

PV inverter industry – boom to bust?

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ABSTRACT

Exceptional demand characterized the PV industry in 2010. Uncertainty regarding incentive schemes in a number of key markets drove global installations, and inverter shipments grew by over 160% as investors and developers rushed to complete projects, fearing that incentives would be reduced or removed altogether. IMS Research estimates that inverter shipments exceeded 20GW in 2010 and sales of small three-phase inverters, rated between 10-20kW, grew by around 200% in 2010. Inverters rated at over 500kW are estimated to have grown at a similar rate, but continue to represent a smaller share of revenues.

Expanding capacity in 2010

Many inverter suppliers announced major capacity expansions and total industry capacity reached over 35GW in 2010 – an increase of 125% on the previous year. In spite of this massive capacity expansion, factory utilization still increased significantly in 2010 to around 66%, hitting close to 85% in Q3'10. In 2010 however, the market was greatly affected by both extremely high demand and low production issues caused by a severe shortage of many key components. Inverter delivery times extended dramatically, and a wait of 30 weeks became the norm throughout much of 2010. Inverter suppliers could not keep up with demand – a sure sign that the industry was struggling to adapt to rapid demand swings.

Inventory levels built up throughout the supply chain with string and multi-string inverters the most affected. IMS Research estimates end-of-year inventory was almost 3.8GW, with Germany and France the main markets affected.

Weak demand for inverters in Q1'11 further compounded the problem as the inventory served much of this and shipments fell by over 45% from Q4'10. Although the first three months of a year are traditionally weaker in terms of demand, weather conditions also delayed installations and FiT cuts were enforced January 1st, so this year has seen a bigger slowdown than previous years. Uncertainty over the Italian government's support for PV and the sheer amount of demand pulled forward into 2010 contributed to this situation.

to delay many of the capacity expansions that were planned for 2011 as capacity utilization is forecast to dip to under 30% in Q1'11, failing to reach the levels seen in 2010. The build-up of inventory, even within suppliers' warehouses, means that delivery times have dramatically shortened to around one or two weeks. With the demand softening compared to 2010, the pressure on inverter pricing will most likely increase. It is estimated that prices will fall by around 10–15%, as weakened demand puts the balance of power back with the customer.

Current situation

By Q4'10, slowing installations in several core markets – most notably Germany – cooled the demand for PV inverters and eased the component shortage. The former was due to rate cuts in Germany and government intervention in other markets such as France and the Czech Republic. Market conditions had reversed and the industry was faced with oversupply as distributors and installers had overestimated demand in the final part of the year. Order cancellations were also common.

Future outlook

IMS Research estimates that demand will increase considerably in Q2'11 and a recent survey of inverter suppliers suggests that inventory levels will return to normal in the same timeframe. However, although installations are forecast to grow in 2011 by about 14%, inverter shipments are forecast to decrease by about 7% due to the high levels of inventory in the supply chain carried over from 2010. These market dynamics have caused inverter suppliers

Opportunities for microinverters

With 2011 preventing markedly different conditions in 2011 for suppliers' operations, the need for product differentiation becomes all the more important. With the previous measure of inverter efficiency becoming ever narrower across the industry, suppliers are finding new ways to separate their products from the competition. Claims of lowering installation costs, increasing reliability, in-depth servicing packages and new product features are all appearing on the market. Of all the new products entering the market, microinverters are garnering the most attention with Enphase Energy currently leading the way. With module level DC/AC conversion these units claim to increase efficiency and safety and lower installation time and cost. Success has been achieved in the US residential market but has thus far been limited to the US. Traction in the European market is an objective for the various emerging microinverter suppliers, although the UK-based supplier Enecsys is hoping to break the European barrier first. Installers with vast experience of using string inverters will take some persuading to switch to this new technology and IMS Research forecasts that in MW terms, microinverters will capture less than 5% of the market by 2014, but with an inherently higher price per watt, the revenue share will be slightly larger.

