



SILVIA QUANDT
RESEARCH GMBH

SECTOR



SOLAR ENERGY – UPSIDE FOR DOWNSTREAM

- _ WITHIN THE PHOTOVOLTAIC MARKET, WE FAVOUR THE DOWNSTREAM SEGMENT OVER THE UPSTREAM SEGMENT, AS ITS COMPANIES ARE LESS EXPOSED TO THE ANNOUNCED CUTS IN FEED-IN TARIFFS FOR GERMANY
- _ A CRITICAL SUCCESS FACTOR FOR DOWNSTREAM PLAYERS ARE A HIGH SALES EXPOSURE TO THE ROOF-TOP MARKET WITHIN GERMANY, AS WELL AS A HIGH SALES EXPOSURE TO COUNTRIES WITH ATTRACTIVE FEED-IN TARIFFS
- _ LOW VALUATION REFLECTS THE MARKET'S MISPRICING OF ATTRACTIVE RISK / RETURN PROFILES OF SELECTED COMPANIES
- _ BUY RATINGS: CENTROSOLAR, COLEXON ENERGY, PAYOM SOLAR, RALOS NEW ENERGIES AND SOLAR MILLENNIUM

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Investment Summary

The impact of redone German FITs on PV stock positioning in the German sector is not a straightforward thing. The tougher tariff environment has implications, mostly adverse to many companies as it is cutting IRR levels and affects demand. The impact depends on whether the industry is forced to cut ASPs beyond expectations and H2 volumes depend on industry timing to lower ASPs.

— Volume and price drop in solar modules (ASPs) in H2 2010 as well as dropping orders for PV installations in general, albeit roof-mounted systems will still suffer less than ground-mounted systems. We estimate that roof-mounted PV systems account for approx. 80% of total installed PV capacity in Germany. We reckon this share to rise in the future as new ground-base PV installations are unlikely to be ramped up further due to the lower FITs paid for such projects (as IRRs will drop in this market segment). But we see scope for value enhancement as solar companies are seeking higher exposure to foreign markets which are offering attractive FITs (for instance, France, Italy, Bulgaria)

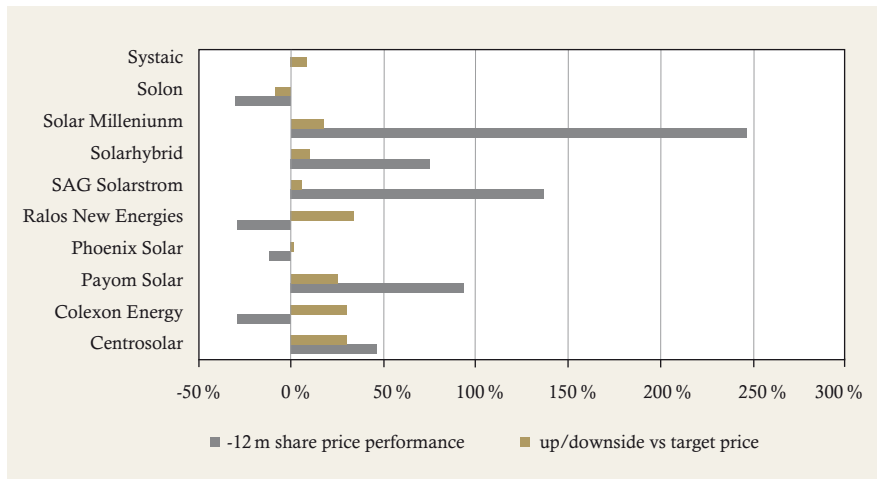
— Margin erosion to occur post the cut in FITs in Germany becoming effective 1 July this year, although the magnitude of downside will depend on the level of price erosion in module prices. Assuming prices for ASPs will drop c20% this year as they did in 2009 (versus 2008), we believe erosion of cash margins will be cushioned (module cost represents around 50 - 60% of the total installed cost of a Solar Energy System).

— We believe self-consumption of generated solar PV electricity in Germany will play a larger role in the future after the government has lifted the rate for solar PV electricity that is self-consumed, as part of the new FIT regime. We do not share doubts of self-consumption of PV electricity will play no tangible role as a driver for roof-top PV solar installations for lacking broad deployment of storage systems, e.g. batteries. We rather expect the new tariff to create some offsetting potential in the near-term from the roof-top mounted PV systems market segment. In addition, demand shall also be supported, we reckon, by the extension of the maximum size of PV systems subsidised from 30KWp to 800KWp.

— We believe low or reasonable financial leverage is imperative to fund larger PV power plant projects in the future, given the higher content of equity/cash demanded by debt lenders, namely banks, particularly in the aftermath of the 2008 financial market crash (typically 70-80% debt content now versus 85-90% in the past). Our ratings consequently reflect the financial state of solar companies reviewed in this report.

— **Positively meeting our mix of key criteria for stock selection, i.e. 1) rather low German exposure (at current and/or in the near term), 2) relatively high share of roof-mounted PV business, and 3) good financial share (reflected by net gearing), we rate Centrosolar, Colexon Energy, Payom Solar, Ralos New Energies and Solar Millennium as Buy.**

Share price performance solar peer group, 12 months and expected



Source: Silvia Quandt Research estimates, Reuters

Valuation

We base our sector valuation on a combination of valuation yardsticks. Our PV group trades at a median 2010e EV/EBITDA of 5.5x. To approach fair valuation multiples (at target price) we are taking into consideration operating profitability (EBITDA ROS), net gearing, market capitalization and free float.

Solar Peer valuation

	<i>RIC</i>	<i>Price (€)</i>	<i>Market cap. (€m)</i>	<i>free float</i>	<i>EBITDA ROS 2010e</i>	<i>EV/EBIT- DA 2010e</i>	<i>Net gearing 2010e</i>	<i>% deviation from median EV/EBIT- DA 2010e</i>
Centrosolar	C3OG.DE	3.10	45	56%	6.4%	6.1	85%	11%
Colexon Energy	HRPG.DE	3.24	55	42%	14.4%	6.0	90%	5%
Global EcoPower	GOPG.DE	1.56	29	8%	11.1%	10.0	55%	192%
Payom Solar	P1YG.DE	11.50	52	38%	12.3%	3.6	-73%	-35%
Phoenix Solar	PS4G.DE	27.20	182	93%	7.2%	4.7	-51%	-15%
Ralos New Energies	BGHG.DE	7.80	34	37%	8.6%	3.5	52%	-36%
SAG Solarstrom	SSOG.DE	3.80	47	91%	5.5%	5.5	23%	0%
Solar Millenium	S2MG.DE	28.50	356	78%	17.7%	10.4	69%	88%
Solarhybrid	SHLG.DE	4.60	21	15%	5.8%	1.9	89%	-65%
Solon	SOOG.DE	4.40	121	64%	5.3%	18.8	162%	240%
Systaic	SJKG.DE	4.10	42	59%	7.2%	2.6	-2.6%	-53%
Peer group					8.6%	5.5	55%	

Source: Silvia Quandt Research GmbH estimates, Reuters

General appraisal of PV stocks rests on valuing each companies' exposure and sensitivity to

- _ German solar market (versus foreign markets, particularly France)
- _ Exposure to relatively resilient (to cuts in FITs) roof-top mounted installations (as opposed to ground-mounted)
- _ Financial leverage (critical for financing PV projects which still rely mainly on debt funding)

Germany, exposure to downstream PV clusters, financial leverage, key criteria for stock appraisal

(FY 2010e)	Regional sales split		PV business split		Net gearing
	Germany	Abroad	Roof-top	Ground-mounted/others	
Centrosolar	40%	60%	75%	25%	85%
Colexon Energy	65%	35%	30%	70%	105%
Global Eco Power *)	100%	0%	0%	100%	55%
Payom Solar	75%	25%	75%	25%	net cash
Phoenix Solar	80%	20%	45%	55%	net cash
Ralos New Energies	35%	65%	35%	65%	52%
SAG Solarstrom	40%	60%	50%	50%	15%
Solarhybrid	91%	9%	19%	81%	89%
Solar Millennium	5%	95%	0%	100%	61%
Solon	25%	75%	20%	80%	162%
Systaic	5%	95%	15%	85%	net cash

*) France home market

Source: Silvia Quandt Research estimates, company data

Obviously the metrics are as follows: Below average market capitalization, free float and net gearing trigger ceteris paribus a discount of the fair EV/EBITDA multiple versus the average EV/EBITDA multiple. On the opposite, an above average market capitalization, free float and net gearing trigger a premium of the fair EV/EBITDA multiple versus the average EV/EBITDA multiple. In addition companies with a higher sales exposure abroad deserve a premium over those peers, who have a higher sales exposure in Germany and a higher sales share for ground-mounted systems.

In response to the reduction in German FITs the PV sector has suffered as concerns over future pricing and demand has caused general dislike for solar shares rather than selecting companies' for their position in the PV value chain. We argue that looking closer into business models of the company under review is rewarding and reveals that there is reasonable upside in individual stocks, from low levels.

PV stocks' ratings and target multiples

<i>Company</i>	<i>Rating</i>	<i>Target Price (€)</i>	<i>Up-/downside (%)</i>	<i>Implied Valuation (EV/EBITDA 10e)</i>
Centrosolar	Buy	4.00	29%	6.9
Colexon Energy	Buy	4.00	29%	7.8
Global EcoPower	Neutral	1.90	21%	19.0
Payom Solar	Buy	14.20	22%	4.5
Phoenix Solar	Neutral	27.00	1%	4.5
Ralos New Energies	Buy	10.00	33%	4.5
SAG Solarstrom	Neutral	4.00	5%	5.5
Solarhybrid	Neutral	5.00	9%	2.0
Solar Millennium	Buy	33.00	17%	12.0
Solon	Sell	5.00	18%	19.0
Systaic	Neutral	4.00	8%	2.8

Source: Silvia Quandt Research GmbH

Sector review

In our report we focus on the downstream segment of the photovoltaic value chain. We believe, that the downstream sector offers a higher potential for investors, as its companies are to a lesser extent exposed to the already announced cuts in feed-in tariffs (FIT) for the German market and further to be expected cuts in feed-in tariffs (FIT), in particular if these companies have a lower exposure to the German market. The recent announcement of cuts in German FIT came not exactly as a surprise, as after the election in autumn 2009 the new administration had already envisaged a cut in FIT for 2010.

Feed-in-tariff (FIT) environment: incentives lowered, but regional exposure critical for success

Despite falling production costs in PV manufacturing, governmental support still continues to be a key driver for the industry. Economic viability will thus still depend on incentives like feed in tariffs and various forms of subsidies (VAT reductions, one-off tax exemption et al). Still, regions offering the highest sun irradiation levels like Italy, South France, Bulgaria, and as far as Germany is concerned, its southern parts, are attracting investments in PV projects and are assumed to become stand-alone economic viability. That is, companies with existing projects already installed or planning to ramp up new projects in those areas are less affected by cuts in FITs and other grants hitherto offered by governments.

How do FIT regimes compare among primary EU PV markets?

- Germany has offered rather stable and reasonable IRRs for several years. See our more detailed comments and analysis in the subsequent section.
- France FITs rates offer highest rates for roof-mounted PV installations (€0.42 up to €0.52/kWhr plus indexation) while rates for ground-mounted systems in the range of 0.3140-0.3770/kWhr which still exceed the need tariffs in Germany. France thus should attract more investments in future especially for roof-mounted PV systems. For instance, Centrosolar has a strong foothold in that segment.
- Being the second largest PV market in Europe in 2009, attractive FITs for ground-mounted PV systems are offered (€0.3457/kWhr), apart from very high sunshine levels.
- The Czech Republic offers one of the highest FITs, i.e. €0.4925/kWhr, however, such a rate is required to fuel demand for projects. Expectations are that the country will attract meaningful demand this year and beyond, given the attractive FIT tariffs.
- In Bulgaria, new feed-in tariffs were passed in November 2008 within the Renewable Energy Sources Act. These are valid for a period of 25 years if a PV project is started until 2013. The latest resolution as of March 2009 has set the feed-in compensation for open land at €0.386 / kWh.

Germany: challenging trading environment due new FIT regime

Effective 1 July, German FIT tariffs in Germany were cut, by 15-16%. These cuts are one-off cuts, on top of already confirmed cuts in FITs of 9-11% (see table). Changes from previous recommendations by the government which were communicated in January were 1) roof-top subsidies cuts now level 16% versus 15% indicated before and 2) Greenfield PV installations on agricultural space were completely abolished compared to a cut of 25% indicated before.

In addition to the cuts, the government suggests it will try hard to keep a close eye on PV market growth, seeking 3.5 GWp at maximum for 2010 installations. If installation levels surpass the maximum level a step-up increase of 2% and 3% on the already announced 9-11% cuts in 2010 and 2011 respectively. However, no final target for total GWp volumes for 2011 has been set by the government yet. In 2009 installed PV power in Germany amounted to approx. 3 GWp.

In addition to the FIT cuts, the government is also granting an €0.05/kWh increase for self-consumption of generated solar PV electricity, to €0.08/kWh compared to €0.03/kWh before. The increase will raise the rate for self-consumed electricity which favourably compares to a new FIT tariff as of 1 July 2010 (€0.33/kWh for small installations i.e. <30kW). Because the amount of PV electricity that is self-consumed substitutes expensive electricity from the grid (approx. €0.20/kWh in 2009) we believe self-consumption of generated solar PV electricity in Germany will play a larger role in the future. We do not share doubts of self-consumption of PV electricity will play no tangible role as a driver for roof-top PV solar installations for lacking broad deployment of storage systems, e.g. batteries. Instead, we see noticeable potential in the next years coming from self-consumption by German households because PV electricity will not necessarily need to be stored during nights but will add to peak-load energy consumption which normally occurs during the day.

In addition to the higher rate for self-consumption the German government has extended the maximum size of PV systems from 30kWp to 800kWp which will also affect smaller enterprises in future. We assume the more attractive rates for self-consumption and the broader coverage of potential users could potentially add to greater demand.

What about future IRRs?

In 2009, average IRRs for PV projects leveled at around 10% or discretely more. While at the beginning of the year IRRs around these levels could still be generated despite the 9-11% cuts in FITs, thanks to cheaper material sourcing and price adjustments. The planned reductions in July will cut IRRs by 100-200bps by our estimate. This compares rather favorably to higher cuts assumptions, like 200bps or more, prevailing in the market before the final announcements on FITs were made by the German government.

IRRs offered in foreign markets

The table below shows the IRRs of ground-mounted solar systems in various countries. With the recent cuts in FIT in the German market, IRRs decline steadily. In France, Italy (particularly Sicily) and Southern France, the IRR are by far more attractive, which is obviously a result of a higher irradiation, but also the higher FITs in these countries.

	<i>Sun hours/year</i>	<i>FIT 2010</i>	<i>Revenues</i>	<i>cost per kWp (€)</i>	<i>Margin</i>
Germany (2009)	1000	0.32	320	2400	13.3%
Germany (current)	1000	0.28	284	2200	12.9%
Germany (1 July 2010)	1000	0.24	242	2200	11.0%
France (South)	1550	0.31	487	2200	22.1%
Italy (Sicily)	1700	0.36	612	2200	27.8%
Bulgaria	1600	0.39	618	2200	28.1%
Czech Republic	950	0.48	456	2200	20.7%

Source: Silvia Quandt Research estimates, EPIA

As for business generation we expect a boost to demand for PV installations in Q2 2010, ahead of the cuts effective 1 July. The incremental business then generated could compensate for a rather strong decline in business volumes post 1 July. That is, third quarter performance should be very weak due to possibly buoyant ordering in Q2, in order to catch the old tariffs.

