

The cell and module equipment market 2009: a sobering year with a brighter future

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ABSTRACT

As 2009 comes to a close, many equipment suppliers are reflecting on the fact that the photovoltaic industry, despite its huge growth potential, can be a brutal place to do business. In the first half of the year many equipment suppliers had the unnerving experience of falling off a cliff, going from record order levels to no orders at all in the space of a few months. This sobering moment served as a reminder that the PV industry needs both access to finance and government support to continue growing. Indeed, it should be remembered that photovoltaics would still only be an interesting technology serving niche markets were it not for government subsidies. Despite orders for equipment declining by over 70% this year, the market for PV cell and module manufacturing equipment is set to grow by 5% to a value of \$5.0 billion in 2009.

The one good thing about this year has been the accelerated drop in cell and panel prices. This is bringing ever closer the day when the price of PV generated electricity reaches parity with electricity generated from non-renewable sources and subsidies are no longer required. It is also driving a new round of investment in more efficient manufacturing equipment.

Utilization rates on the way up

Explosive growth in demand for PV cells and panels in the past few years has resulted in a scramble to add capacity. In 2008 the nominal production capacity of the industry almost doubled to 15GWp, yet sales of PV cells and panels only reached 6GWp. Looking at these two figures would give one the impression that the capacity utilization rate for the industry in 2008 was only 40%. However, the 15GWp number represents the nominal production capacity as measured at the end of the year and should not be taken as a true reflection of the actual capacity that was available. A better estimate of the actual capacity for the year as a whole is to take the average of the capacities at the beginning and end of the year. This method gives an average capacity of 11GWp and a utilization rate approaching 55%.

In a rapidly growing industry, however, it is necessary to take the process one step further and calculate the utilization rate on a quarterly basis. By doing this and factoring in ramp-up times, the effective quarterly utilization rates during 2007 and 2008 were in the range of 60% to 80%. These high utilization rates explain why the industry was so desperate to add capacity during this period, as with cell demand growing so fast and capacity utilization so high, manufacturers had

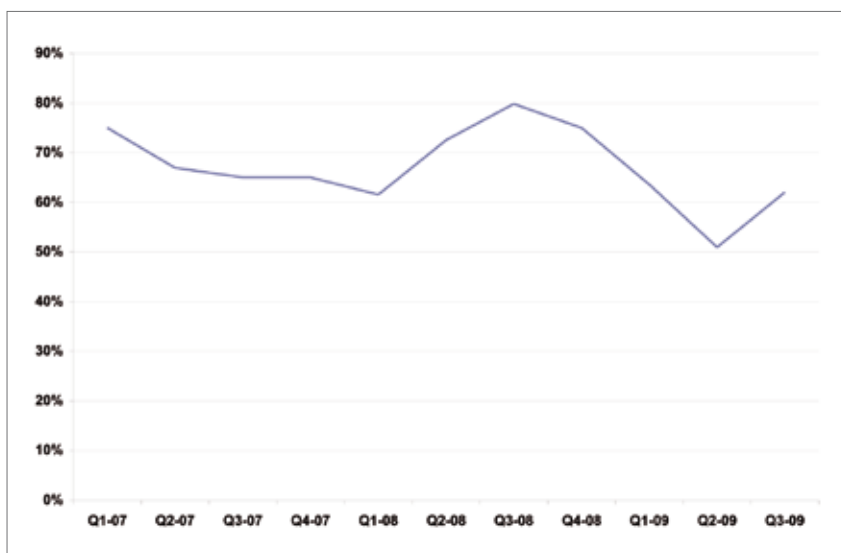


Figure 1. Capacity utilization rates from Q107 to Q309.

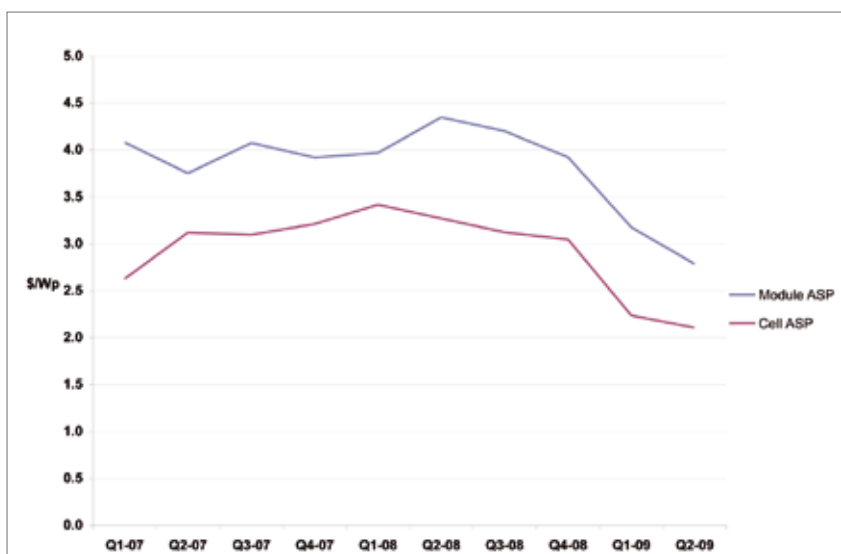


Figure 2. Cell and module prices (data gathered from average prices of publicly listed companies).

