Solar Outlook

BiMonthly Solar Industry Update

All Solar All the Time

Editor's Corner

The numbers for PV industry shipments in 2010 over 2009 are impressive, with shipments growing by 119% and capacity increasing by 67%. Manufacturers in China/Taiwan have ~52% of the global industry capacity to produce technology, so it is no surprise six of the top ten manufacturers making this year's list have a technology manufacturing facility located in China or Taiwan. Overall, the PV industry experienced growth at ~94% in 2010, compared to ~44% in 2009.

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NAVIGANT

Dear Readers,

It is finally here, the first issue of *Solar Outlook* in 2011! Included in this issue is an analysis of the 2010 shipments, listing of the top ten manufactures, as well as a comprehensive breakdown of shipments by technology. I would like to announce that our second issue of the year will have an analysis and forecast of both the CSP and CPV markets. Enjoy!

Thank you,
Jessica Donnelly
Editor, Solar Outlook

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Analysis of 2010: PV Shipments grow by 119% over 2009

The solar industry needs to pay attention to Warren Buffett, chairman of Berkshire Hathaway Inc. In his annual letter to the shareholders, Mr. Buffett wrote, "The job gets tougher as the numbers get larger." What is true for Berkshire Hathaway is true for the solar industry – with multi-gigawatts of manufacturing capacity a significant slowdown would be an expensive catastrophe for the industry and its participants all up and down the value chain.

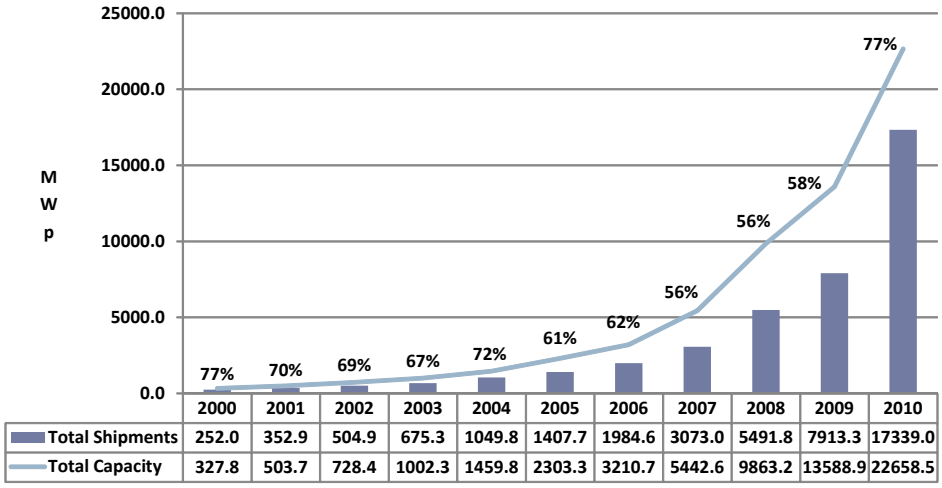
Figure 1 presents capacity and shipments for the photovoltaic industry for a ten-year period, 2000 through 2010. The ten-year compound annual growth rate for both capacity and shipments was 53%. Photovoltaic shipments grew by a compound annual rate of 65% during the five-year 2005 through 2010 period, with capacity increasing by a CAGR of 58%. The PV industry experienced significant growth in 2010 over 2009, with shipments growing by 119% and capacity increasing by 67%. Globally, capacity utilization for the PV industry was strong, increasing by nineteen percentage points, from 58% in 2009 to 77% in 2010.

The global market for photovoltaic technologies in 2010 consisted of several categories of numbers, and it is important to understand how these numbers interconnect. All markets have a demand side and a supply side, and as with any accounting ledger, at some point all the numbers need to add up. To understand market behavior during a particular calendar year all categories should be observed. These categories are beginning inventory (both supply and demand side), capacity, production, shipments to the first point of sale, installations and end of year inventory. A basic precept of the market research discipline is that the count is from one point to another, after which a new count begins. For the purpose of this analysis, technology shipments are counted from the point of manufacture to the first point of sale in the market, whether this is an installer, integrator, end user or another technology manufacturer. Figure 2 presents 2010 broken out into these categories. Announcements are included in Figure 2 to make a point about what is real, and what is, basically, marketing. The incentive driven photovoltaic industry needs to take great care not to overstate its size, as it risks the removal of necessary incentives.