We would expect that average PV system prices will come down by 10-15% in 2010. This should still keep IRRs and margins attractive from a PV producer's point of view since module prices are poised to slip as well. We expect another decline for the latter in the high teens for 2010 versus 2009, with the brunt of decrease likely to occur in the second half of 2010, with the new German FIT tariff regime in place. Hence, as a result, German PV producers may take some comfort from this likely margin trend with some potential for positive surprise, that is, even better performance, still offered for the Q2 interim.

German FIT tariffs, old and new

<i>PV application</i>	<i>Duration (Years)</i>	<i>FIT 2009 (€/KWh)</i>	<i>FIT 2010 old (€/kWh)</i>	<i>y-o-y (%)</i>	<i>FIT 2010 new (€/kWh)</i>	<i>y-o-y (%)</i>	<i>FIT 2010 new/ FIT 2010 old</i>	<i>FIT 2011 (€/kWh)*</i>	<i>y-o-y (%)</i>
Roof-top									
< 30kW	20	0.4301	0.3914	-9%	0.328776	-24%	-16%	0.3027	-8%
< 100 kW	20	0.4091	0.3723	-9%	0.312732	-24%	-16%	0.2880	-8%
< 1000 kW	20	0.3958	0.3523	-11%	0.295932	-25%	-16%	0.2725	-8%
> 1000 kW	20	0.3300	0.2937	-11%	0.246708	-25%	-16%	0.2271	-8%
Green field									
Open field	20	0.3194	0.2843	-11%	0.2417	-24%	-15%	0.2199	-9%
Agricultural **)	20	0.3194	0.2843	-11%	0.0000			0.0000	

*) based on the assumption of a 9% FIT decline if installed capacity 2.5 – 3.5 GWp in 2010

**) PV installations on agriculture ground approved before 1 Jan 2010 and meant to feed into the grid until year end 2010 will continue to receive old

Source: Bundesnetzwerk

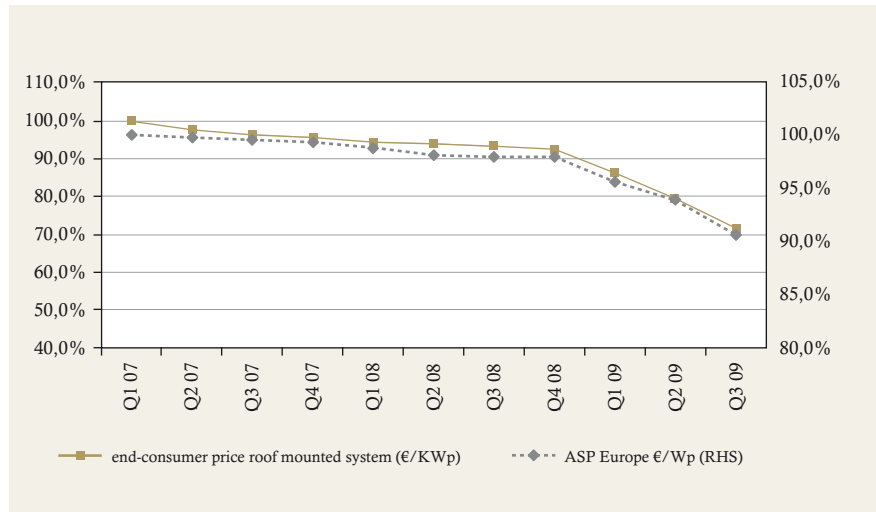
Being a downstream PV producer will be critical for future success

Given the new FIT tariff system soon to become effective for German PV producers, we argue that attractive margins could still be possible if ASP prices continue to fall. In 2009, PV producers reaped great benefits from a strong decline in module prices, in excess of 20% y/y in certain cases. For 2010 we expect ASP prices to further slip, probably by as much as 15-20% relative to 2009 levels.

We expect margins for downstream players, i.e. those covering the middle- to upper end of the PV value chain, to be rather insulated from the module ASP decline. Price support incentives like attractive FITs found in, for instance, France (roof top), Italy and Bulgaria, offer shelter from the price mechanism transfer further down the value chain (i.e. "upstream" clusters: cells, modules getting cheaper). Further, reasonable service content in PV projects (such as maintenance, service and operating IPP units) will further stabilize margins and provide steady cash flow generation.

According to our nomenclature which is shown below, these include distributors (wholesalers), project developers (ground mounted and roof top) and solar power utility (i.e. IPP, Independent Power Producers). On the contrary we believe upstream manufacturers (e.g. cells, wafers, and modules) are likely to be hit hardest this year due to the continued price erosion for their products, thanks to fierce competition and additional supply hitting the markets. There will also be incremental supply coming to the market in the course of 2010 and beyond as particularly Asian module production will be seeing meaningful expansion. Still, Chinese module makers will be less impacted due to their low-cost position whereas European producers are facing a hard time ahead, due to their high-cost bases.

Price roof-mounted systems follow trend in ASP prices (Europe)

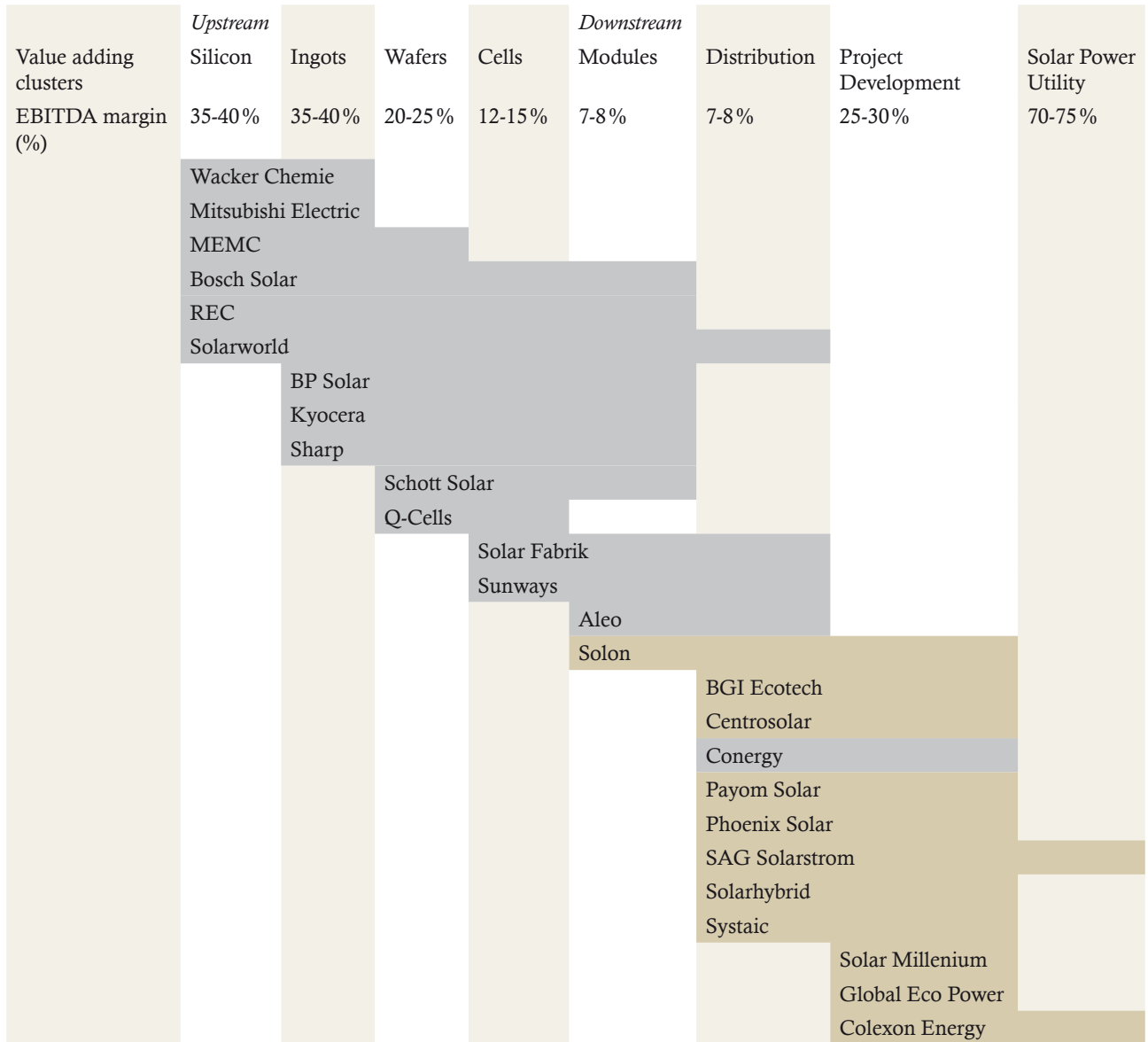


Source: Silvia Quandt Research estimates, company data

Looking at profitability levels across the PV value chain we believe upstream margins as indicated, derived from companies' inputs, are mostly at risk in the context of sliding ASP prices. Downstream margins should stay rather resilient in such challenging trading environment (declining module prices, lower FITs Germany), though. We expect economic incentives varying from country to country; will continue to attract investments as to realize the highest profitability possible. That is, PV companies will continue to build larger exposure, for example, to the French roof-top PV installation segment to generate high IRRs and margins.



PV value chain, downstream clusters likely beneficiaries of tighter governmental incentive programs



Source: Silvia Quandt Research estimates

Basic principles of the PV technology

The photovoltaic effect on which the basic principle of solar electricity is based was first recognized by the French physicist Alexandre Edmond Becquerel in 1839 and was scientifically explained by Albert Einstein in 1905. When solar radiation hits the photoactive semiconductors of a solar cell, several electrons are put in motion which results voltage. The voltage drop is used to transform radiant energy into electric energy. In order to make it compatible with the current in the grid, it is fed through an inverter which converts continuous current into alternating current. The energy can either be fed into the public energy grid or used in off-grid / stand-alone systems. The latter are not connected to the grid which is why they are predominantly suited for applications in remote regions without grid connection, so that the electricity is directly consumed where it has been generated.

There are three different generations of solar cells. The first generation of “thick” solar cells is made with mono and polycrystalline silicon and was already used in the 1950s. The second generation is thin film cells, which are only up to 1/100th of the thickness of mono- and polycrystalline cells. The third generation of solar cells is also based on thin film technology but consists of organic semiconductors. In the past few years, the latter generations of solar cells experienced a boom, mainly stimulated by the global lack of silicon. Before the emergence of the PV industry, silicon was mainly used in the semiconductor manufacturing process. Hence, there was sufficient supply of high-grade silicon for these purposes. However with the emergence of the PV sector there was a sharp increase in demand and the producers of silicon could hardly cope. Due to the shortage and the increasing silicon prices, the PV industry pursued the search for alternatives and began to invest in the development of thin film cells.

Mono- and polycrystalline cells

At present, mono- and polycrystalline solar cells are the mainly used technologies. In the first step of the monocrystalline cell production process, large blocks of highly pure molten silicon, called ingots, are extracted. The ingots are cut into thin discs, called wafers. In 2009 monocrystalline modules had a market share of some 40 %, while polycrystalline made up for some 50 %. Monocrystalline cells generally have slightly higher efficiency degrees than polycrystalline cells. In commercial use the efficiency degree of monocrystalline cells is about 20%, while polycrystalline cells achieve some 17%.

Polycrystalline cell production results from silicon blocks cast from highly pure silicon. As a result of this simplified production technology, the surface of the material includes defects which are responsible for the slightly lower degree of efficiency. However, the advantage of polycrystalline technology is that the lower price of such cells. Both technologies are mainly applied on private rooftops, where cells with a higher efficiency are preferred due to the limited rooftop size.

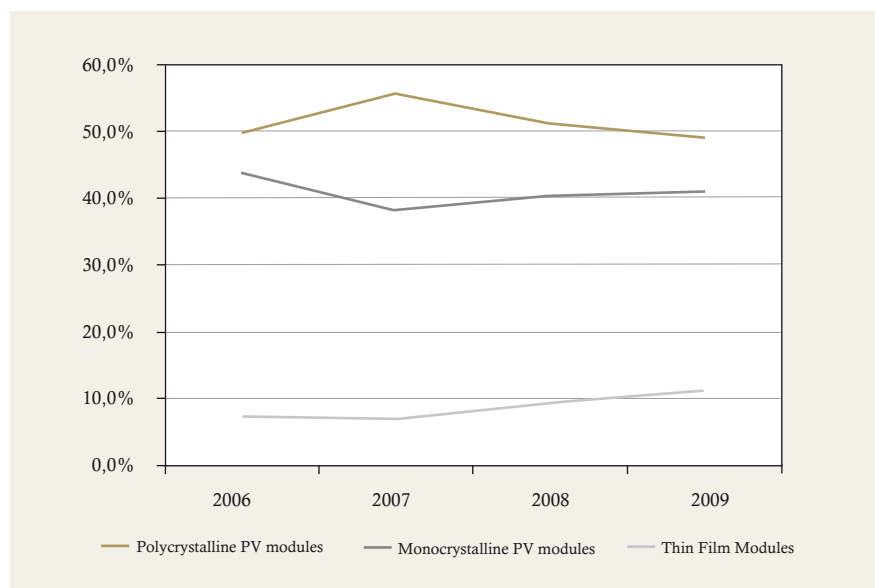
Thin film cells

Thin film cells are continuously gaining market shares over mono- and polycrystalline solar cells. E.g. the market share of thin film cells increased from 7% to 10% between 2006 and 2009. The following thin film technologies are currently produced on a commercial scale:

- amorphous (a-Si) and micromorph (μ -Si) cells
- cadmium telluride (CdTe) cells
- copper indium (gallium) selenium (CIS/ CIGS) cells

The production costs for thin film technologies are significantly lower than those of mono- and polycrystalline solar cells. However, the efficiency of thin film cells is about 10%, i.e. 50% below the efficiency degree of monocrystalline cells. Hence, thin film technology is mainly applied on large-scale industrial rooftop plants or in open spaces where the lower efficiency is compensated by bigger spaces and lower prices. Moreover, thin film cells are rather sensitive to heat. In case of strong radiation, which causes obviously higher temperatures at the surface of the cell, the efficiency degree declines by 0.5%-points per 1°C higher air temperature.

Technology split in Germany



Source: EuPD Research, Silvia Quandt Research estimates

Amorphous and micromorphous solar cells (a-Si/ μ -Si)

Amorphous silicon solar cells are the most common thin film technology. In the production process the silicon is either applied on coated conductive glass or on flexible substrates, e.g. metal. Tandem cells, also called double-decker cells, are a variation of this technology and consist of two amorphous and two micromorph silicon layers. Amorphous silicon cells achieve efficiency degrees of some 7%, while tandem cells are about 9%. Amorphous silicon cells are characterized by low material costs and are suited for diffuse lighting conditions as well as locations, where sunlight rays hit at suboptimal angles. Moreover, they offer stable yields at least 10 years. The degradation, i.e. wearing out of the cells characteristics of thin film does not become significant until then. The major disadvantage of amorphous and micromorph solar cells is their much lower efficiency; which is about 50% lower than conventional crystalline silicon cells.