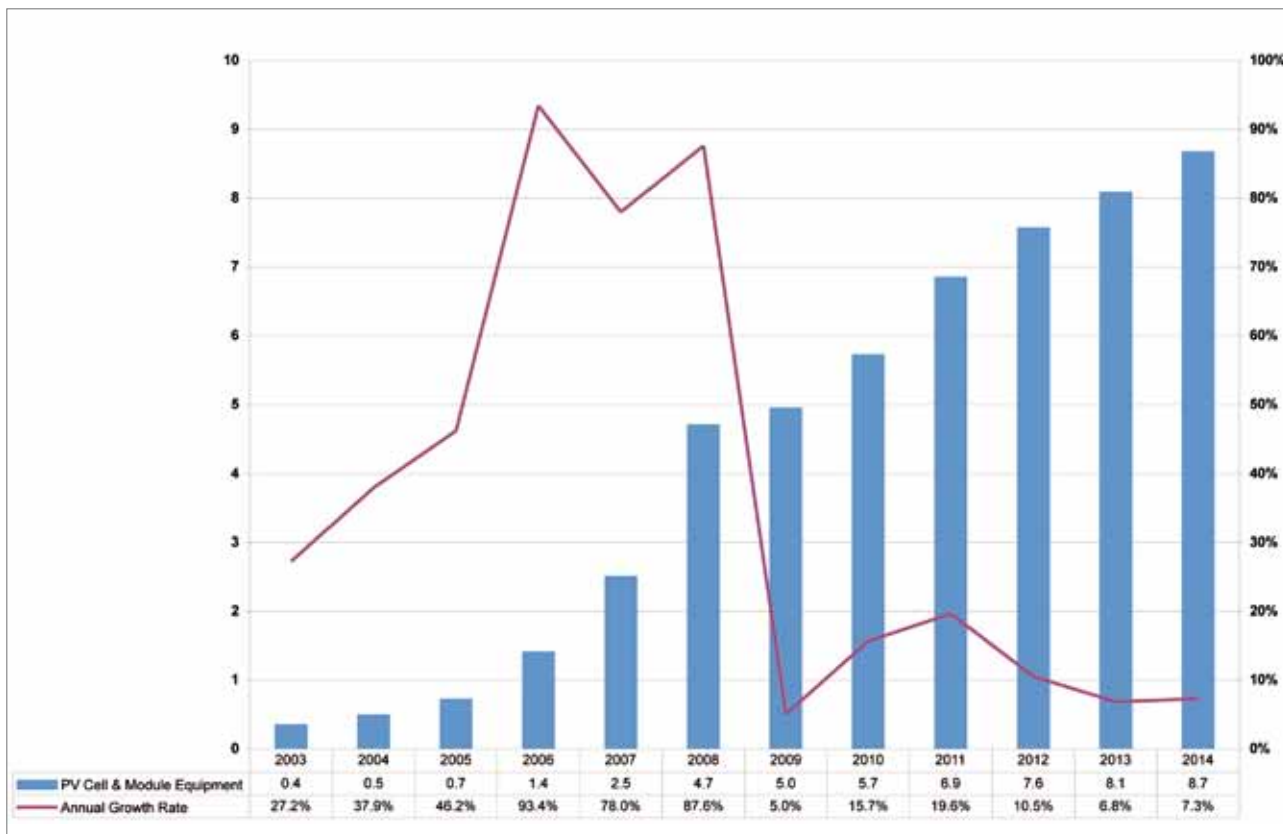


Figure 3. PV cell and module manufacturing equipment market sales (in \$Bn) and projected annual growth rates.

to add capacity as quickly as possible or risk hitting 100% utilization within a few months.

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However, the situation in 2009 has clearly changed. Demand for PV cells and modules softened and utilization rates plummeted. In the second quarter, utilization rates fell back to 50% which resulted in an immediate and dramatic cut in capital expenditures causing major problems for the equipment industry. However, demand for PV cells and modules has surged in the third quarter of 2009 and utilization rates are now above 60% and rising. Interestingly, this situation has not yet triggered another round of increased capital expenditures as cell and module manufacturers wait to see whether this is just a seasonal spike in demand or the start of a sustainable recovery.

Prices on the way down

While 2009 looks like being a reasonably good year in terms of MWp shipped, falling prices are causing problems for cell and module manufacturers. Prices have declined by around 35% in the past 12 months and many manufacturers are now selling at prices below production costs.

This state of affairs is unsustainable. Cell and module manufacturers will have to invest in new, more efficient production capacity if they wish to remain competitive. Such a scenario is not new, however. We have already seen this happening as several manufacturers, most notably Q-Cells, have retired older, less efficient capacity. Our initial estimates show that around 4% of the installed base will be replaced or upgraded in 2009, and this percentage is set to rise further in 2010.

Equipment market outlook

Despite orders for equipment declining by over 70% this year, the market for PV cell and module manufacturing equipment is set to grow by 5% to a value of \$5.0 billion in 2009. This is a direct result of most companies working through the backlog of orders that were placed in 2008 and getting paid for them in 2009. A further contributing factor is the receipt of revenue for tools that were shipped in 2008 but the revenue only being recognised on the company books in 2009.

This year will be remembered as a period of transition for the PV equipment industry. From 2000 to 2008, the high double-digit growth rates meant that the primary concern was in relation to delivery of equipment. In contrast, falling cell and module prices in 2009 has focused the cell and module manufacturers' minds on new production technology to get manufacturing costs down and cell efficiencies up. This is benefiting those equipment companies that have the research and development resources to

develop the next generation of production equipment. It is these companies that have fared best during this difficult period.

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Beyond 2010, it is difficult to predict the trajectory of the equipment industry because demand depends on shipments of cells and modules, which for the time being depend on government subsidies. However, based on cell and module demand growth of 25 to 30%, in terms of MWp shipped, this should drive long-term growth in demand for equipment of around 10-12% resulting in a market value of \$8.7 billion in 2014.

About the Author

John West is the managing director of VLSI Research Europe and has been analysing the PV equipment market since 2006. He was awarded an M.B.A. from Cranfield University and has a degree in medical physics from the University of London.

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