newer technologies and methodologies being incorporated and implemented. Indian UPS market is a steadily growing market with both Indian and multinational manufacturers contending for a major chunk of market share. The Indian inverter market comprises several organised and unorganised players jostling for space. Let us look into major driving factors for this industry.

## What is driving the UPS and inverter industry?

All industry experts unanimously believe that a major factor driving growth for inverters and UPS in industrial and private sectors is a need for uninterrupted power supply to run basic infrastructure. The widening gap between demand and supply of electricity in India is a key factor driving growth in this market.

Statistically speaking, George Mathew, research analyst, Netscribes shares, "With an 8.7 per cent average energy deficit and a 9 per cent peak deficit in 2012-13, the demand for power backup solutions is considerably increasing. This is particularly true for South India which faced a shortage of 7.2GW in 2012-13."

Inverter is basically a backup power device whereas UPS is used for backup power as well as power conditioning. Talking about UPS industry, Anindya Das, industry manager, En-



ergy & Power Systems Practice, Frost & Sullivan informs, "In the process and manufacturing industries, there are critical nature of processes carried out which cannot afford a millisecond of power disruption. This is one sector where UPS really fits in and which is driving growth in the UPS sector."

**Lack of an efficient power grid.** India does not have a grid that is efficient or sufficient enough for its people. Not only is there a lack of power compared to what is required, the power that we do receive is not efficient power and it thus incurs huge losses.

Sameer R. Sanghvi, managing director, Barr Electronics says, "If these losses were to be rectified, there would be a huge surge in the percentage of power available to us. Insufficient capacity and inefficiency of grid for distribution are factors that are driving our UPS and inverter industry today."

Power quality and reliability has been (and remains) a concerning issue

until today in India. From industrial and commercial sectors, the power requirement has increased, and this demand and supply gap is forcing establishments to opt for inverters and UPS systems to address this requirement.

Vikas Chola, MCU application manager-North India, Texas Instruments (India) informs, "Furthermore, to maintain technology, inverters and UPS have become an integral part to address power fluctuations and prevent wear and tear to expensive electronics and industrial equipment."

**Change in rural attitude.** Apart from increased purchasing power of Indian households, another reason fuelling growing popularity of this sector is a change in attitude of rural consumers. "A comparative index indicates that rural consumers who would previously easily withstand a 7-8-hour-long power cut are no longer willing to withstand power cuts of more than 4-5 hours. This change in attitude has opened up the rural markets as a thriving prospective market for power backup systems," notes Mathew.

Additionally, these devices support users in exercising control over various factors including parameters such as power factor correction and load balancing. T. Anand, principal consultant, Knewron says, "Online (or inline) inverters are first choice as compared to offline inverters as they could help

you save bills too. Apart from technical reasons, price trend and servicing options are helping buyers to choose UPS and inverters easily."

## Opportunities for organised and unorganised sectors

The market for inverters and UPS in India is characterised by a dominant presence of the unorganised sector, informs Mathew. However, the market for these products in India is extensive enough for both organised and unorganised sectors to co-exist, since they essentially cater to different sets of consumers.

He says, "While the unorganised sector caters to the price-sensitive consumers, organised players mostly target the brand-conscious consumers. However, the low prices offered by the unorganised players are now compelling the organised players to reduce their prices to effectively maintain their competitive edge in the market."

Although Sanghvi believes organised players are some of the largest manufacturers in the inverter industry in India and worldwide, he says, "There is a massive potential for growth for both the sectors."

## Effect of grid parity on this industry

Today, the cost of power is continuously rising and, at the same time, the cost of buying a solar solution is going down. As manufacturers in this industry increase, so does the awareness of solar causing the prices to go down.

Sanghvi informs, "If we look at the last five years and consider per watt cost, it must have gone down at least by 50 per cent, if not more. And the trend is, the cost is continuously going down but our power requirement and power price is going up. So the situation is coming to something called grid parity."

Explaining grid parity, he adds, "It means the power we pay for and the power we extract, in terms of capital expenditure (CAPEX) and operational expenditure (OPEX), respectively, will be the same because of rising prices of fossil

fuels and traditional methods of supplying power, and the fact that the price of photovoltaic module, which are made from the abundantly-available, easily-extractable silicon, is going down."

This point of intersection is called grid parity and hence, in the future, the solar industry would definitely be in a very strong position to expand rapidly. Once grid parity is realised, the payback period comes down drastically.

Suppose you use a generator, have a grid tie inverter extracting sunlight and using it as power, your payback period can come down to as low as 1.6 years. This will result in making the purchase decision an easier one.

## Market and business trends

Extensive research by market research agencies on power backup systems market across rural and urban sectors brings up a number of trends. Suppliers operating in the inverter industry are exploring contract manufacturing opportunities.

Mathew says, "This arrangement benefits both the service provider and the hiring firm as each can focus on his core competencies. Moreover, players operating in the UPS market are increasingly focussing on selling their products through large retail formats and on strengthening their channel sales."

He further adds, "UPS units of up to 600VA are being sold through retail channels while large configurations that require technical support are mostly being sold through channel partners."