Cadmium Telluride (CdTe) cells

Cadmium telluride cells are the thin film technology which has achieved to date the highest market penetration of all thin film technologies. Thin layers of cadmium telluride are coated on the substrate. These cells achieve efficiencies of between 9-11%. The cells have the advantage of low production costs because of the fast coating process and the low input of raw material. Furthermore, the technology provides relatively high efficiency even under weak lighting conditions, as well as at high temperatures. Hence, they are suited for warm and radiant intensive regions. The main disadvantage of CdTe is that telluride is a rather rare and expensive material and that the heavy metal cadmium is used.

Copper Indium (Gallium) Selenium (CIS/ CIGS) cells

Solar cells can also be made of copper indium (gallium) selenium compound materials, which are considered to be the most promising thin film technology. In the production process, the materials are deposited on the glass surface. The modules reach efficiency degrees of 10% to 12%. The advantage of this technology is based on the combination of its high efficiency and low production costs. Moreover, the technology shows a good efficiency at weak lighting conditions and in a broad range of temperatures. However, the technology has not reached yet a high market penetration. In addition, one needs to keep in mind the very rare raw materials indium and gallium could see price hikes and supply shortages, if production is expanded significantly.

Organic solar cells

Here the semi-conducting materials are based on organic chemistry. The most promising technological approach, the Graetzel cell, is based on the absorption of light via dyes like plant chlorophyll. An alternative technology is based on conductive hydrocarbon polymers. Due to the low efficiency degree of 2-5% and a comparatively fast degradation, potential applications are mainly in the off-grid sector. Moreover, it could be suited for mobile end devices in entertainment and communication electronics. Due to the fact that organic solar cells are only a few nanometers thick the cells are highly flexible and very light. Compared to other solar cells their major disadvantage is their substantially shorter lifespan of just a few months.

Applications & segments of PV technology

The most common application of PV systems in industrial regions is on-grid systems. On the opposite the market share of off-grid systems are only marginal with applications being installed in remote regions and in developing countries. More importantly, the segments for small private systems and commercially-used open space plants develop differently. Hence, when looking at different regional markets, it is necessary to consider the different customer segments and application areas.

Regarding the different application areas, Germany stands out for its diversity. The regular framework in Spain has mainly favored the extension of large-scale installations, and has become an example of the consequences of one-way market development, while France mainly focused on small, building-integrated plants. In contrast, the German market developed more heterogeneously and more steadily, as the German promotion scheme did not focus on any specific system type but stimulated the growth of all segments.

Private customer segment

The private end customer segment is the backbone of the German solar industry growth. Until 2008 more than 300,000 plants had been installed on German single family and semidetached houses, as well as apartment complexes and rental property, which add up to a total installed capacity in these segments of some 2.2 GW. Hence, the private end customer segment represents a market share of some 40%. In the private customer segment, PV systems typically have a size of up to 10 kW. Considering the total potential of single and semidetached houses, as well as apartment complexes and rental property of at least 55 GW could be installed on private rooftops. Under optimal conditions, 120 GW could theoretically be installed, which shows that the saturation in Germany is still quite low, at 2-4%.

Commercial segment

The commercial segment includes industrial and commercial buildings as well as public property. Behind the private customer segment, industrial and commercial buildings are the second biggest segment with a market share of currently some 27%. By the end of 2008, 2.0 GW of capacity had been installed in this segment with the average system size in this segment increased from 38 kW to 57 kW within the last five years. With a further 28 GW of capacity remaining theoretically realizable in the commercial sector, this sector offers enormous potential as well.

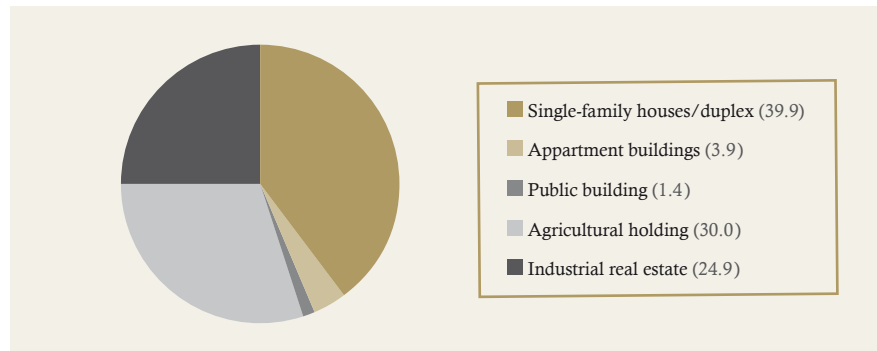
Open space segment

Over the last few years the open space segment accounted for about 10% of the German PV market. Large commercial, open space plants have mainly been installed in Bavaria, as well as Eastern Germany. In 2008 alone large open space plants with a capacity of 177 MW were installed. Usually commercial investors, banking or investor groups as investors in open space projects focus on the return, so that the distribution of profits and short payback periods are the driving force. Moreover, the technology installed has changed over time. While predominantly crystalline modules were installed in open space plants in 2004, thin film modules have displaced them completely in the meantime, despite the fact that the latter are slightly less efficient than crystalline modules, which is compensated by their lower manufacturing costs. Political support is another relevant factor within the open space segment. While e.g. Baden-Württemberg has been rather reserved, Brandenburg has forced the construction of large PV plants. Up to 2020, Brandenburg wants to cover 20% of its primary energy demand by means of renewable energies.

Agricultural segment

After the implementation of the Renewable Energy Act (EEG) German farmers were the first customers to invest considerably into PV plants. Hence, in 2004 they had a market share of 35%. However, in the last two years this segment had lost ground due to the increasing share of large rooftop plants on industrial buildings. Nevertheless, with a cumulated PV capacity of 1.5 GW by the end of 2009, the market share of agricultural PV buildings still accounts for some 25%. Market sources estimate the theoretical market potential to around 25GW. Even though the first signs of saturation can be seen in some German regions – especially in Baden-Württemberg and Bavaria – there is still considerable potential for new installations in the future.

Market share splits in rooftop segment



Source: EuPD Research

International market overview

In the past few years, the development of global PV markets was characterized by constantly high growth rates. With a cumulated capacity of 14 GW and a newly installed capacity of more than 6 GW, the market reached its all-time high in 2009. Despite the market slowdown in 2009 due to the global financial crisis. After the availability of raw materials dominated the development of the market over the recent years, the market has changed last year from a suppliers market to buyers market. While in the past there were significant shortages in the production of solar silicon which were solved through massive expansions in capacity in the downstream levels of the value chain, the increasing volumes led to lower prices for modules and cells and heavy competition. Hence, in 2009 worldwide demand was not able to keep pace with this development, which has led to a significant overproduction and price erosion. Despite the recent turmoil in Germany about the change in feed-in tariffs, we expect the market to continue its normalization, which has already started in Q4 2009 and return to its growth path over the next years.

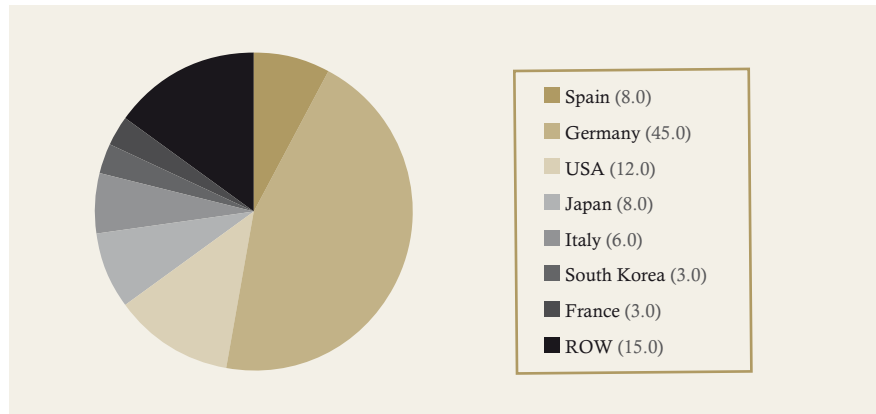
Regional split of annual newly installed PV capacity (MWp)

	2008	2009	2010e	2011e	2012e
Germany	1800	2800	3000	3300	3600
Spain	2700	500	500	550	600
Italy	350	400	700	1000	1500
France	100	200	300	700	1200
Greece	20	50	150	250	500
Rest of Europe	100	200	300	600	850
Europe	5070	4150	4950	6400	8250
USA	400	700	1000	2300	3100
Rest of America	30	60	90	120	180
America	430	760	1090	2420	3280
Japan	200	500	700	800	1200
South Korea	100	150	200	250	300
China	80	250	500	700	900
India	20	80	120	200	300
Australia	20	80	120	180	250
Rest of APAC	30	80	100	120	150
Asia Pacific	450	1140	1740	2250	3100
Rest of World	100	150	200	300	500
Total	6050	6200	7980	11370	15130
yoy (%)	133%	2%	29%	42%	33%

Source: Silvia Quandt Research GmbH

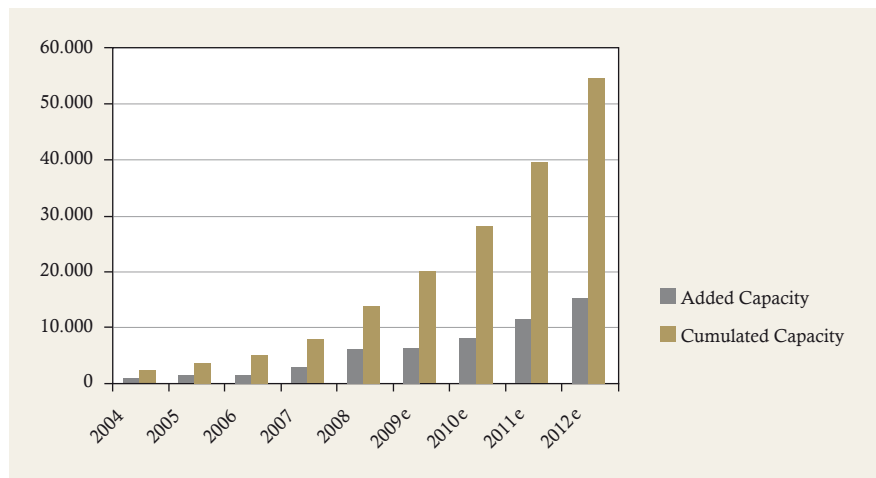
The development in 2009 was further exacerbated by the Spanish PV market which was only partially able to absorb the previous capacity due to a revision of the feed-in tariffs. While 2.7 GW were built in the country in 2008, in 2009 the market has been capped at a maximum of 500 MW. Plants installed after the cap had been reached were significantly less economically attractive as they would have not received government subsidy. In addition, the markets in the USA, France, Italy and Greece have missed expectations.

Global photovoltaics market split 2009



Source: Silvia Quandt Research GmbH

Global PV market (in GWp)



Source: Silvia Quandt Research GmbH

Germany

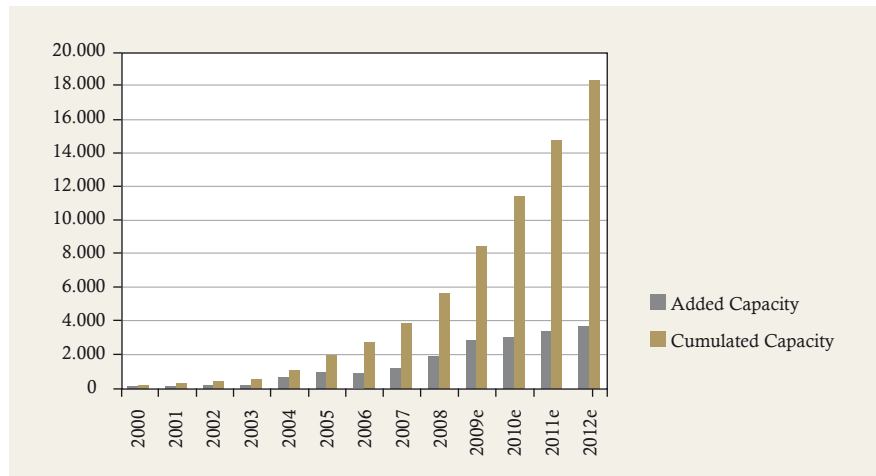
The German PV market has experienced strong growth in the last few years. In the past four years, the market grew by 40 percent on average. In 2008, the newly installed capacity was 1650 MW, while the total capacity cumulated to approximately 5400 MW. The German market was by far the world's biggest PV market despite the relatively weak sun radiation of 900 kWh/m² in the north and 1,250 kWh/m² in the south. Along with a high level of public acceptance for the technology, growth was mainly driven by the stable framework conditions of the EEG.

Since the introduction of the EEG, PV technology has developed from a niche technology into an attractive alternative energy source in the German energy mix which is steadily gaining ground. According to the Bundesverband Solarwirtschaft (BSW) German solar companies' generated accumulated revenues of €9.5bn, of which €3.7bn were accounted for by exports. Moreover, the PV industry has also proven to be a successful job creator with the number of jobs increased from 6,500 to some 50,000 between 2004 and 2009.

In 2009 the German PV market should have reached a capacity of 2800 MW, which would still reflect a market growth of 45% YoY, despite the market pressure in 2009 on the back of the amendment of the EEG and the corresponding cuts in FIT. With the recently announced additional cut in feed-in tariffs and its implementation as of July 2010 the market will face additional price pressure. Nevertheless we expect the German market to have a size of 3000 MW in 2010, which would reflect a growth of 25%.

Regarding the further development of the market from 2011 onwards, we expect the market to grow to a size of 3500 MW in 2012. Our optimism is a result of the fact that the German PV market does not concentrate on one segment only. After 2012, the development strongly depends on the political intent to continue the promotion of the industry in order to successfully guide the market in its transition from a highly-subsidized, policy-dependent market to an independent and free market.

German PV market (in GWp)



Source: Silvia Quandt Research GmbH

Spain

Spain was the most important market for PV products in 2008. The high returns in the open space segment triggered enormous growth which in turn saw the Spanish market become the biggest PV market in the world in 2008. In total, the newly installed capacity reached a volume of 2.7 GW and accounted for a global market share of 43%. Predominantly solar parks were built on just a few sites as the construction of large-scale plants has been very profitable in Spain due its high feed-in tariffs and extremely advantageous geographic conditions. However, the rapid growth of installations surprised the government and lead to considerable expenses for the Spanish state as the promotion is – unlike in Germany – financed through taxes. The old law had been in effect for just 16 months when the promotion of PV was regulated by a new feed-in system as of September 2008. The new scheme provided a cap of 500 MW in 2009 and similar figures for the following years. In comparison to the previous year, the Spanish market leaves a gap of about 2 GW that had to be allocated to other sales markets instead. Hence, the amendment of the Spanish promotion scheme Real Decreto led to the drastic collapse of the market in 2009. According to pessimistic market sources an installed capacity of only 350 MW were expected for 2009. However, there might be a kick start of the market in 2010, as plants approved in H1 2009 must be built in the course of 2010. Hence we expect the Spanish market to have a size of 450 MW in 2010.

Italy

While the favourable geographical conditions of the country and sufficient solar radiation should actually have stimulated the application of solar plants, the domestic PV industry is only slowly getting underway. Italian companies have watched neighboring countries build up a PV industry without becoming active themselves for several years. In particular, the growth of the past few years was curbed by a multitude of bureaucratic hindrances. E.g. the connection to the public grid takes quite long, investors have to pass through long-winded and complex processes on different administrative levels, and authorities are overloaded with regulatory. Hence, there is no powerful industry in the country so far.