The Top Ten Manufacturers of 2010.

The top ten manufacturers for 2010 shipped 61% of the global total, had a 54% share of manufacturing capacity, and, as a group, high capacity utilization of 85%, (industry capacity utilization was 77% in 2010). Six of the top ten manufacturers have technology manufacturing located in China/Taiwan. Of the 2010 top ten, only First Solar had technology manufacturing in the U.S., though, in 2010, First Solar primarily shipped product from its

Figure 1
Photovoltaic Shipments and Capacity, 2000 to 2010



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Shipments	252.0	352.9	504.9	675.3	1049.8	1407.7	1984.6	3073.0	5491.8	7913.3	17339.0
Total Capacity	327.8	503.7	728.4	1002.3	1459.8	2303.3	3210.7	5442.6	9863.2	13588.9	22658.5

Figure 2
Snapshot of 2010

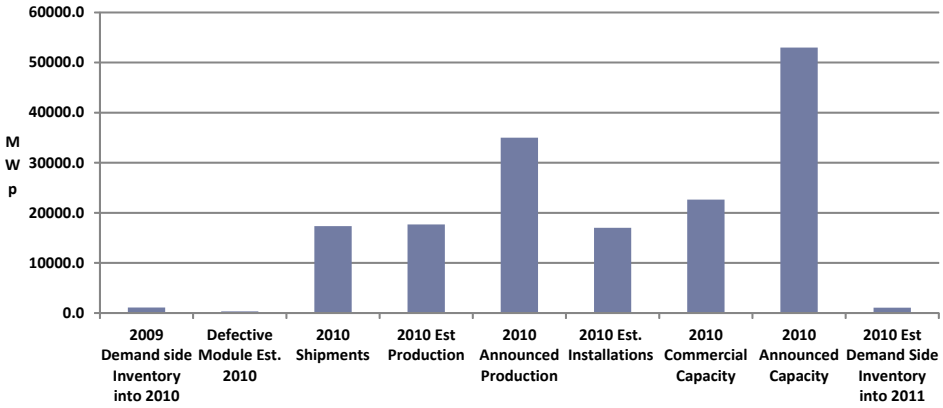


Table 1
Top Ten Manufacturers 2005 through 2010

Ranking	2005	2005 MWp	2006	2006 MWp	2007	2007 MWp	2008	2008 MWp	2009	2009 MWp	2010	2010 MWp
1	Sharp Solar	375.2	Sharp Solar	434.7	Sharp Solar	363.0	Q-Cells	547.2	First Solar	1057.3	Suntech	1530.0
2	Kyocera	142.0	Q-Cells	240.4	Q-Cells	344.1	Suntech	497.5	Suntech	672.2	JA Solar	1460.0
3	Q-Cells	131.2	Kyocera	180.0	Suntech	309.0	Sharp	458.0	Sharp Solar	570.0	First Solar	1387.1
4	Schott Solar	95.0	Suntech	152.0	Kyocera	207.0	First Solar	434.7	Yingli	525.3	Yingli	1061.6
5	BP Solar	85.8	Sanyo	120.5	First Solar	186.0	Kyocera	290.0	Q-Cells	518.2	Q-Cells	995.0
6	Mitsubishi Electric	85.0	Mitsubishi Electric	111.0	Motech	167.0	Motech	263.5	JA Solar	509.0	Sharp	914.0
7	Sanyo	84.0	Schott Solar	96.0	Sanyo	155.0	Sanyo	220.2	Trina	399.0	Trina	905.4
8	Shell Solar	55.0	Motech	91.8	SolarWorld	136.1	SunPower	215.2	SunPower	347.0	Motech	850.0
9	Motech	45.0	BP Solar	78.0	Mitsubishi Electric	121.0	JA Solar	212.1	Kyocera	340.0	Gintech	800.0
10	Isofoton	39.3	SunPower	62.7	SunPower	102.0	BP Solar	148.1	Motech	337.5	Kyocera	630.5
10a							Mitsubishi Electric	148.0				
Ttl. Ship.	1407.7		1984.6		3073.0		5491.8		7913.3		17339.0	
Ttl. Top Ten		1137.5		1567.1		2090.2		3434.5		5275.5		10533.6

