

Solar energy: photovoltaics

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AFTER YEARS OF DOUBLE-DIGIT GROWTH, the modern incarnation of the solar industry has run into its first major market cycle. Limited credit, jittery customers, and currency fluctuations have severely hit PV (photovoltaic) vendors. Gartner estimates that the worldwide PV market reached 5.4 GW and \$16.3 billion in solar-cell revenue in 2008 and forecasts that PV-solar-cell revenues will

decrease by more than 50% in 2009.

Three major trends will drive the vendors in the PV industry: the continued importance of government subsidies for PV systems and other renewable energy sources, power shifting downstream toward financiers of PV systems, and the adoption of downstream vertical strategies for PV companies.

The market is still evol-

ing and continues to show some volatility in the rankings (Table 1). Although all the companies had significant growth, Trina Solar grew the fastest in the market as it established a strong sales force in Europe, especially Spain, and operations expansion and solid contracts for raw materials. First Solar was the second-fastest-growing company as it established itself as the cost leader in the industry

with its monolithic-thin-film-module manufacturing process with plants in the United States, Germany, and Malaysia.

The market dynamics for 2009 have shaped up differently from those of 2008. Almost all of the PV-solar-cell companies have shown a significant reduction in both shipments and sales. The only bright spot for the PV-solar-cell vendors is that their material costs have been decreasing in parallel with their sales, though several of them have had to go through legal action to renegotiate their materials contracts. Only First Solar, which arguably has a compelling price position and industry-leading costs, had greater revenues in the first half of 2009 than those in the first half of 2008. First Solar is shaping up to be the market-share leader for the industry, but, even so, it has had to finance some of its projects and recently introduced a rebate program in Germany for free field and commercial rooftop projects.

TABLE 1 TOP 10 PHOTOVOLTAIC-SOLAR-CELL VENDORS

2008 rank	Company	2007 revenue (\$ billion)	2008 revenue (\$ billion)	2007 to 2008 change (%)	2008 market share (%)
1	Q-Cells	1.2	1.7	44	10
2	SunTech Power	1.1	1.5	43	9
3	Sharp	1	1.5	47	9
4	First Solar	0.5	1.2	142	8
5	Yingli Green Energy	0.5	0.9	86	5
6	JA Solar	0.4	0.8	103	5
7	SunPower	0.3	0.7	NM	4
8	Motech	0.4	0.7	78	4
9	Kyocera	0.4	0.7	37	4
10	Trina Solar	0.2	0.6	176	4
	Others	3.9	6	52	37
	Total market	9.6	16.3	68	100

Source: Gartner, August 2009