According to market sources, the Italian PV industry is two to three years behind the market leaders from Germany, France and the US. Moreover, complete stages of the value chain like silicon manufacturing have been neglected. So far, the market is dominated by foreign companies with local offices, although Italian politics tried to prevent such a development. There are big concerns in Italy that mainly foreign PV manufacturers will take advantage of Italian PV promotion while the domestic industry is left behind. In addition, the feed-in tariffs for photovoltaics have come under criticism. . Consequently, there are fears that the development will be similar to Spain where the industry collapsed after a rapid boom. According to market sources, the Italian market is estimated to 250MWp by the end of 2009, after 340MWp in 2008.

According to various market sources the Italian government is likely to propose a 15-20% reduction for the feed-in tariffs in February 2010, which than could be implemented as of July 2010 or January 2011. While this would be definitely no good news for the Italian solar sector per se, the overall picture for the market would certainly depend on the implemented caps.

France

Compared to other countries France has a different approach. While e.g. the heterogeneous German PV market is based on various applications and system types and the growth of the Spanish market is based on a strong open space segment, the French PV market is dominated by building integrated photovoltaics. Here, the solar plants are not installed on top of a roof but are architecturally integrated into the elements of a roof or a facade. According to the French administration this special application is due to urban architectural reasons and is intended to prevent the uncontrolled development of city centers. However, critics suspect that the policy is actually protectionist hiding behind these aesthetic reasons. Via additional premiums for BIPV plants, conventional rooftop plants, whose manufacturing and distribution is lead by foreign manufacturers, are less demanded. France has established a strong yet highly specialized industry and has successfully compensated for its previous competitive disadvantages. According to market sources 85 MW of capacity was newly installed in France in 2008 and 165 MW had been installed in total by then. In 2009 the French market should have grown by almost 200 MWp. Hence, France is the fourth biggest national market within Europe after Germany, Spain and Italy.

Just recently France has unexpectedly cut its rooftop FIT, with the new rates valid until 2012. The price of €0.58/kWh, the highest in the world, is maintained for facilities with frame integration, when integrated with residential housing, education or health related real estate, up to 3kWh, (in particular building with architectural characteristics, for which the implementation of photovoltaic devices is generally expensive due to technical difficulties and lack of economies of scale). For other buildings (office buildings, industrial, commercial, agricultural) the price is €0.50/ kWh. This framework fosters architectural and aesthetic solutions and, in particular, the artisanal construction sector. Facilities with simplified integration to the frame will receive a new tariff of €0.42 / kWh. The creation of this new tariff will encourage the development of solar buildings (industrial, commercial, agricultural), where fully integrated solutions are not fully possible. The ground facilities will still benefit from the tariff of €0.314 /kWh. In addition, ground facilities with a capacity greater than 250 kWp, the price will now vary from €0.314 /kWh for metropolitan areas in sunny regions to €0.377 /kWh for less sunny regions. This differentiation in FIT leads to a better regional distribution of solar power.

Greece

Although the market is still rather small with a newly installed capacity of just about 50 MW in 2009, Greece could face a significant upturn within the next few years. The optimistic outlook mainly stems from two amendments of the promotion of large and small plants in January and July 2009. According to the new regulations, operators of small plants get a feed-in tariff of 0.55 Euros per kWh for 25 years, making the Greek promotion rate significantly higher than in other countries. Moreover, there is no cap for the market. Critics warn that the generous feed-in tariffs could foster a similar development as in Spain.

However, until today the development of the Greek market has been dominated by time-consuming authorization processes. According to industry sources there are already applications for more than 3.5 GW waiting in line at the responsible authority. However, it remains to be seen to what extent the applications will be actually realized. In 2010 e.g. the market is expected to triple to a size of 150 MW, which is still low compared to its potential market.

Czech Republic

The market potential of the Czech market is regarded as the biggest of all Eastern European countries, after the promotion rates were increased in 2007 and the promotion scheme was extended to 20 years. PV plant operators can choose between two compensation models for solar electricity. There is a normal feed-in tariff and a "green bonus" which is paid on top of the normal market price. PV plant owners can take advantage of this as an alternative to consuming the electricity themselves. Moreover, public institutions planning large scale projects with a volume of more than €25m before the end of 2009 have the chance to apply for allowances of up to 80% of the project's costs. Despite these attractive promotion conditions, the Czech market still has to cope with low public awareness of the PV technology. Moreover, the market players have little experience with the technology and often come from other industries, trades and business areas. According to market sources some 35 MW have been installed in the Czech Republic in 2008. For 2009 industry experts expected a newly added capacity of up to 100 MW, which we consider as somewhat ambitious.

Bulgaria

Bulgaria is a newcomer as a market for the PV industry. Until the end of 2009 only 3.5MW have been installed in the country. However, the country offers highly attractive conditions for renewable energies and benefits from superior irradiation with a yearly average of more than 1550 KW/sqm. Within the Renewable Energy Sources Act new feed-in tariffs were passed in November 2008 for a period of 25 years if a PV project is started until 2013. The latest resolution as of March 2009 has set the feed-in compensation for open land at €0.386 / kWh. The national grid is owned by NEC (National Electric Company), basically a state-owned institution. However, in certain regions NEC pursues a leasehold strategy, so that other players can enter the market. E.g. the German E.ON is the grid provider in the Eastern part of Bulgaria.

USA

For many years the US market has been regarded as one of the most promising PV markets. But only after President Obama's election and his announcement of his ambitious renewable energy plans, the USA could really see a trend reversal. The US market has an enormous potential which so far could not be accessed. Currently the US PV market is still characterized by a strong regional concentration. Regions like California, New Jersey, Colorado or Nevada dominate the market while other regions hardly use solar electricity at all. In 2008 67% of all PV installations in the US were installed in California, while New Jersey, the second biggest location for PV in the US had a market share of 9%, followed by Colorado 5%. After the introduction of the Investment Tax Credit (ITC) system in the previous year, the US market is expected to grow by up to 50%. However, in 2009 the US market continued to play only a minor role in international PV business, with a newly installed capacity of 800 MW. According to market sources the annual capacity could increase up to about 2,500MW by 2012, which would then make the US market the world's biggest PV market.

China

So far Chinese PV companies have many times benefited from the booming PV markets in Europe. Due to the lack of domestic market, the Chinese industry strongly depends on the export and has been particularly affected by the overcapacity in 2009. Up to now, China has failed to develop an efficient concept that could stimulate the domestic demand. All in all, approximately 180 MW has been installed in China so far. The promotion scheme announced by the government in March 2009 is considered as first attempt to set up a long-term PV promotion scheme. According to the regulation, only plants of at least 50 kW get an investment grant of €2.31 per Watt. A further premise is that the plant is installed on or in a building. Thus, the focus of the promotion is set on building integrated photovoltaics. There are also requirements regarding the efficiency degree. Monocrystalline modules must have an efficiency of at least 16%, while polycrystalline must be at least 14% and thin film modules at least 6%. A further requirement of the promotion scheme is that priority is given to installations on public buildings like schools, hospitals or governmental institutions. In contrast to that, open space plants and smaller plants for private customers have not been considered up to now. In fact, an additional tariff for open space plants is currently being discussed, but a final decision is still to be made. Moreover, the program has been restricted to installations in 2009. For 2010 the government is to decide on further promotion schemes, which are not announced yet.

Japan

In the beginning of 2009, the Japanese government renewed its promotion program for photovoltaics. Due to its former program, which expired in 2005, Japan has been the country with the highest installed capacity for many years. So far 1.7 GW have been installed. In 2004, Japan was overtaken by Germany and since then, Japan's significance has declined. In 2008 approximately 180 MW were installed. The new promotion scheme from the beginning of 2009 covers a capacity of about 500 MW, which is expected to be accomplished by the end of 2009. Due to the size of the domestic PV industry and the huge public interest in modern CleanTech technologies, the program is expected to be extended in the following years.

South Korea

Previously South Korea intended to increase its cumulated PV capacity up to 1.3 GW by 2011. However, in recent years, the country gave up this plan. Thanks to the introduction of feed-in tariffs, an estimated 200 MW could have been installed in South Korea by 2008. Since then it has been clear that the feed-in tariff system would be abolished and be replaced by renewable portfolio standards from 2012 onwards. According to the standards, energy suppliers have to integrate a certain amount of electricity from renewable energies into their energy mix, which has to be increased to 11% by 2030.

According to these government plans, not even 2 GW of photovoltaics will be realized by 2030, much less than originally planned. The main reason for the amendment of the feed-in tariffs is the high state costs for the promotion of solar electricity. Like in Spain, the South Korean feed-in tariffs were covered by tax revenues. In the long-term, the new strategy in South Korea is the extension of nuclear power. The plan is to increase the country's nuclear share from almost 15% in 2007 to 28% by 2030. Nevertheless industry experts believe that a newly installed capacity of 300 MW is possible until 2012.

India

India provides enormous growth potential, set to surge from a mere 20MWp installed PV capacity at current to 20GWp in 2020. The Indian government is very determined to fight global warming, aiming to establish solar power equivalent to 10-15% of currently installed electricity. Solar radiation in India is very high. For instance, highest radiation exceeds average German rates (about 1,000kWh per m²) by approx. 130% (at approx. 2,300kWh per m²).

Solar thermal technology

Solar collectors

In solar thermal energy generation, solar collectors serve as a medium to catch the energy of the sunlight. In these systems sunlight heats up a carrier medium, either water or a mixture of water and antifreeze, up to 90°C before a collector pump transports it to a buffer storage tank. Then, a heat exchanger transfers the energy to the tap water in the reservoir which can then be taken from the water circuit. Alternatively, a combined storage tank can heat up the tap water but is also circulated through radiators.

Solar collectors can be differentiated into flat plate and evacuated tube collectors that either requires a vacuum or an absorber tube for insulation. Moreover, there are hybrid forms of vacuum and flat plate collectors and low temperature absorbers, which do not need any insulation and are usually installed to heat swimming pools.

Flat plate collectors

Flat plate collectors are far more widely used, as they are about 30% cheaper than vacuum collectors. In Germany, e.g. there are approximately ten times more flat plate collectors installed than vacuum collectors. The basic component of the flat plate collector is its flat, plane absorber surface. In contrast to tube collectors, flat plate collectors can be used without curves and additional reflecting surface. However, the main difference between both types is their kind of insulation. While flat plate collectors, also called "non-evacuated" collectors – use mineral cotton, closed cell cellular glass or polyurethane foam for insulation, the more expensive vacuum collectors use airless tubes with an absorber in the inside for reducing heat losses. Especially at high temperatures, the efficiency losses of flat plate collectors are much higher than those of vacuum tube collectors. Today the majority of absorbers in flat plate collectors consist of darkly coated copper and aluminum sheets that are interconnected with heat conducting tubes. The tubing itself is coated with heat-resistant thermo-lacquer to transfer the heat with as little loss as possible.

Evacuated tube collector

The main difference between evacuated tube collectors and flat plate collectors is the way of insulation. Evacuated tube collectors consist of two interconnected glass tubes that are surrounded by a vacuum. While the inner tube surrounds the carrier medium, the exterior tube is necessary for insulation. Basically, this technology reflects the “thermos bottle principle”. There are two different mechanisms for evacuated tube collectors. Along with directly traversed vacuum tubes, there are also heat pipes that rely on condensation for energy generation.

Both collector types are based on the absorption of the sun and the heating of a carrier medium. However, while the heat in evacuated tube collectors is contained and transmitted by a carrying fluid located in the absorber, the heat in the heat pipes is generated by water or alcohol steam in a high-pressure atmosphere.

Air collector

Air collectors are the third type of solar collectors. While they do not use any liquid as carrier medium but air, their structure is similar to the other collector types. Air collectors also have a metallic, darkly coated heat absorber, which catch the light and transfer it to the air as the carrier medium. As the energy in the air can only be stored for a limited time there are also two different kinds of air collectors in order to cope with this challenge. The simplest approach for solar heated air is to blow it directly into the building. The other possibility is to withdraw the surplus heat in the air via a heat exchanger and to store it in an insulated water reservoir. In comparison to liquid-based collectors, the disadvantage of this collector type can be seen in the comparatively thick air ducts that are necessary to conduct the heat into the room. However, air tubes have the advantage of having a fast reaction time and can generate heat even in weak sunlight.

Applications of solar thermal technology

In 2007, the global installed capacity of solar thermal cumulated to 147 GWth or a collector area of about 210m sqm. The largest market is Asia, especially China and Taiwan where some 80 GWth were installed. At the same time, Europe had an installed capacity of 16 GWth and Japan of 5 GWth. While these markets are mainly dominated by plants for tap water and space heating, the US and Canada primarily use solar thermal for pool heating.

Water and space heating

The biggest proportion of the energy demand of a household is reflected by the provision of warm water and heating of the living rooms, in particular in the cold months. Basically, the initial investment for purchasing a solar thermal plant is quite low and on top of that the purchase is also subsidized by the state. As a result, end customers of solar thermal plants can make profits quite quickly. The initial investment for a four-person-household amounts to €6-10k depending on the collector type, plant size and installation costs. Moreover, banks often offer attractive financing options for home owners and people who want to purchase a house. Depending on the configuration of the plant, up to 100% of the household's demand for hot water can be covered.

Solar cooling

In contrast to solar space heating which is predominantly used in cold seasons without much solar radiation, solar cooling is used in summer. In times of high solar radiation, the temperatures in buildings, offices and warehouses increase and simultaneously cause a higher energy demand. The high temperatures can be reduced via solar thermal absorption plants. In contrast to the thermal heat generation, solar cooling does not have to cope with storage as the high energy demand for cooling correlates with the high solar radiation and the high temperatures.

Systems for air dehumidifying and cooling are based on the principle of adsorption and absorption. Some 60% of all large solar cooling systems are installed in office buildings. A further 15% were installed in research and teaching facilities and 10% in cooled factories. The rest spread over hospitals, hotels, sport facilities or other public buildings.

Industrial process heat

Solar thermal power can also be used in industrial processes that are based on heat energy, e.g. in food processing or industrial cleaning processes. In coastal regions, solar thermal is also widespread for the desalination of sea water. Hence, extensive energetic processes can be accomplished at high efficiency rates. However, such applications are still niche technologies.

Market overview of solar thermal technology

The global market for solar thermal applications is still dominated by smaller plants that are mainly used in the private housing sector. According to market sources, such plants on single and semi-detached houses have a share of some 90% of the total European market, while the remainder is made up of larger housing units, mainly office and industrial buildings. Interestingly, China currently dominates the global market for solar collectors for home use: on 2007 a cumulated capacity of about 80 GWth was installed.

The major industrial application of solar thermal for means of electricity generation is related to concentrated solar power plants; see our separate chapter on Concentrated Solar Thermal Power (CSP).

Applications for conventional solar thermal plants are mainly in hotels, hospitals, shopping centers or sport facilities. Usually such buildings offer ideal conditions for the application of solar thermal plants. In the field of large-scale plants on public buildings, Spain has particular experience, as the use of such systems is widespread. In the rest of Europe, however, there is still enormous potential in this sector waiting to be opened up.

So far this way of heat generation is still far away from being standard for new buildings. However, there are different national and international attempts to increase the share of solar thermal in the field of residential buildings. The success is mainly based on regulatory factors. Politicians have realized that conventional heat sources have served their time and thus have begun to put a stronger focus on the extension of the solar thermal industry. This development is affected by modern standards for residential buildings, which require a proportion of the energy demand in new buildings to be provided by renewable energies.