Shifting focus to the inverter segment, previously, for hard-core backup power, people used gensets. Due to rising cost and storage challenges of diesel, people are starting to shift from gensets to power inverters. Although, Das notes, "In some of the small office/home office (SOHO) and SME segments, diesel gensets are not completely being discarded but their usage is slowly being reduced; they are complementing the power inverters when they are completely discharged."

A lot of people today want to be

independent of the grid. So in the inverter segment, people are exploring solar inverters today. "The market trend is moving towards solar. Backup solutions given through solar are the most sought after," says Sanghvi. Ideally, people would install a solar system with batteries so that it not only serves their power needs during the day but also gives them a small relief in their power needs during night.

Another important business trend is an increasing demand for SOHO/high-end inverters as a lot of users are looking for uninterrupted power backup for commercial activities which saves them huge money in comparison to generators.

Manoj Jain, vice president, Microtek International Pvt Ltd shares, "Due to errant power conditions, more and more industries and SOHO segment users are shifting from generators to inverters. This is because running costs of inverters are very low and these are more convenient."

Specifically talking about the India market, Chola says, "We see the emerging requirement for inverters with 2kV and high-frequency inverters." Furthermore, the popularity of solar technologies in both rural and urban India is driving the trend for solar hybrid inverters that combine solar panels with an inverter, to address power requirements. Finally, there is also a trend of battery management in inverter batteries.

## Government policies and their effects

The Jawarhalal Nehru National Solar Mission (JNNSM) currently gives 80 per cent accelerated depreciation for companies that by a solar system. And in Maharashtra, there are no taxes for a solar power generating pack. A solar power generating pack comprises a battery and the solar panel with an inverter, which attracts zero tax.

The government is releasing schemes but, at the same time, due to lack of knowledge, the assemblers and integrators still do not know how to give you maximum benefit, informs Sanghvi. He says, "So the outside pic-

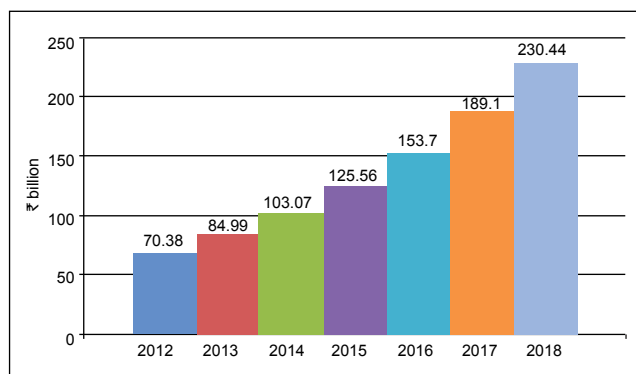


Fig. 1: Inverter market: Value-wise (Data courtesy: Netscribes)

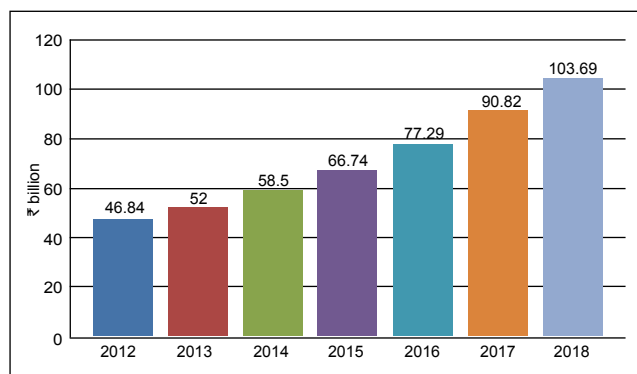


Fig. 2: UPS market: Value-wise (Data courtesy: Netscribes)

ture looks like it is a fraudulent industry but actually, if done the right way, the UPS and inverter industry should experience continuous growth."

However, not all are of the same view. "Though prima facie it seems that government policies do affect, in reality, they need not. Industry consortium can help this segment to grow without much ado. Depending upon government for concession or something else could definitely slow-down growth of the segment and would not do any good in the future," adds Anand.

Some other challenges are balancing rising input costs because of rising costs of raw materials and maintaining fair value for the users.

On another note, one of the major buyers of inverters and UPS systems today is the government of India, shares Mathew. However, he says, "Of late, our government has not floated any major tenders, as a result of which sale of UPS and inverters has taken a hit. While government schemes such as computerisation of schools have boosted the industry in the past, not many new funds have been allocated to schools in the recent times." This has, in turn, affected the number of orders, thereby leading to a decline in sales. On the brighter side, he adds, "The government's initiative of computerisation of its various departments is benefitting the industry, currently keeping the industry afloat."

## Challenges faced

Lack of awareness is one of the major challenges that the UPS and inverter

industry in the country has to deal with. Growth of the Indian power backup industry is thwarted by poor consumer knowledge and further hindered by misconstrued selection criteria for power backup products, informs Mathew.

He notes, "Consumers often tend to overlook important technical details such as resistive loads, types of lubrication, safety features and other technical parameters while making purchase decisions, which leads to negative reviews by current consumers and ultimately causes other potential customers to defer their purchase."

