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The Future of Solar Inverters

With a crash in the inverter market in stronger economies of Europe, the manufacturers are now shifting their attention to Asia and the US. The inverter demand in India has increased due to power shortages, and a strong push from the government through national solar mission. Now, the some state governments and bodies coming forth to install solar inverters for more reliable backups. This does look promising.

In Coimbatore, one of the solar cities of India, power outages have been an issue of serious concern. In the last few years, the demand for inverters ousted supply-to an extent where people queued in to book their inverters. The manufacturers and suppliers of inverters were, of course, happy.

This is a problem that exists in many states of the country. With the demand for power shooting up, the inverter market does look promising in India.

KSEB takes up solar inverters

In Kerala, to manage the increasing power demand, the Kerala State Electricity Board (KSEB) is on a path to explore intelligent solar-powered inverters. These would automatically discharge power to electric equipment during peak hours.

When the KSEB announced this, almost 18 companies responded on the call for new generation electric invertors. This would help the board bring down power consumption from grid lines during peak hours, which was from 6pm to 10pm and 5am to 9am. This would also set a technology standard for inverters sold in the state.

This also came with another reason that use of substandard inverters gave hard times to the state electricity board during crisis time. These inverters consumed too much of power during peak hours, causing considerable waste and loss.

The desire for setting a technology standard for the inverters available in the market led the KSEB to the idea of promoting solar-powered inverters. Such devices would automatically stop drawing power from KSEB lines during peak hours and use line power to charge only 50% of the inverter battery capacity, that too only during off peak hours.

The idea was mooted in the KSEB innovation zone. The device was tested and proved to be successful, it was then that the board decided to go ahead inviting commercial sale of the product at affordable rates.

According to the KSEB officials, they first called upon a meeting of traders in the state. They then asked them if they will be able to stick to the technical requirements set for inverters by the KSEB. When this was agreed upon, a meeting of inverter manufacturers was called. When all the parties were in consensus, first there was standardisation of inverter, the introduction of solar inverters followed soon.

As the power crisis deepens, consumers are looking at inverters for temporary relief.

The Inverter Market

With the sudden increase in demand, dealers are unable to meet requirements. This again, is opportunistic for companies making solar inverters.

The Indian PV market has been growing and with the National Solar Mission, and increasing number of players eyeing the market, the solar inverter market shows promise. The push from the government on the PV market has propelled companies to expand their production. ABB, one of the leading companies, which makes solar inverters, has been able to expand its market production with this push, and growing along. According to their global product manager, new production facilities have emerged and with this they can support the customers in India with more rapid delivery times. They can also provide faster support for varying project needs.

ABB soon expanded the production of its solar inverters by opening a production line in India to support the rapidly growing local photovoltaic (PV) market.

Sources from the companies said that ABB's solar inverter range is complemented by local solutions and products. These included string monitoring junction boxes, SCADA monitoring and a control system package. These factors made the company stand out among other inverter manufacturers. They had more in the offing- Medium- and high-voltage transformers and grid connection equipment, complete substations for ABB central inverters. This apart, the central inverters are supported through a local service organization in India. Therefore, the entire value chain from pre-purchase to installation and maintenance is taken care of. The customer is sure happy in this situation.

Technology Advancements

According to the analysts, many vendors are involved in technology development to give better service to their customers and increase their competency in the market. For instance, technologically, market vendors have recently invented a new class of power inverters. These inverters use a single switching transistor and generate infinite-level voltage, as compared to inverters that use multiple transistors and provide only one voltage level.

Vendors are also investing huge sums in research and development to develop advanced cooling systems for large capacity inverters, which can also handle frequency fluctuation more efficiently.

Such technological advancements in the market are increasing the production and usage of inverters, leading to the growth of the Global Inverter Systems market for Renewable Energy during the forecast period.

Another reason claimed for the growth in this sector is that majority of solar installations requires inverter systems to convert DC to AC. This enables the electricity generated to be fed into the main power grid. Another research report by IMS, estimates that in 2014 over 7 million inverters will be sold, much higher than 1 million in 2009.

Global Price Drop

The picture of the solar photovoltaic inverters looked grim in 2013. The worldwide shipments declined 5% in the second quarter of 2013 as compared to the same period in the year 2012. According to reports from IHS, the demand fell in the European countries.