Europe

With a market share of 45%, Germany is by far the biggest sales market for solar thermal plants in Europe. In 2008, installations with a capacity of 1.5 GWth were connected to the German grid, reflecting a growth of 120% YoY. Spain, the second biggest European solar thermal market, had a total installed capacity of 990 MWth, reflecting a share of 10% in the European market in 2008. Compared to the previous year, the Spanish market grew by 58%. In total, more than 300 MWth of capacity was installed all over Spain in 2008. However, in 2009, the market growth was much lower, without any specific numbers available so far.

Currently Italy is the third most important location for solar thermal in Europe. The market growth of 30% in 2008, reflecting a newly installed collector surface of 300 MWth, was comparable to the Spanish market. With a market share of 9%, the fourth biggest European market is France. In absolute figures, the French market grew by 270 MWth in 2008, reflecting a 16% YoY market growth.

USA

Thanks to increasing energy prices, growing consumption and promotion schemes and financial incentives, the market for solar thermal plants grew by about 16% in 2008. Hence, more than 62,000 new systems for solar water treatment were installed in the US. As renewable energies are still mainly used in just a few states, there is significant untapped potential in the US. California is the dominating sales market for PV products in the US, with a market growth of 95% in 2008. Interestingly, Hawaii is the most important market when it comes to solar thermal, resulting from the high energy prices there. According to market sources, the newly installed solar thermal capacity was about 100 MWth in 2007 coming from newly installed capacity in the field of water and building heating. A further 700 MWth was added in pool heating systems in the same year. However, in contrast to the growing market for water and building heating, the market growth for solar powered pool heating has been declining since 2006. Since then, the number of new plants has continuously decreased, which might – not at least – result from the crisis of the housing market in the US.

China

With a cumulated capacity of 80 GWth, China is the biggest solar thermal market in the world currently. Solar collectors are primarily used for warm water and heating for residential houses. Although the majority of solar thermal plants are used as decentralized collector units for domestic water heating, there are also larger plants for the generation of industrial process heat. One of the world's biggest plants for process heating has been built on an area of 13,000 sqm in China, which has a capacity of 9 MWth and generates the heat for a textile factory.

Market development of the solar thermal technology

Despite the advantages of solar thermal technology, there are already several countries, where solar thermal is not part of new building standards. However, solar thermal technology is increasingly being used in the commercial sector, at least in the largely diversified European market. While the US market is mainly dominated by installations for pool heating, the widest product range can be found across the European continent. Up to now traditional tap water plants still hold the largest market shares and dominate the market but other systems are moving forward, like space heating in single and semidetached houses, combined systems for hospitals, hotels and schools as well as large-scale plants and pilot projects for air conditioning and industrial process heat.

According to market sources, the market could grow by about 20% on average and could cumulate to 970 GWth by 2030, which then would reflect a market share for solar collectors of some 10% in the European heat demand market. Together with increasing energy saving efforts and stricter regulations for heat insulation in residential buildings, solar thermal heat could even provide 40% of the heat needed. There are even more optimistic expectations that the European solar thermal capacity could rise to 2,600 GWth by 2050. This would mean that 50% of the European heat demand would be covered by solar collectors.

Concentrated solar thermal power technology (CSP)

Parabolic trough plants

This type of plant is the mainly used type of CSP technology and is the only one which has reached the mass market. In 2009 the installed capacity of parabolic trough plants stood at some 500 MW. A parabolic trough plant has several rows of mounted curved mirrors which act as collector and which bundle the light to burning rays on the absorber tube. These collectors can be up to 100m long and follow the sun on one axis. They are able to orientate themselves towards the sun in order to ensure that the maximum energy level is ensured at each time. In the absorber tube the liquid medium is heated up by the sun light to around 400°C. The heated liquid is then fed through various heat exchangers in order to generate steam, which then drives a steam turbine to produce electricity.

Solar tower plants

In solar towers the absorber is located in a tower, which is in turn located in the center of a ring of collectors. So called circular heliostats direct the sunlight onto the furnace, which heats up to temperatures between 1'000°C and 1'300°C depending on the strength of the solar radiation. The energy is bundled in the furnace by a medium, mostly steam or molten salt, which stores the thermal energy as liquid. This liquid is then transported and used in a steam turbine or extracted via re-crystallization. Compared to parabolic trough plants the higher temperatures of solar tower plants allow for a higher efficiency degree. Another advantage of solar tower plants is the smaller footprint, which means that solar tower plants are appropriate for expensive surfaces despite higher initial investment costs.

Parabolic dish plants

Parabolic dishes, also known as solar dishes apply the principle of heating up a liquid or gas heating medium in a receiver. In this type of plant, temperatures easily reach 750 °C. Typically solar dishes have a diameter of several meters. Some types, known as "big dishes" can even be up to 25 meters in diameter. Each collector unit has a nominal capacity of 10 kW but a big dish can be up to 25 kW. The systems are therefore equally well-suited to smaller applications in regions far away from the grid as autonomous units and to solar farms. The modular character of parabolic dishes means that they can be employed more flexibly. Theoretically the plants can be built according to the individual requirements and can be scaled almost as easily. However, the disadvantage is that the costs are still high in comparison to other CSP plants. Despite the marginal market shares, market experts judge the market potential of parabolic dish plants to 1,500 MW in the next few years.

Linear Fresnel reflector plants

This type is based on parabolic trough technology and combines its principles with that of the solar tower. The sunlight is concentrated onto an absorber tube using rows of parallel mirrors. However, instead of using curved troughs the Fresnel reflectors are flat and the absorber tubes are fixed. On the one hand there are fewer surfaces to catch the wind and production costs are lower, but on the other hand there are larger losses in terms of shadowing. The strips of mirror on one axis are combined with a secondary mirror attached behind the absorber to reflect the lost part of sunlight. A further advantage of Fresnel reflectors is the comparably low initial investment sum and maintenance cost. The investment costs are 25% to 50% lower than for parabolic troughs. Despite these cost advantages, the clear disadvantage of this technology is the lower return yield. Furthermore, this technology is only being pursued by only a few companies.

CSP technology value chain



Source: Silvia Quandt Research GmbH

Market overview of CSP technology

Spain

Spain is leading in the deployment of CSP plants. The main reason for the country's advance is that Spain was the first southern European country to introduce a feed-in tariff for CSP in August 2002. After the law was altered several times, plants of up to 50 MW receive a feed-in tariff of €0.289 per kWh for 25 years. Once this time has passed the plants receive a guaranteed tariff of €0.231 per kWh.

The regulations guarantee investors and project developments a high degree of planning security. However, the market for CSP is still capped at 500 MW, and market experts expect that this limit will be reached in 2010. After that, it is unclear what will happen. Given the many plants which are in the process of construction or planning, a decision is likely to be announced in due course.

According to market sources around 750 MW are under construction and a further 1,600 MW are being planned. However, critics fear that the development will be similar to the photovoltaic market, where the Spanish government also brought in new regulations and were then overwhelmed by the demand, which was then followed by the market collapse in 2009.

North Africa

The deployment of CSP in Northern African countries like Algeria, Egypt and Morocco seems highly promising. Algeria enjoys both high solar radiation intensity and large quantities of available space, along with a promotional law to support CSP and a national plan to extend the use of alternative energy. The amount of promotion is in line with current electricity prices and is therefore low when compared on an international scale. The promotion scheme states that 10% of primary energy has to be contributed by renewable energy sources until 2025. Until 2015, 5% of the energy mix should come from solar if the target is achieved. These targets seem somewhat ambitious at a first glance, in particular when compared with the low electricity costs. Despite this, Algeria is seen as one of the most attractive regions for CSP in the world after Spain and the USA.

In Morocco the government has looked more towards wind and water energy. The long coastline provides excellent conditions for the country to use these sources. Regarding CSP, a weak spot of this country is the lack of universal promotional programs to support CSP plants. However, the use of CSP plants in combination with photovoltaic and wind plants in these regions is the topic of intense discussion. The planned Desertec project, which brings together different energy sources to provide electricity to the Mediterranean and northern Europe, is one of the biggest and most promising projects at present.

USA

Due to the favorable geographical conditions in the South West and Mid West and attractive promotional conditions the USA is a highly promising growth market for CSP plants. This is complemented with various development and support programs on a national, state and regional level. However, the variety of support programs and differing regulations in each individual state mean that foreign investors find it difficult to have an exact overview. Market sources judge that in the US there are 450 MW of CSP capacities, mainly parabolic troughs. Moreover, there is a total of 6,000 MW in planned projects in the CSP segment. While many other countries focus on parabolic trough plants, the US are not focusing on one type of CSP technology, but pursue the development both solar towers and parabolic dishes. E.g. in California there is a larger solar tower project, while in Arizona and Nevada there are several projects based on parabolic through technology.

Central & South America

Due to the absence of promotional programs to expand the use of CSP, Brazil and Mexico are rather unattractive locations for the use of CSP. Even though there is no political support at present, the natural conditions in both countries are very promising. In particular in Mexico there should be a significant potential for CSP technology, given its proximity to the USA and the industry located there. Brazil seems not yet to be active in the field of CSP but due to the high population density and strong economic growth the energy requirements will continue to grow. To date, however, the renewable energy mix has been heavily focused on biopower, wind energy and small hydro plants.

Asia

China does not support the development of CSP with its own promotional program but rather has set the basics for the extension of CSP and other renewable with its regulatory environment, e.g. with tax breaks, low-interest credits and direct subsidies for renewable energy system operators. Market experts believe that a CSP capacity of up to 1,000 MW could be installed in China by 2020. However, China has focused more on extending large-scale hydro plants up to now. By 2020, 20% of the country's electricity needs could come from this source, according to industry sources.

In Australia the government is driving forward renewable energies with clear climate targets. The regulatory framework requires that 20 % of primary energy comes from renewable energies by 2020. In addition there are various solar development programs such as the Solar City Initiatives, although currently the focus is clearly on photovoltaic plants. Nevertheless, the intention remains to push CSP forward. Some firms have already announced their projects and plan to build at least 500 MW of CSP capacity within the next five years. It is estimated that the market volume in Australia could be some 1,500 MW in 2015.

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Centrosolar Group AG

	Year end 31 Dec., in €m	2008	2009e	2010e	2011e
Price target 4,00 €					
Up/downside 29,0%					
Rating Buy					
Current price 3,10 €					
Headquarter Centrosolar Group AG München Germany					
IR Georg Biekehoehr g.biekehoehr@go-metacom.de www.centrosolar.com +49 (0)6181 / 982 8030					
Stock data Main Market Regulated Market					
Market cap (m) 45,1 €					
No. of shares (m) 20,33m					
Daily volume (shares m) 0,04					
Indices DAX sector ALL INDUSTRIALS					
Next event FY 09: 18 March 2010					
	Profit loss				
	Sales	333	309	341	385
	y-o-y in %	51.0%	-7.0%	10.4%	12.9%
	EBITDA	21	9	22	28
	EBIT	11	-0	13	19
	EBIT margin in %	3.4%	-0.1%	3.7%	5.0%
	Net income	4	-8	5	10
	EPS SQR (€)	0.25	-0.54	0.24	0.50
	y-o-y in %	200.5%	-315.9%	-144.4%	108.4%
	EPS consensus (€)		-1.87	0.28	0.42
	DPS (€)	0.00	0.00	0.00	0.10
	Payout ratio %	0.0%	0.0%	0.0%	20.1%
	Dividend yield %	0.0%	0.0%	0.0%	3.2%
	Cash flow				
	Net income	4	-8	5	10
	Depreciation/Amortisation	9	9	9	9
	Working capital movements	-11	5	-1	-5
	Operating cash flow	-2	3	15	18
	Net capex	-27	-7	-9	-10
	Free cash flow	-32	-7	6	8
	Free cash flow yield	-35.1%	-16.2%	9.9%	12.1%
	Balance sheet/Key ratios				
	Total Assets	222	204	203	216
	Closing net debt (cash)	-75	-70	-72	-65
	Gearing	73.6%	83.0%	84.6%	77.9%
	Capex ratio (tangible)	32.0%	8.5%	10.4%	12.1%
	ROE	4.3%	-8.9%	5.8%	11.5%
	ROCE	7.8%	-0.2%	8.5%	12.7%
	ROA	12.7%	-0.3%	13.3%	20.1%
	Valuation				
	Enterprise value	34	118	134	131
	Book value	90	86	83	93
	Market cap	92	45	63	63
	EV/Sales	10%	38%	39%	34.1%
	EV/EBITDA	1.6	13.2	6.1	4.6
	PER	26.3	-5.8	13.0	6.2
	PBV	1.1	0.5	0.7	0.7

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Unique strategy for sourcing crystalline solar cells, i.e. sourcing on spot to feed wholesale and distribution business.
- Market for roof mounted systems is set to grow approx. 40%+ p.a. in 2008-11. France poised to stage strongest advance in Europe apart from Asia and the USA; Centrosolar is a leader in roof-mounted PV installments in residential building in France
- Global market leader in protected antireflective (nano) coating of solar glass, the global share 16% is to rise, given margin a possible enhancement through glass coating (nano coating enhances solar power efficiency).

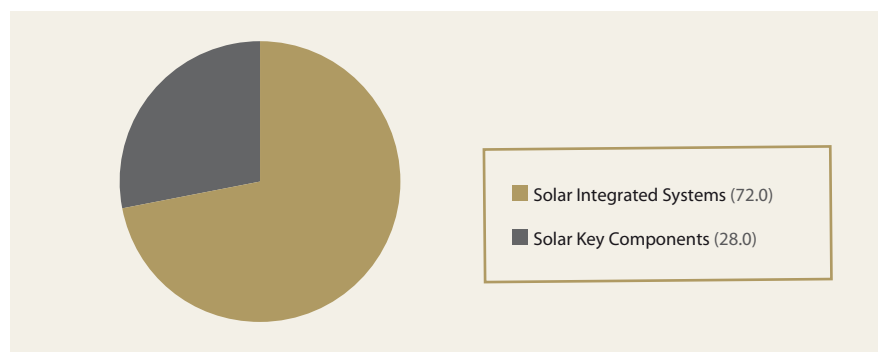
Company structure and strategy

Centrosolar Group AG focuses on the manufacture of solar energy systems for private households. Key pillars of the business are integrated photovoltaic systems, modules, mounting systems and solar solutions. Centrosolar Group AG also produces integrated photovoltaic systems for industrial customers.

We estimate that Centrosolar boasts at least 10% market share in the approx. €1.6-1.7bn German market for roof mounted systems. Major competitors are Solarworld, Conergy (Suntechnics), Schueco, and IBC, altogether (including Centrosolar) fetching at least 50% share in Germany.

The company's two business pillars are Solar Integrated Systems and Solar Key Components.

Centrosolar divisional sales split (2008)



Source: Centrosolar AG

Management

Dr. Alexander Kirsch is the CEO and CFO of CENTROSOLAR Group AG. Since 1998 he has also been a board member of CENTROTEC Sustainable AG for which he executed the IPO of CENTROTEC. Apart from M&A experience he is also carrying out operative excellence projects.

Dr. Axel Müller-Groeling is responsible for strategy and operative management of the company's subsidiaries. He used to be a McKinsey associate partner formerly where he gained more than seven years of experience in the energy and financial services industry. His prime focus within the group is on strategy, risk management and post-merger integration.