Moreover, he adds, "A significant growth in imports from China, especially in case of inverters and the UPS units of lower than 10kVA range, is another challenge being faced by the domestic industry."

Shifting focus to the inverter industry, inverter is not really a high-end product; any power electronics company can enter the market. Das believes that the entry barriers are very low in this sector. He says, "Due to this, we see a lot of players who have entered this market recently, resulting in stiff competition. The entry barriers in the UPS industry are comparatively higher." Besides, the whole origin of the inverter industry is because of need of backup power during power cuts. He adds, "Over a period of time, the grid power supply is improving due to privatisation of distribution companies in cities such as Delhi, Mumbai and Kolkata. This can have a dampening effect on the inverter industry."

Also, there are a lot of smaller players who have entered the market. So there is a tendency amongst them to sell underrated inverters also.

Summarising the challenges, Das says, "Stiff pricing, inferior rating and lower quality of batteries, improvement of main grid power supply and deliberate underrating of inverters are some of the pressing challenges faced by the whole inverter industry."

Sanghvi believes the challenges faced are basically concept selling and knowledge. He adds, "Once you give knowledge to people and you start selling the concept then this industry will definitely look at a boom." So the challenge today is knowledge—not basic knowledge but integrated technical knowledge as well.

Talking about the government policies, Jain believes that, "The government policies offering different tax slabs in various states is a very disturbing factor—there must be a uniform slab all across India."

## Technology trends

The demand for power in the country has been increasing at an exponential rate. The increased spending power of the people has been a significant contributor. Even people in the rural areas have resorted to complex appliances to support their daily lives, informs Mathew. Consequently, the industry is witnessing a shift towards new technology and design in order to support more sophisticated appliances. He says, "Green UPS systems, which offer efficiency rates of 94-97 per cent as against the usual 80-88

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per cent efficiency units, is one of the latest trends that has emerged in the market. This helps in conserving energy as well as reducing the carbon footprint."

On a similar note, Das informs, "Today, we see a lot of modular UPS coming in the market. There is also a UPS called Flywheel or Green UPS which uses energy under the flywheel (rotor)." (Flywheel systems store energy kinetically rather than chemically. Instead of dozens of heavy containers of lead plates submerged in sulphuric acid, flywheels use the inertia of a spinning mass to store and regenerate power. Data courtesy: [www.power-thru.com](http://www.power-thru.com))

Introduction of transformerless UPS systems is another emerging area where the efficiency is a little higher. It is used for very specific applications.

Talking about another significant trend, he adds, "Multi-utility products, wherein both lighting and computing power backup requirements are managed, are being manufactured to meet the market needs. Moreover, owing to rising real-estate costs, vendors are also looking to offer products with a higher wattage per square centimetre. Even 5kVA UPS units are being equipped with features that were earlier seen only in high-end systems."

The technology for this market has been developing over the years. Chola shares, "Currently, in the home UPS market, we see the move from traditional square-wave inverters towards the sine-wave inverter technology. Second, the sine-wave inverters are predominantly iron-core transformer types. However, in recent times, development of ferrite-core-

## Price trend

There are several players operating in the industry, which has led to a stiff price competition in the market. While unorganised players sell their products at significantly lower prices, products from the organised players are generally sold at premium costs. The difference in prices can be attributed to the quality of the products and the superior after-sales services offered by the bigger brands.

Additionally, high raw material prices and inflationary pressures are making it all the more difficult for players to keep the prices of their products stable.

*Courtesy: Netscribes*

based high-frequency inverters is taking place. These inverters are smaller in size and more efficient."

The trend with respect to technology is also moving towards solar. Today, high-power tracking systems such as maximum power point tracker (MPPT) based solar inverters are being used. "This is the latest technology shift that is occurring from the typical pulse-width modulation (PWM) inverters. Companies are employing more of this tracking technology to extract the maximum they can from sunlight and convert it into usable power," says Sanghvi.

Another trend is moving towards hybrid inverters. These inverters use solar panels in combination with the main power to charge the battery, thus saving on the electricity cost. These inverters could help in integrating conventional energy sources with regular sources easily and are programmed to use conventional sources in a better way.

## Future

While UPS/inverter industry is relatively stable these days, there is need to look out for new trends in advanced electronics such as Internet of Things based systems and smart grid linked sys-

tems. This would help industry to have a different and futuristic perspective and see UPS and inverters beyond just power suppliers, informs Anand.

R&D has become one of the major focus areas of the power backup systems market. For the overall development of the industry, and for players to be able to increase the profitability, it has become imperative for the companies to invest in R&D activities. Making power backup equipment available in smaller sizes would ensure greater revenue, especially from the SME and SOHO segments. Players can also look to foray into e-commerce business models along with doorstep delivery systems.

Another emerging area is that of superior after-sales services. A widespread service centre network will help companies build trust and ensure recommendations from existing customers, thereby adding to their goodwill and brand value. Moreover, cross-selling platforms for low-voltage products via the diffused channels are expected to bring about a greater visibility amongst end users, thus leading to greater revenues. ●

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