facilities in Malaysia. Irrespective of specific manufacturers, the compound annual growth rate for the top ten for the five year period from 2005 through 2010 was 56%, while the CAGR for all manufacturers for the same period was 65%. Table 1 presents the top ten manufacturers from 2005 through 2010.

Regional Shipments

2010 was an amazing ride for the PV industry replete with soaring demand, anxiety over decreasing incentives, in the U.S. anxiety over the potential end of the grant in lieu of ITC, and abrupt retroactive changes for programs in Spain and the Czech Republic. Manufacturers experienced raw material shortages, coped with crashing prices and domestic content requirements. In the U.S., lawsuits to halt future installations on public lands sent shudders through the solar community (all technologies). Bankability was a roadblock for new entrants. Along with strong demand came speculation and quality problems and of these two concerns, quality problems are the biggest threat. In the U.S., the potential end of the grant in lieu of ITC led to frantic buying so that investors/installers could qualify before the end of the year. The PV industry grew from megawatt level demand to multi-gigawatt demand in just a few years – in 2003, demand was 675-MWp – and, unfortunately, it grew up without maturing.

Supply and demand are partners, that is, if it was supplied, it must have been demanded (or bought). Installations are a different, specific metric. Typically, installations lag shipments. In 2010, installations were ~98% of shipments, which is extraordinarily high. Taking the 1.1-GWp of inventory held on the demand side at the beginning of 2010, installations are still quite high. Unfortunately, with quality problems taking 1% to 2% of shipped modules out of the field, and with installation quality problems in Italy and France, it will be some months before an accurate installation figure is established.

CSP/CPV/PV CONFERENCE CALENDAR

2011	Conference and Contact Information	Location
March 8-10, 2011	Photovoltaics World Conference & Expo 2011 Kay Baker phone +1/918/8319-160, fax -875 headquarters@PennWell.com www.pennwell.com	Tampa, Florida, USA
March 9-10, 2011	2011 Clean Energy Workforce Education Conference Phone: +1 518 4586059 E-mail: infoirecusa.org URL: irecusa.org/irec-programs/workforce-development/2011-clean-energy-workforce-education-conference/	Saratoga, NY, USA
March 10-11, 2011	PV Power Plants 2011 – EU Phone: +49 30 726296373 Fax: +49 30 726296309 E-mail: janos.buechnersolarpraxis.de URL: www.solarpraxis.de/en/conferences/pv-power-plants-2011-europe	Paris, France
March 15-17, 2011	Intersolar China / Solarcon China 2011 Tel: 49 (0) 723158598207 Fax: 49 (0) 72315859828 E Mail: engelhard@solarpromotion.com URL: www.intersolar.asia	Shanghai, China
March 17-18, 2011	High-efficient Thin Film Solar Summit 2011 Phone: 86-21-5155 5555 E-Mail: elinayan@cbichina.com URL: thinfilm.cbichina.com	Erdos, China
March 17-20, 2011	New Energy Husum 2011 Phone: +49 4841 902 0 Fax: +49 4841 902 246 E-mail: infomessehusum.de URL: www.new-energy.de	Husum, Germany
March 21-25, 2011	The 14th Annual Power and Electricity World Asia Phone: +65 6222 8550 Fax: +65 6226 3264 E-mail: yeeling.chuaterrapinn.com URL: www.terrapinn.com/2011/asiapower/	Singapore
March 23-24, 2011	Solar Power Finance & Investment Summit 2011 Phone: +1 818 8884444 Fax: +1 818 8884440 E-mail: mailinfocastevents.com URL: www.infocastnetwork.com/index.php/conference/439	San Diego, CA, USA
March 23-26, 2011	Energising South East Asia 2011 Phone: +61 8 9228 1292 Fax: +61 8 9228 0597 E-mail: adminwasea.com.au URL: www.energisingsea.com.au	Perth, Australia
March 24-26, 2011	Impianti Solari Expo Tel: 39 023 320391 E Mail: info@senaf.it URL: www.senaf.it	Parma, Italy
March 29, 2011	Solar UK Conference 2011 Phone: 44 (0)1923 690200 E-mail: sm@angelbcl.co.uk URL: www.solar-uk-conference.co.uk	London, United Kingdom