Thomas Güntzer by qualification is a lawyer, responsible for International Sales and major projects as well as M&A and Human Resources. He boasts 15 years of experience in investment banking and private equity (Managing Partner with Pari Group and responsibility for private equity at PPM Capital).

Recent performance and outlook

While third-quarter group sales fell short by 10.4% against the comparable period of 2008, reaching €81.5m, sequential growth (q/q) to the tune of 34.9% was posted in Q3. Momentum has clearly gained pace since Q2 2009 when Centrosolar saw revenues slip by 7% y/y while quarter-on-quarter sales fell by 2.2%. Adjusted sales performance (for lost sales generated by Doesburg until June) showing, look even better with Q3 topline down only 2.2% y/y and approx. 31% up q/q. The latter comparison figure shows triple growth from the figure registered in Q2.

Centrosolar excelled at the Q3 stage, recording 13% growth for EBITDA against the same period last year. Implied operating profitability shows a strong c26% enhancement versus Q3 2008, to give 10.7% EBITDA ROS which very favorably compares with 8.5% last year. The latest figure compares with red-inked ROS registered in the second quarter, as well as in the first quarter. First-half results were burdened by the closedown of Doesburg, Netherlands, and the termination of the joint solar cell venture in Portugal. The latter was deconsolidated (at equity stake) at the end of July, hence, charges were full taken into H1 accounts.

Key drivers to the excellent Q3 performance were again buoyant demand for Centrosolar products and services in France, Benelux, and the USA. For instance, French sales almost doubled in the 9 month term while revenues also surged in other European countries (Benelux et al) as well as in the USA. On the contrary, Spain deteriorated against last year's level. Centrosolar generated some 52% of total revenues abroad, reflecting the firm's strategic aim to disproportionally grow non-German markets going forward. Apart from strong top-line performance in these markets, notable relief on cost bills came from the slump in solar cell prices which provided a boost to operating margins.

The firm's in-house production of solar modules in Wismar guarantees very competitively priced material being used by downstream operations with the group. Wismar has become Centrosolar's sole production site for module production, after the termination of the Quimonda joint project in Portugal two years ago, as well as the shut down of the site in the Netherlands last year. The Wismar site is said to boast lowest production costs in Europe in module manufacturing and is therefore a major success factor for Centrosolar helping to add tangible value within the group.

Centrosolar released preliminary figures for FY 2009 revenues which exceeded the previous guidance (€280-290m) by management and consensus estimates. This implies very strong headway was made in the final quarter, showing an increase against the comparable period of 2008 of roughly 20%. Key drivers for growth were higher sales volumes for installed PV systems, rising from 59MWp to 87MWp. International markets contributed disproportionately, accounting for already about half of group business. The shutdown of the Netherland module production site shed approx. €25-30m sales from the 2009 topline, we estimate.

2010 will be become challenging for Centrosolar's businesses, given the cut in German FIT even for solar roof systems. However, the company has gained a bold foothold in France as a leading solar roof system installer, with still generous FIT tariffs offered, compared to any other market. France now accounts for approx. 25% of the total business volume; hence the adverse impact of tougher German FIT regime will be less felt and probably can be even overcompensated in the coming years. In addition, Centrosolar is benefitting from cheap solar cell and module sourcing, only relying on their Wismar module output for in-house processing. We would add at this point that the company has by now implemented their second-generation production runs for nano-coated glasses used for solar panels. This new technology (coating of both sides of the raw glass) should support margins of the Solar components division, despite possibly slower growth in the German PV market (thanks to the lower FIT rewards in Germany).

As a result, we anticipate group finances will be gradually restored over time owing to constantly positive free cash flows in the range of €5-10m p.a. through 2013. As a result, this will also get net gearing to drop to approx. 70% in the same time. Against the background of tougher FIT regimes in Germany, we expect capex to be allocated mostly to dynamic markets abroad, namely France, and onto technology progress,

SWOT analysis

Strengths

- Rather unchallenged niche position in system integration for PV roof systems versus price-led competitors, namely Chinese producers
- Strong exposure to prospering French residential rooftop market, strong tax and feed-in tariff incentives provide boost the volume growth; still generous FIT for roof-mounted PV systems
- Unique nano-coating glass production, provides cost advantages for in-house sourcing

Weaknesses

- Company still over-gearred, 2010 challenging for cash flow generation in Germany

Opportunities

- Foreign PV markets (France, Italy, etc) to record disproportional growth (relative to Germany) in coming years; Centrosolar best positioned in French roof-systems market

Threats

- Further cuts in FIT tariffs, particularly Germans' at risk
- Bank lending restrictions could hamper fund raising for further strong PV expansion
- Sustained drop in oil price could hamper use of clean energy

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	332.6	309.3	341.4	385.4
Costs of sales	-283.0	-227.5	-269.7	-300.6
% of sales	81.5%	76.0%	79.0%	78.0%
Gross Profit	49.6	81.8	71.7	84.8
Gross ROS	14.9%	26.5%	21.0%	22.0%
Other operating income	6.2	7.1	6.6	6.5
Labour costs	-22.9	-23.9	-23.9	-27.0
% of sales	-6.6%	-8.0%	-7.0%	-7.0%
Other operating expenses	-26.9	-46.1	-32.4	-35.8
EBITDA	20.5	8.9	22.0	28.5
EBDITA ROS	6.2%	2.9%	6.4%	7.4%
EBIT	11.2	-0.3	12.8	19.3
EBIT margin	3.4%	-0.1%	3.7%	5.0%
Interest expenses	-7.0	-8.0	-6.8	-6.3
Interest income	0.4	0.5	0.5	0.5
Net interest expenses	-6.6	-7.5	-6.3	-5.8
PTP	4.6	-7.8	6.5	13.5
PTP ROS	1.4%	-2.5%	1.9%	3.5%
Income taxes	-1.1	0.0	-1.6	-3.4
Tax rate	23.9%	0.0%	25.0%	25.0%
Net Profit	3.5	-7.8	4.8	10.1
Net Profit ROS	1.1%	-2.5%	1.4%	2.6%
Minorities	0.0	0.0	0.0	0.0
Attributable income	3.5	-7.8	4.8	10.1
Adjusted Net Profit	3.5	-7.8	4.8	10.1
Total aver. # of shares (m)	14.08	14.53	20.33	20.33
Attributable EPS	0.25	-0.54	0.24	0.50
Adjusted EPS	0.25	-0.54	0.24	0.50
DPS (€)	0.00	0.00	0.00	0.10
Ratios				
ROCE	7.8%	-0.2%	8.5%	12.7%
FCFF return on sales	-2.7%	0.6%	3.0%	3.5%
ROE	4.3%	-8.9%	5.8%	11.5%
Sales/Capital employed (x)	2.31	2.00	2.27	2.53
Interest cover (x)	2.60	0.96	2.88	4.06
Payout ratio	0.0%	0.0%	0.0%	20.1%

Source: company data, Silvia Quandt Research

COLEXON Energy

	Year end 31 Dec., in €m	2008	2009e	2010e	2011e
Price target					
4,00 €					
Up/downside					
23,5%					
Rating					
Buy					
Current price					
3,24 €					
Headquarter					
Colexon Energy AG					
22767 Hamburg					
Germany					
IR					
Jan Hutterer					
ir@colexon.de					
www.colexon.com					
+49 (0)40 / 2800 31 100					
Stock data					
Main Market					
Prime Standard					
Market cap (m)					
55,4 €					
No. of shares (m)					
17,1					
Daily volume (shares m)					
0,02					
Indices					
DAX sector ALL INDUSTRIALS					
Next event					
FY 09: 26 March 2010					
	Profit loss				
	Sales	143	109	218	240
	y-o-y in %	67.5%	-23.6%	100.2%	10.1%
	EBITDA	12	25	31	39
	EBIT	12	19	20	24
	EBIT margin in %	8.5%	17.4%	9.1%	10.0%
	Net income	7	5	7	8
	EPS SQR (€)	1.41	0.65	0.40	0.46
	y-o-y in %	-1072.2%	-53.9%	-38.5%	14.6%
	EPS consensus (€)		0.53	0.09	0.14
	DPS (€)	0.00	0.00	0.00	0.00
	Payout ratio %	0.0%	0.0%	0.0%	0.0%
	Dividend yield %	0.0%	0.0%	0.0%	0.0%
	Cash flow				
	Net income	7	7	8	9
	Depreciation/ Amortisation	0	6	12	15
	Working capital movements	11	-45	0	-10
	Operating cash flow	58	-28	22	18
	Net capex	-0	-5	-30	-20
	Free cash flow	58	-43	-8	-2
	Free cash flow yield	140.5%	-132.6%	-15.3%	-4.4%
	Balance sheet/Key ratios				
	Total Assets	269	325	356	380
	Closing net debt (cash)	-112	-111	-139	-161
	Gearing	93.3%	92.1%	90.0%	118.3%
	Capex ratio (tangible)	0.1%	2.2%	12.0%	7.8%
	ROE	11.1%	3.8%	4.9%	6.2%
	ROCE	11.5%	8.9%	8.0%	9.2%
	ROA	9.2%	7.8%	7.8%	9.0%
	Valuation				
	Enterprise value	-19	-65	188	213
	Book value	97	145	133	121
	Market cap	41	33	55	55
	EV/Sales	-13%	-59%	86%	88.5%
	EV/EBITDA	-1.5	-2.6	6.0	5.5
	PER	5.7	7.1	8.1	7.1
	PBV	0.6	0.3	0.4	0.4

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Balanced portfolio of components & systems and power plants, hence providing valuable integration in the downstream parts of the PV value chain to generate stable earnings and cash flows in the future
- Cost benefits from cheap module sourcing (First Solar) for PV projects relying on thin-film modules
- strong future value enhancement from IPP assets should be reflected in sustainably higher valuation of stock

Company structure and strategy

COLEXON Energy AG is a Germany-based company engaged in the design and manufacture of solar power plants. The Company divides its business operations into the two divisions Project Development and Specialized Wholesale and, since 2009, solar power plants (IPP). Project Development plans and constructs turnkey solar energy facilities, mostly with outputs exceeding 100 kilowatt-peak (kWp), selling them to institutional, commercial and private investors. Specialized Wholesale includes the provision of modules and components for photovoltaic systems as well as made-to-measure one-stop solutions for resellers, installers and specialized solar power businesses.

A special feature of Colexon Energy's business model is the firm's exclusive contract with First Solar, USA, which is the world's largest producer of thin-film modules, valid until 2010. The contract secures sourcing such modules at much cheaper prices than asked for European crystalline modules. The discount prices and volumes granted by First Solar have so far delivered cost advantages relative to competitors, especially rewarding in large-scale PV projects. However, we believe, that sourcing polycrystalline modules elsewhere (for instance, from Moser Baer) should not necessarily incur cost disadvantages for Colexon Energy. Instead, we believe increasing the scope with respect to module purchasing will be advantageous for the company as the share of IPP business and conversion areas will demand more flexibility while attracting higher margins (featuring less impact from material costs).

COLEXON Energy operates internationally through its subsidiaries COLEXON Sainte Maxime Solaire Sasu as well as COLEXON France S.A.S. in France, COLEXON Iberia S.L. in Spain and COLEXON Corp. in the United States. The company is also running a representative office in China.

Effective 14 August 2009 the acquisition of Danish IPP company Renewergy occurred as reverse takeover (for former Renewergy shareholder received more than 50% of the new COLEXON's voting shares, hence reversal was forced by IAS standards), heavily distorting the comparison post transaction. Pro-forma group revenues of the merged entities would perhaps be €70m, according to our estimates for FY 2009 revenues, i.e. €109m.

Long-term, the company has mapped out as the single major goal to become an independent provider of solar power. Coupled to that is the aim to offer solar power at

competitive prices, through economies of scale as the company is installing larger sizes of megawatt solar power in the future. The acquisition of Renewagy will help achieving those goals in the future, also creating major rewards for shareholders as a gradually higher share of rather safe cash flows will be derived from solar power utility units. Consequently, future dividend streams from COLEXON will be more lively and secure, resembling the merits of established utility firms, e.g. E.ON, RWE et al, rather than for renewable industries overall (as yet). Currently, Colexon Energy's IPPs supply to approx. 15,000 households equating to 44MWp at the end of 2009. The aim is to cover more than 60,000 households which needs capacity of some 200MWp, according to the company's mid-term planning (although we have made a rather cautious assumption, estimating only 120MWp will be ramped up for capacity until 2012; hence there is plenty of value upside, should realization of the firm's business plans turns out to be correct).

Management

As the Chief Executive Officer of COLEXON Energy AG, Mr. Preugschas is in charge of purchasing, sales, project implementation and strategic corporate development. Formerly, Mr. Preugschas was the controlling shareholder in the founding of Maaß Regenerative-Energien GmbH (a company that now belonging to COLEXON GmbH), he then ran as its Managing Director and subsequently contributed to Sun Energy AG. The latter became COLEXON Energy AG effective September 2005.

Henrik Cristiansen was appointed CFO of COLEXON Energy in October 2008 and is responsible for finances, controlling, human resources and risk management. Before his appointment he was the Commercial Director of the company. His career covered executive positions at Farmatic Biotech Energy AG and Cleanaway Deutschland AG & Co (later becoming SULO GmbH).

Mr. Volker Hars has become a further member of the Management Board of the company effective last months, mainly be responsible for the business segments' strategy as well as plant operation (IPP). He succeeded Tom Glæsner Larsen, formerly CIO of Colexon Energy.

Recent performance and outlook

For the nine months ended 30 September 2009, COLEXON Energy AG's total revenue increased less than 1% to €43.9m. Net income from continuing operations increased 67% to €5.8m. Total revenue reflects an increase in demand for the company's products and services in the Solar Energy business division across German geographic locations. Net income from continuing operations benefited from increased operating margins, particularly boosted by cheaper solar cell and module prices.

COLEXON Energy AG announced that the Management Board expects turnover (pro forma) of the company to reach between €160m and €180m and EBIT of between €16m and €18m for the full year 2009. At this level of sales volume the company expects to achieve an EBIT increase of approximately 40% (pro forma basis) in comparison to the previous year.

Near-term business growth will be fueled chiefly through international deals. For instance, just lately Colexon Energy sold a PV power plant in South France to Mitteldeutsche Verwaltung & Treuhand with more deals like this contracted until 2011. In addition, Colexon Energy will construct and erect a solar power plant in North Italy with a total capacity of 1 MWp. Completion is expected in H1 2010. Both projects are using polycrystalline modules from Moser Bear which are particularly suitable for high irradiation areas like found in the Southern European rim.

For FY 2010, the company targets PV capacity of 146MWp overall, that is IPP, Project business, and Wholesale, splitting into 24%, 36% and 40% respectively. We believe this target looks achievable although shifts within the regional portfolio may occur, due to the likely drop in business volumes in H2 2010, following the cut in German FITs effective 1 July 2010.

Regarding implied value of Colexon Energy, we argue that increasing the share of IPP as a contributor to the group's bottom line will sure translate into a higher long-term platform for stock multiples. This follows from the assumption of rather compelling operating margins typical for IPP operation, above 60% p.a., the company will be capable to deliver in coming years. We estimate that the share of PV Plant Operation (IPP) of total group business (revenues) will increase from approx. 12% this year to more than 30% in 2013. EBITDA contribution of IPP to the group line will be much higher. We expect IPPs share of group EBITDA to exceed 90% by 2013. This assumption implies that Wholesale margins will shrink in coming years, as well as Project Business's margins.