The report also said that PV inverter shipments in Q2'13 amounted to 8.3 GW, down from 8.7 GW during Q2'12.

The key reason for fall in the PV inverter shipments worldwide was clearly the sharp slowdown in the European market, according to the IHS report. Shipments in the Europe, Middle East and Africa (EMEA) region during the first half of 2013 fell more than 40% compared to the first half of 2012. The EMEA region accounted for only 6 GW worth of shipments in the first half of the year, down from 10 GW during the same period in 2012.

The analyst said that the pace of contraction for inverter shipments in critical European countries such as Germany and Italy has been faster than expected. Some of these markets saw their demand decline by more than 70 percent this year.

Some inverter suppliers were reliant on these markets, which have been large markets, historically. After a slip in the market demand, now, inverter suppliers are seeking new markets. These companies have expanded their presence internationally in high-growth countries, including the United States, China, Japan and India.

When it comes to global prices, the inverter prices continued to drop, by 20% in Q2, 2013. The decline was the result of inverter shipments shifting to lower-cost markets in Asia, and continued eroding prices in the matured markets. Revenue decreased by 18% year-on-year in Q2 2013 to $1.6 billion.

IHS report says that the majority of inverter demand is forecast to come from the Americas and Asia. This will continue to put pressure on inverter suppliers that do not have a strong presence in these markets. Analysts expect inverter suppliers - particularly Chinese and Japanese firms such as Sungrow, Omron, Tabuchi and TMEIC - to increase their market share substantially this year at the expense of some of the European suppliers.

Global Markets

In a report titled, "Global Inverter Systems Market for Renewable Energy 2014-2018" report, analysts forecast the Global Inverter Systems market for Renewable Energy to grow at a CAGR of 8.9 percent over the period 2013-2018.

The report claims that one of the key factors contributing to this market growth is the increasing solar energy consumption. There have been technological advancements in this sphere. The challenge though remains that, there is a high maintenance cost that is involved. The key vendors dominating this market space include names like KACO New Energy Inc., Power-one Inc., Schneider Electric Co., and SMA Solar Technology AG. Apart from these names, the report also mentions names of Bonfiglioli Riduttori S.p.A., Danfoss Solar Inverter, Eaton Corp., Emerson Electric Co., Enphase Energy Inc., Fronius International GmbH, GE Co., Jiangsu Zeversolar New Energy Co., Ltd, Mitsubishi Electric Corp., Proniso REFUsol GmbH, Riello S.p.A, Siemens AG, TDK Corp. and Toshiba Corp. These are some of companies that are into the global inverter market in the renewable energy space.

Bonfiglioli, for instance, has moved from 185 MW in 2011 to 500+ MW in 2013, recording growth in the Regenerative & Photovoltaic Business Unit in India. With 24% market share and increasing, it is believed that Bonfiglioli Inverters are customized to the Indian conditions and one of the most preferred among the customers. Based on German technology, these are developed by the centre of excellence Bonfiglioli Vectron, and have been installed in large photovoltaic parks all over the world.

Initiatives from the Indian Government

With the looming power crisis in India, the National Bank for Agriculture and Rural Development (NABARD) came forth for alternative solutions in the state of Andhra Pradesh. To promote solar and help people battle the crisis, NABARD is providing 40 per cent subsidy for purchasing solar inverters. This also comes in line with Ministry of New and Renewable Energy's (MNRE's) Jawaharlal Nehru National Solar Mission (JNNSM), which mandates for subsidy for solar lighting and solar PV systems of smaller capacity. NABARD, with MNRE as a facilitating agency entered into an agreement with Andromedar for subsidy.

Reports say that the cost of installing a solar inverter would be around Rs. 30,000. Of this, NABARD will be providing 40 per cent of the amount as subsidy. The commercial banks will be providing loans for the 50 per cent of the amount while the rest will be paid by the consumer. Consumers who owned their own houses could apply for the loan through designated agency.

Andromedar entered into an agreement with Andhra Pradesh Grameena Vikasa Bank which will be providing the loans, and the consumers will have to repay the loan in monthly instalments. When the state governments are taking proactive steps in providing solar inverters, the market demand is likely to stay

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