CSP/CPV/PV CONFERENCE CALENDAR

2011	Conference and Contact Information	Location
March 29-30, 2011	Utility Scale PV Phone: +44 2070990600 E-mail: infogreenpowerconferences.com URL: www2.greenpowerconferences.co.uk/EF/?sSubSystem=Prospectus&sEventCode=SP1103IT&sSessionID=30a47772b5f77b1d30b5841c06beb40f-1647224	Milan, Italy
March 29-31, 2011	Solar World Africa 2011 Tel: 27 11 5164077 Fax: 27 11 4636000 E Mail: brendan.harington@terrapinn.co.za URL: www.terrapinn.com/2011/solarafrica	Johannesburg, South Africa
March 30-31, 2011	5th China New Energy International Forum Phone: +86 10 63100807 Fax: +86 10 63107703 E-mail: zhouyangcnecc.org.cn URL: www.neforum.cn/2010/cn/	Beijing, China
31th Mar.-1st April, 2011	3nd PV Summit Asia Phone: +86 21 62278218-201 Fax: +86 21 62278358 E-mail: zoey.yaomerisis-asia.com URL: www.merisis-asia.com/pv2011	Beijing, China
March 31th.- April 3, 2011	2011 EVER Monaco International Exhibition & Conference on Eco-logic Vehicles & Renewable Energies Phone: +377 97 775421 Fax: +377 97 775422 E-mail: napoleonever-monaco.com http://www.ever-monaco.com	Monaco
April 3-5, 2011	Conference: PV America Solar Energy Industries Association (SEIA) Emily Brown phone +1/202/62877-45, fax -79 E Mail: info@seia.org URL: events.jspargo.com/seia09/public/enter.aspx	Philadelphia, Pennsylvania, USA
April 4-6, 2011	International Conference on Concentrating Photovoltaic Systems NREL E-mail: info@cpv-7.org http://www.cpv-7.org/cms	Las Vegas, Nevada, USA
April 4-6, 2011	European Photonics Industry Consortium Exhibition and Conference Phone: +33 1 4505 7263 E-mail: pearsallepic-assoc.com www.epic-assoc.com/sources/images/gp_exhibitioncall.pdf?ftopus=6f1cbe3777f0f7e0	Berlin, Germany
April 5-6, 2011	Printed Electronics & Photovoltaics Europe 2011 Phone: +44 1223 813703 E-mail: c.clareIDTechEx.com URL: www.IDTechEx.com/Dusseldorf	Dusseldorf, Germany
April 5-7, 2011	PHOTON's Photovoltaic Technology Show 2011 Europe PHOTON's 8th Solar Silicon Conference PHOTON's 5th PV Production Equipment Conference (c-Si, thin film) PHOTON's 5th PV Investors Conference PHOTON'S 4th Solar Electric Utility Conference Moritz Dieck phone +49/241/4003-0, fax -300 moritz.dieck@photon-expo.com www.photon-expo.com	Stuttgart, Germany

CPV CSP PV Combination of Technology

Bimonthly Solar Industry Update

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