SWOT analysis

Strengths

- __ Cost benefits from exclusive thin-film module sourcing (First Solar), should support margins in ground-mounted systems outside Germany
- __ Subsidiaries in fast growing markets USA, Czech Republic, which are set to provide strong leverage to future business growth
- __ merger with Renewagy secures valuable platform for future expansion of IPP business

Weaknesses

- __ exposure to ground-mounted PV systems in agriculture in Germany

Opportunities

- __ PV plant operations (IPP) expansion will lift group profitability noticeably in coming years
- __ Expansion of foreign business namely in France and Czech Republic

Threats

- __ Adverse PV business trading environment in Germany for ground-mounted systems from 1 July 2010
- __ Fund raising amidst restrictive bank lending

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	142.7	109.0	218.2	240.3
Costs of sales	0.0	0.0	0.0	0.0
% of sales	0.0%	0.0%	0.0%	0.0%
Gross Profit	142.7	109.0	218.2	240.3
Gross ROS	100.0%	100.0%	100.0%	100.0%
Other operating income	0.8	3.0	2.5	2.5
Labour costs	-5.3	-4.6	-8.7	-9.6
% of sales	-3.7%	-4.0%	-4.0%	-4.0%
Other operating expenses	-10.3	-6.8	-15.3	-16.8
EBITDA	12.4	25.0	31.5	38.6
EBDITA ROS	8.7%	22.9%	14.4%	16.1%
EBIT	12.1	19.0	20.0	24.1
EBIT margin	8.5%	17.4%	9.1%	10.0%
Interest expenses	-1.8	-10.0	-10.0	-12.0
Interest income	0.5	0.5	0.5	0.5
Net interest expenses	-1.3	-9.5	-9.5	-11.5
PTP	10.8	9.5	10.5	12.6
PTP ROS	7.6%	8.7%	4.8%	5.3%
Income taxes	-3.6	-2.8	-2.6	-3.8
Tax rate	33.3%	30.0%	25.0%	30.0%
Net Profit	7.2	6.6	7.8	8.8
Net Profit ROS	5.0%	6.1%	3.6%	3.7%
Minorities	0.0	-2.0	-1.0	-1.0
Attributable income	7.2	4.6	6.8	7.8
Adjusted Net Profit	7.2	4.6	6.8	7.8
Total aver. # of shares (m)	5.11	7.11	17.10	17.10
Attributable EPS	1.41	0.65	0.40	0.46
Adjusted EPS	1.41	0.65	0.40	0.46
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	11.5%	8.9%	8.0%	9.2%
FCFF return on sales	5.6%	11.6%	-3.2%	3.3%
ROE	11.1%	3.8%	4.9%	6.2%
Sales/Capital employed (x)	1.35	0.51	0.88	0.91
Interest cover (x)	7.72	2.90	3.00	3.01
Payout ratio	0.0%	0.0%	0.0%	0.0%

Source: company data, Silvia Quandt Research

Global Eco Power

	Year end 31 Dec.. in €m	2010e	2011e
Price target 1,90 €			
Up/downside 21,0%			
Rating Neutral			
Current price 1,57 €			
Headquarter Global Eco Power F-3857 Aix en Provence Cedix France			
CFO Philippe Perret contact@global-ecopower.com www.global-ecopower.com +33 442 / 245 016			
Stock data			
Main Market Open Market			
Market cap (m) 29,0 €			
No. of shares (m) 18,50			
Daily volume (shares m) 0,001			
Indices n/a			
	Profit loss		
	Sales	36.0	73.5
	y-o-y in %		104.2%
	EBITDA	4.1	10.7
	EBIT	4.1	9.2
	EBIT margin in %	11.5%	12.5%
	Net income	4.1	7.7
	EPS SQR (€)	0.22	0.42
	y-o-y in %		85.7%
	EPS consensus (€)	0.14	0.35
	DPS (€)	0.00	0.20
	Payout ratio %	0.0%	48.1%
	Dividend yield %	0.0%	12.7%
	Cash flow		
	Net income	4.1	7.7
	Depreciation/ Amortisation	0.0	1.5
	Working capital movements	-3.0	-5.0
	Operating cash flow	5.6	9.2
	Net capex	-35.0	-60.0
	Free cash flow	-104.4	-50.8
	Free cash flow yield	-359.3%	-175.0%
	Balance sheet/Key ratios		
	Total Assets	121.0	188.7
	Closing net debt (cash)	-22.5	-75.3
	Gearing	25.4%	53.0%
	Capex ratio (tangible)	31.8%	35.6%
	ROE	9.4%	8.3%
	ROCE	7.5%	6.5%
	ROA	7.5%	6.6%
	Valuation		
	Enterprise value	41.5	79.0
	Book value	88.5	96.2
	Market cap	29.0	29.0
	EV/Sales	115%	107.4%
	EV/EBITDA	10.0	7.4
	PER	7.0	3.8
	PBV	0.7	0.3

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Valuable exposure to fast growing French PV market, fueled by generous subsidies
- Seasoned management with excellent reputation gained from former management of wind power producer (Theolia)

Company structure and strategy

Global EcoPower SA, formerly Energeo Environnement SA, is a France-based company specialized in building power plants and producing electricity from renewable energy sources, such as wind, sunlight, water, and biomass. The company covers all development stages leading to electricity production, including land prospecting, drafting and signature of leases, technical studies, modeling, technical and financial optimization, impact studies, administrative requirements, search for suppliers, organization, piloting and coordination, reception, industrial commissioning, financing and client prospection. The company's major shareholder is Athanor Equities with an 80% stake. Global EcoPower SA has developed partnerships with BTP Consult, Transenergie and Schletter, among others.

Management

Jean-Marie Santander (Engineer, 57 years old): Successful entrepreneur in the renewable energy sector

Philippe Perret (Sup de Co Paris, 46 years old): significant experience as CFO and board member in public listed companies following 18 years banker's background

Jean-Paul Ingrassia (Engineer, 41 years old): experienced in acquisitions, development and exploitation of power stations in the renewable energy sector

Strategy

Global EcoPower develops, builds and runs photovoltaic power stations in France. Thanks to its strong presence in the South of France, allied to lobbying by its directors, Global EcoPower will focus its activities on ground solar power stations, in particular in the PACA region. Recognizing the magnitude of ground installations, which are able to reach 12.5MW, Global EcoPower will give priority to ground solar power plants compared to roof top plants. Roof top projects are underway but currently only represent a small part of the group's activity.

In addition, GEP can develop projects in other countries which benefit from "guaranteed" feed-in tariffs in a favourable environment for renewable energies. These conditions allow high visibility and predictability of profits and turnover over periods ranging from 15 to 20 years.

For the power stations to be built, Global EcoPower will follow two principles:

- __ Global EcoPower will sell its plants to investors that are qualified for this type of project.
- __ Global EcoPower will keep approx. 50% of the plants for its own account.

Recent performance and outlook

For the fiscal year ended 31 December 2007, Global EcoPower SA's total revenue decreased 7% to €28K. Net loss for the period totaled €417K, vs. a net profit of €15K. Total revenue reflects decreased demand for the company's products and services. Net loss reflects significantly increased exceptional charges from capital operations as well as lower financial income and higher depreciation charges.

SWOT analysis

Strengths

- Very seasoned management with vast experience in renewable energy markets, large project business (Theolia/wind energy)
- strong project pipeline in South France (high sun irradiation)

Weaknesses

- no track record as a solar energy producer

Opportunities

- Generous subsidizing of solar energy generation in France which is keen to reach largely higher shares of PV energy relative to total energy capacity

Threats

- stronger competition expected in coming year, may dent into margins

P & L

(€ m)	2010e	2011e
Sales	36.0	73.5
Costs of sales	-27.4	-54.4
% of sales	0.0%	0.0%
Gross Profit	8.6	19.1
Gross ROS	24.0%	26.0%
Other operating income	0.0	0.0
Labour costs	-1.6	-2.6
% of sales	-4.5%	-3.5%
Other operating expenses	-1.1	-2.2
EBITDA	4.1	10.7
EBDITA ROS	11.5%	14.5%
EBIT	4.1	9.2
EBIT margin	11.5%	12.5%
Interest expenses	0.0	-2.0
Interest income	0.0	0.5
Net interest expenses	0.0	-1.5
PTP	4.1	7.7
PTP ROS	11.5%	10.5%
Income taxes	0.0	0.0
Tax rate	0.0%	0.0%
Net Profit	4.1	7.7
Net Profit ROS	11.5%	10.5%
Minorities	0.0	0.0
Attributable income	4.1	7.7
Adjusted Net Profit	4.1	7.7
Total aver. # of shares (m)	18.50	18.50
Attributable EPS	0.22	0.42
Adjusted EPS	0.22	0.42
DPS (€)	0.00	0.20
Ratios		
ROCE	7.5%	6.5%
FCFF return on sales	-85.7%	-67.1%
ROE	9.4%	8.3%
Sales/Capital employed (x)	0.65	0.52
Interest cover (x)	n/a	5.59
Payout ratio	0.0%	48.1%

Source: company data, Silvia Quandt Research



Payom Solar AG

	<i>Year end Dec., in € millions</i>	2008	2009e	2010e	2011e
Price target 14,20 €					
Up/downside 23,5%					
Rating Buy					
Current price 11,50 €					
Headquarter Payom Solar AG 91732 Merkendorf Germany					
IR Jörg Truelsen, CEO truelsen@payom-solar.de www.payom-solar.de +49 (0)9826 / 6599 45					
Stock data					
Open Market Entry Standard					
Market cap (m) 52,33 €					
No. of shares (m) 4,55					
Daily volume (shares m) 0,025					
Indices None					
Next event Q4 results, March-April 2010					
	Profit loss				
	Sales	37	72	120	160
	y-o-y in %	273.3%	93.7%	67.6%	33.3%
	EBITDA	5	12	15	18
	EBIT	1	5	12	14
	EBIT margin in %	2.7%	7.0%	10.0%	9.0%
	Net income	1	4	10	11
	EPS SQR (€)	0.69	2.74	2.16	2.51
	y-o-y in %	49.9%	295.7%	-21.1%	16.0%
	EPS consensus (€)		2.62	1.64	1.91
	DPS (€)	0.00	0.00	0.00	0.25
	Payout ratio %	0.0%	0.0%	0.0%	10.0%
	Dividend yield %	0.0%	0.0%	0.0%	2.2%
	Cash flow				
	Net income	1	4	10	11
	Depreciation/Amortisation	1	0	0	0
	Working capital movements	-4	-1	-3	0
	Operating cash flow	-2	2	8	12
	Net capex	0	-0	-0	-0
	Free cash flow	1	2	8	12
	Free cash flow yield	14.9%	15.8%	15.0%	22.7%
	Balance sheet/Key ratios				
	Total Assets	11	16	68	80
	Closing net debt (cash)	3	5	13	23
	Gearing	-17.8%	-35.8%	-73.0%	-130.4%
	Capex ratio (tangible)	0.0%	7.7%	15.4%	23.1%
	ROE	9.8%	33.7%	80.9%	83.8%
	ROCE	17.9%	63.7%	125.9%	140.5%
	ROA	402.3%	920.0%	1107.7%	1384.6%
	Valuation				
	Enterprise value	8	11	43	35
	Book value	10	11	13	14
	Market cap	8	15	52	52
	EV/Sales	23%	16%	36%	21.6%
	EV/EBITDA	4.2	2.2	3.6	2.4
	PER	12.8	4.2	5.3	4.6
	PBV	1.3	1.4	4.3	3.8

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- A leading provider in Germany for solar rooftops, in both in-roof and on-roof segment from residential systems to large industrial systems
- Strong management with high long experience and outstanding reputation
- Long term supply contracts with module suppliers

Company structure and strategy

Payom Solar is renowned specialist for solar rooftops in both, the in-roof and on-roof segment from residential systems to large industrial systems. The company focuses on in-roof solutions, i.e. constructions where the solar systems simultaneously function as roof. Payom Solar acquires profitable photovoltaic sites, assumes the complete project planning to the ready-to-use realization of systems as well as the project sale to individual investors. The project planning includes the configuration of the system, the application at energy providers, statics, the installation and the connection of the system.

Roofing companies are the main customers of Payom Solar with a sales share of some 80%. Roofers act as multipliers and sales partners for the company. 50,000 roofers are organized in the Germany roofing trade. Thus, the demand from this side does not represent an effective restriction. The remainder is generated in the end customer segment, which can be divided in four groups: farmers, industry, open spaces and households. The group of industrial customers is of major importance, they generate high margins and considerable growth, as this customer group has realized the energy savings potentials by solar roofing and has sufficient funds to equip the large-scale industrial roofs with solar systems. While in 2007 Payom Solar focused its business on Bavaria, in 2009 some 80% of sales were generated in Germany outside of Bavaria. The German market is currently still the largest market and most mature photovoltaic market with a world market share of some 35%. The German market is expected to grow by approximately 20% despite lower feed-in tariffs. Going forward first projects in European countries add to it. The foreign business is expected to play an increasing role in 2010 after first projects abroad in 2008 and 2009. Italy, France and Czech Republic should be the main markets. All of these markets have attractive feed-in tariffs.

The company gains its customers mainly via roof construction business. New customers are regularly won via trainings for roofers, thereby establishing close and long-term customer relationships. Furthermore, the trainings provide Payom Solar with knowledge of the customer's actual requirements and provide the possibility to adapt the offer accordingly. In addition to the high quality of Payom Solar's solar roofs, this in turn fosters customer satisfaction and customer retention. Whilst the Bavarian domestic market was still dominant in 2007, the overall German market was served in 2008. First foreign projects, e.g. in France, Czech Republic and Italy are also envisaged.

On the procurement side, the company has long-term supply contracts for thin-film modules of Yingli (up to 54 MW), EGing (15 MW), First Solar (5 MW), and optionally Lite-On on a variable basis.

With the acquisition of Solare AG and its consolidation effective as of January 2010, the profile of Payom Solar is set to change considerably. Solare AG is specialized in the equipment of adequate open space, fallow land and roofs with solar plants. Solare AG cooperates worldwide with leading enterprises arising from the industries photovoltaics, service and maintenance, monitoring, assurance, estimators and banks. The company has three areas of business activities.

Solar Parks, the first – and most important - business area, is the large-scale, turnkey installation of solar parks in Bulgaria and other Eastern European countries with a capacity of 50 MW until the end of 2010. The second sector is trade and sales worldwide regarding the following items: photovoltaics conception including properties / surfaces and feed in contracts, turnkey installed modules or just deliverable high quality modules of top three contractors, expertise in the sector of photovoltaics, specified consultancy services (project control, business development). The third area, CEPS (Car Energy Protect System), is the development, positioning and commercialization of the ready for serial production engineered products CEPS worldwide, which serve as car protection and the prevention of visitors, e.g. at parking spaces at retail chains.

Management

The company is headed by CEO Mr. Joerg Truelsen. He has 10 years of experience in the segment of solar roof systems. In 1997 he began to work in the sales team of the biggest European roofing group Braas, which belonged to the French Lafarge group, which is today Monier. Mr. Truelsen turned Payom Solar into a competence center for solar roofs specializing in solar in-roofs. Recently the company has appointed Jérôme Glozbach de Cabarrus and Daniel Grosch as additional board members. Payom Solar had 11 employees at the end of 2009.