European demand faltering

In the medium term it is forecast that Europe will account for less global demand than it

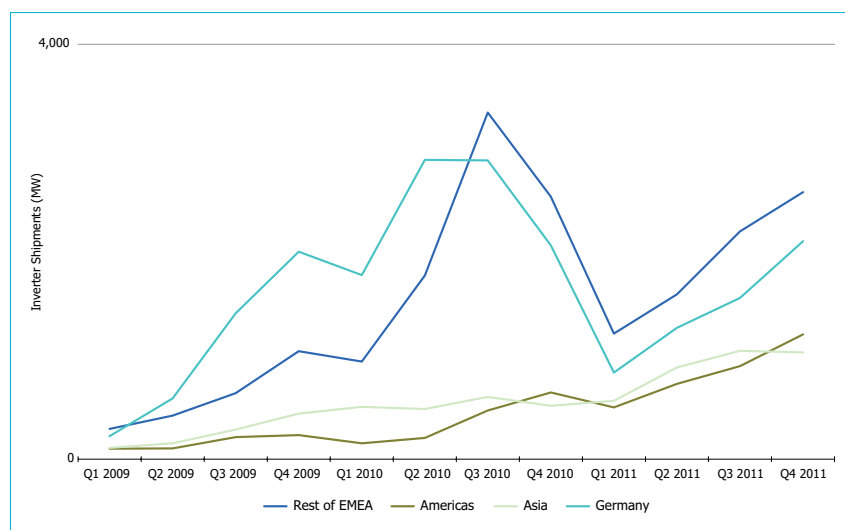


Figure 1. Quarterly PV inverter market forecasts by major region.

Source: IMS Research

does currently – which is estimated to have been over 80% in 2010. Emerging markets located in the Asia region (China, India, Australia), South America (Brazil, Mexico) and Africa (South Africa) are forecast to grow faster than the more mature European markets and capture their share of the market. Installations being planned here are almost exclusively MW-scale ground-mount power plants and therefore the suppliers of large central inverters are targeting the markets heavily. Satcon has already opened up manufacturing facilities in China using a partnership with GCL and it is thought that many other suppliers will follow suit. Turnkey inverter solutions are reported to be most in demand in these emerging markets. These are fully prefabricated inverter substations, typically 1MW in size or bigger, which are delivered with all the components needed for grid connection, promising simpler installation and servicing. These units are forecast to account for almost 30% of the market by 2014.

It is clear that the competitive conditions of 2010 have changed considerably and the PV inverter industry may not ever see another year like it, which saw shipments increase by over 160%. Suppliers are now faced with a situation where driving down costs will be paramount in order to make systems commercially viable in markets where FiT rates are far lower. Module prices will also have a dramatic effect: if a price collapse happens in this sector, then PV may

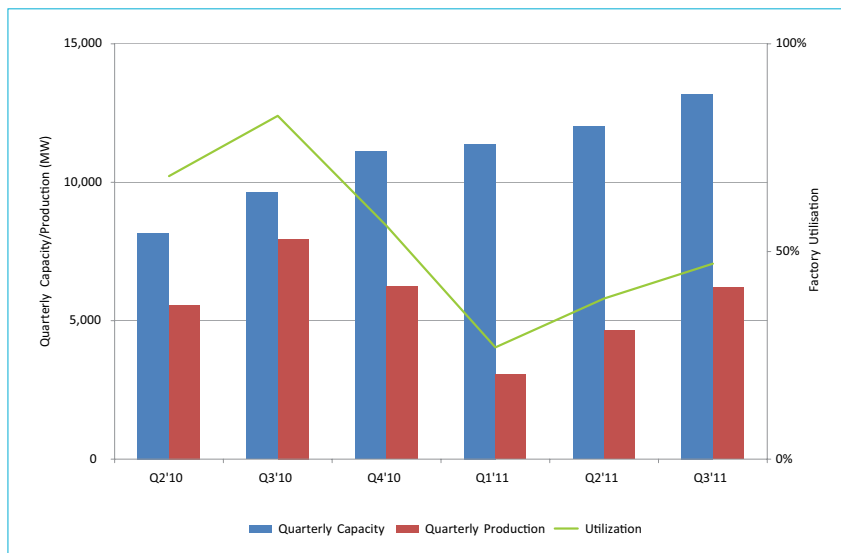


Figure 2. Quarterly capacity, production and utilization rates of inverter facilities by quarter (MW).

Source: IMS Research

Power Generation

experience another year of strong growth.

Despite the gloomy short-term outlook for the PV inverter market, IMS Research forecasts that the market will grow to be worth almost US\$8 billion by the year 2014. The key driver will be that PV becomes economically competitive with traditional electricity generation as the price of inverters and other system components fall.

About the Author

Tom Haddon is a research analyst with IMS

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