Recent performance and outlook

According to the company's preliminary results, which were released at the end of January, sales in 2009 were €71.2m which reflects a volume of some 30MW, which was completely installed in Germany. EBIT was €4.95m in 2009, reflecting an EBIT margin of 7%. For H1 2010 the company is already sold out, according to the management, which is a result of customers' anticipation of the cut in FIT in Germany as of April 2010. We expect the "old" Payom to achieve sales of €90m in 2010, reflecting some 55 MW. On top, the consolidation of Solare AG should add some additional €30m – equivalent to some 15 MW - in 2010.

We believe that the acquisition of Solare AG was at the right time, as the group's resulting expansion outside of Germany might mitigate the adverse effects of the cut of German FIT. Solare AG has a pipeline of 50 MW in Bulgaria and has recently received the approval. Its project partner EON.Bulgaria should ensure the success in this market (FIT €0.39/kWh). The acquisition of Solare has been financed via a capital increase in kind. Hence, the number of shares increased from 3.25m to 4.55m.

We expect the consolidation of Solare AG to be the main driver for the group's profitability. Given the pioneer character of the Solare project in Bulgaria, we expect an EBIT margin of some 20% for Solare, which is, however, unlikely to be sustainable over the next years. In total, sales of €120m – equivalent to 75-80 MW - should be possible for the group in 2010, leading to a group EBIT margin of some 10%. As of 2011 we have modeled a slight reduction in the group's profitability back into the single digit EBIT margins.

SWOT analysis

Strengths

- __ High reputation for high-quality solar roofing solutions
- __ Close customer relationships
- __ Long term supply contracts with module suppliers

Weaknesses

- __ Sub-critical company size
- __ High dependency on CEO Truelsen
- __ Still high focus on Germany, which is about to change with the integration of Solare AG

Opportunities

- __ With the merger with Solare AG, the roof-top focused business model is extended into the larger solar park projects

Threats

- __ Successful integration of Solar AG has to be proven

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	37.0	71.6	120.0	160.0
Costs of sales	0.0	0.0	0.0	0.0
<i>% of sales</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
Costs of materials	-33.5	-64.7	-104.2	-140.1
<i>% of sales</i>	<i>-90.6%</i>	<i>-90.4%</i>	<i>-86.8%</i>	<i>-87.6%</i>
Gross Profit	3.5	6.9	15.8	19.9
<i>Gross ROS</i>	<i>9.4%</i>	<i>9.6%</i>	<i>13.2%</i>	<i>12.4%</i>
Other operating income	0.0	0.0	0.0	0.0
Labour costs	-0.4	-0.5	-2.0	-3.2
<i>% of sales</i>	<i>-1.1%</i>	<i>-1.5%</i>	<i>-1.7%</i>	<i>-2.0%</i>
Other operating expenses	-1.0	-1.3	-1.6	-2.0
EBITDA	2.0	5.0	12.2	14.7
<i>EBDITA ROS</i>	<i>5.4%</i>	<i>7.0%</i>	<i>10.1%</i>	<i>9.2%</i>
EBIT	1.0	5.0	12.0	14.4
<i>EBIT margin</i>	<i>2.7%</i>	<i>7.0%</i>	<i>10.0%</i>	<i>9.0%</i>
Interest expenses	-0.1	-0.3	-0.4	-0.5
Interest income	0.0	0.0	0.0	0.0
Net interest expenses	-0.1	-0.3	-0.4	-0.5
PTP	0.9	4.7	11.6	13.9
<i>PTP ROS</i>	<i>2.5%</i>	<i>6.6%</i>	<i>9.6%</i>	<i>8.7%</i>
Income taxes	-0.3	-1.2	-1.7	-2.5
<i>Tax rate</i>	<i>29.4%</i>	<i>25.0%</i>	<i>15.0%</i>	<i>18.0%</i>
Net Profit	0.7	3.6	9.8	11.4
<i>Net Profit ROS</i>	<i>1.8%</i>	<i>5.0%</i>	<i>8.2%</i>	<i>7.1%</i>
Minorities	0.0	0.0	0.0	0.0
Attributable income	0.7	3.6	9.8	11.4
Adjusted Net Profit	0.7	3.6	9.8	11.4
Total aver. # of shares (m)	0.96	1.30	4.55	4.55
Attributable EPS	0.69	2.74	2.16	2.51
Adjusted EPS	0.69	2.74	2.16	2.51
DPS (€)	0.00	0.00	0.00	0.25
Ratios				
ROCE	17.9%	63.7%	125.9%	140.5%
FCFF return on sales	4.6%	5.1%	8.5%	7.4%
ROE	9.8%	33.7%	80.9%	83.8%
Sales/Capital employed (x)	6.54	9.06	12.63	15.61
Interest cover (x)	10.18	18.65	30.90	29.80
Payout ratio	0.0%	0.0%	0.0%	10.0%

Source: company data, Silvia Quandt Research

Phoenix Solar AG

	<i>Year end Dec.. in € millions</i>	2008	2009e	2010e	2011e
Price target 27,00 €					
Up/downside -0,7%					
Ratings Neutral					
Current price 27,20 €					
Headquarter Phoenix Solar AG 85254 Sulzemoos Germany					
IR Anka Leiner, IR aktie@phoenixsolar.de www.phoenixsolar.de +49 (0)8135 / 938 315					
Stock data					
Open Market Prime Standard					
Market cap (m) 182,24 €					
No. of shares (m) 6,70					
Daily volume (shares m) 0,040					
Indices TecDax					
Next event Annual results 2009, 22 April 2010					
	Profit loss				
	Sales	403	470	640	830
	y-o-y in %	54.7%	16.8%	36.2%	29.7%
	EBITDA	11	28	46	56
	EBIT	34	10	27	56
	EBIT margin in %	8.4%	2.1%	4.2%	5.4%
	Net income	24	24	18	29
	EPS SQR (€)	3.52	0.89	2.62	4.36
	y-o-y in %	49.2%	-74.8%	195.1%	66.3%
	EPS consensus (€)		1.07	2.82	3.64
	DPS (€)	0.30	0.30	0.40	0.40
	Payout ratio %	8.5%	0.0%	0.0%	10.0%
	Dividend yield %	0.0%	1.1%	1.5%	1.5%
	Cash flow				
	Net income	24	6	18	29
	Depreciation/Amortisation	0	1	1	1
	Working capital movements	-57	-17	-23	-24
	Operating cash flow	-24	60	-19	27
	Net capex	-1	-2	-2	-2
	Free cash flow	-22	58	-22	24
	Free cash flow yield	-37.9%	31.8%	-12.1%	13.4%
	Balance sheet/Key ratios				
	Total Assets	128	263	284	350
	Closing net debt (cash)	7	63	39	54
	Gearing	-15.6%	-38.7%	-50.5%	-37.5%
	tCapex ratio (tangible)	48.1%	50.0%	38.3%	29.3%
	ROE	34.6%	6.5%	17.3%	23.5%
	ROCE	55.8%	15.7%	47.8%	57.3%
	ROA	208.4%	423.2%	568.7%	589.7%
	Valuation				
	Enterprise value	59	147	131	136
	Book value	89	93	110	138
	Market cap	59	182	182	182
	EV/Sales	15%	31%	20%	16.3%
	EV/EBITDA	1.7	13.7	4.7	2.9
	PER	2.5	30.6	10.4	6.2
	PBV	0.9	2.0	1.8	1.5

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Balanced portfolio of components & systems and power plants
- Potential to emerge as a winner of the upcoming industry sector consolidation

Company structure and strategy

Phoenix Solar emerged from the Phoenix Solar initiative founded in 1994 and was established as a company in 1999. The company is a wholesaler for PV systems, modules and components. Moreover, the company plans, builds and operates PV plants. Since the year 2003 the company focuses on thin film technology.

In the components & systems business the company acts as a wholesaler for photovoltaic systems and components, mainly inverters, mounting systems and cables. The company's customers are retailers and wholesalers in the electrical and solar areas, as well as heating and roofer companies. The segment's revenues are mainly contributed by the German residential market. However, going forward the company aims to capitalize on the growth opportunities in other European markets, in particular France, Belgium and Italy. The components & systems has strong synergies with the Power Plant business, as it enables the company to optimize its components and systems offer as well as the negotiation power in purchasing. On the other hand the distribution and wholesaler characteristics of the Components & Systems business provide a limited operating leverage.

In the power plant business, the company offers planning services, turnkey construction, operation and maintenance of solar plants in the MW range for green-field installations and also roof-top installations. Its customers are industrial customers, local communities, closed end solar funds, insurance companies other institutional investors. The company has a focus on thin film technology and has a balanced procurement strategy with First Solar, Sharp, Solyndra and Schott Solar. For crystalline modules the company has supply contracts with Sharp, Yingli, Suntech and Schott. On top of the project business there is a considerable potential for service business and the company aims to extend its maintenance business to third-party constructed systems. The project business carries inherent execution risks in terms of project approval, legal disputes, payment delays etc.

Management

CEO Dr. Andreas Hänel is a founding member of the company and responsible for corporate strategy & business development, corporate communications and infrastructure. He has worked in the PV industry since 1987. He studied mechanical engineering, aerospace technology and environmental engineering at the Technical University of Munich.

CTO Manfred Bächer is responsible for technology & innovation, power plant construction and quality insurance. In 1995, after several years at an international consultancy focussing primarily on research and development of PV system technology, Manfred Bächler founded MHH Solartechnik GmbH, a company based in Ulm and focusing on PV plant construction. Simultaneously he served as an expert technical advisor to the "THERMIE Technical Management Programme" of the EU Commission's Directorate-General for Transport and Energy (DG TREN). In the spring of 2000, after MHH and Phoenix have merged, Mr. Bächler became Phoenix Solar's Chief Technology Officer. Mr. Bächer studied electrical engineering at the Technical University of Munich and has been active in the photovoltaic industry since 1990.

COO Dr. Murray Cameron is a founding member of the company and responsible for procurement & purchasing, logistics, public & governmental affairs. Mr. Cameron has been active in the field of photovoltaics since 1994. Particularly due to his three-year position as General Secretary of the European Photovoltaic Industry Association (EPIA) and as its Vice President from 2003-2005, he is deeply familiar with the photovoltaic market worldwide. Since May 2006 he has resumed the position as Vice President at EPIA after being its President in 2005/2006. He took up his position as COO at Phoenix Solar AG in 2003. He studied astrophysics in London and obtained his doctorate there in 1988. From 1988 until 1994 he was project manager at the Max-Planck-Institute for extraterrestrial physics in Garching near Munich.

CFO Sabine Kauper is responsible for accounting, controlling, treasury, law & contracts as well as personnel development. She worked at an auditing company for several years after studying business administration with electives in tax and auditing. Mrs. Kauper has been with Phoenix Solar since the year 2000, where her responsibilities included the implementation of internal structures and processes of a growing company, as well as the set-up of international capital market standards of the organization.

CSO Ulrich Reidenbach is responsible for sales and marketing. He brings extensive sales experience from a number of different positions. Since 1999, he has been Managing Director for Germany and, most recently, Commercial Director Western / Central Europe at a leading manufacturer of building components. He took up his new duties with Phoenix Solar on 1 December 2008. Mr. Reidenbach holds a degree in civil and industrial engineering.

Recent performance and outlook

With its latest profit warning in November 2009, the company missed expectations by a wide margin. In particular, the company's project business collapsed due to delays of approvals and customers financing. In addition the segment' results suffered from a basis effect after the drop in the Spanish project business. The Components & Systems business, which is still focused on the German market, benefited from the year-end rally in demand for roof tops ahead of the cut in FIT as of January 2010. All in all, following two profit warnings in 2009 the latest management guidance for 2009 aims for €430-480m sales and a positive EBIT. For 2010 the company has not given any guidance taking into account the uncertain consequences from the amendment of the FIT in Germany. However, management has confirmed its long term outlook for 2013 with sales of €1.5bn and an EBIT of €100m. Within this time frame the company wants to establish itself as a globally leading system integrator and wants to expand its international business to more than 65% of total sales.

SWOT analysis

Strengths

- Experienced management team with strong expertise
- Strong international footprint
- Balanced portfolio and Components & Systems and Power Plants

Weaknesses

- Credibility has suffered after to profit warnings last year

Opportunities

- Potential to emerge as a winner of the upcoming sector consolidation
- Increasing purchasing power due to increasing availability of modules

Threats

- Focus on thin-film technology
- Adverse impacts from cuts in FIT

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	423.1	474.0	644.0	834.0
Costs of sales	0.0	0.0	0.0	0.0
<i>% of sales</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
Costs of materials	-356.5	-425.0	-565.8	-726.1
<i>% of sales</i>	<i>-84.3%</i>	<i>-89.7%</i>	<i>-87.9%</i>	<i>-87.1%</i>
Gross Profit	66.6	49.0	78.2	107.9
<i>Gross ROS</i>	<i>15.7%</i>	<i>10.3%</i>	<i>12.1%</i>	<i>12.9%</i>
Other operating income	0.0	0.0	0.0	0.0
Labour costs	-12.5	-18.3	-25.1	-31.7
<i>% of sales</i>	<i>-3.0%</i>	<i>-3.9%</i>	<i>-3.9%</i>	<i>-3.8%</i>
Other operating expenses	-19.9	-20.0	-25.0	-30.0
EBITDA	34.2	10.7	28.1	46.2
<i>EBDITA ROS</i>	<i>8.5%</i>	<i>2.3%</i>	<i>4.4%</i>	<i>5.6%</i>
EBIT	33.8	9.9	27.1	45.2
<i>EBIT margin</i>	<i>8.4%</i>	<i>2.1%</i>	<i>4.2%</i>	<i>5.4%</i>
Interest expenses	-0.4	-1.4	-2.0	-3.5
Interest income	0.0	0.0	0.0	0.0
Net interest expenses	-0.4	-1.4	-2.0	-3.5
PTP	33.4	8.5	25.1	41.7
<i>PTP ROS</i>	<i>8.3%</i>	<i>1.8%</i>	<i>3.9%</i>	<i>5.0%</i>
Income taxes	-9.8	-2.6	-7.5	-12.5
<i>Tax rate</i>	<i>29.3%</i>	<i>30.0%</i>	<i>30.0%</i>	<i>30.0%</i>
Net Profit	23.6	6.0	17.6	29.2
<i>Net Profit ROS</i>	<i>5.9%</i>	<i>1.3%</i>	<i>2.7%</i>	<i>3.5%</i>
Minorities	0.0	0.0	0.0	0.0
Attributable income	23.6	6.0	17.6	29.2
Adjusted Net Profit	23.6	6.0	17.6	29.2
Total aver. # of shares (m)	6.70	6.70	6.70	6.70
Attributable EPS	3.52	0.89	2.62	4.36
Adjusted EPS	3.52	0.89	2.62	4.36
DPS (€)	0.30	0.30	0.40	0.40
Ratios				
ROCE	55.8%	15.7%	47.8%	57.3%
FCFF return on sales	5.4%	1.2%	2.7%	3.7%
ROE	34.6%	6.5%	17.3%	23.5%
Sales/Capital employed (x)	6.65	7.47	11.29	10.53
Interest cover (x)	85.50	8.07	14.54	13.92
Payout ratio	8.5%	0.0%	0.0%	10.0%

Source: company data, Silvia Quandt Research

Ralos New Energies AG (formerly BGI Ecotech AG)

	Year end Dec., in € millions	2008	2009e	2010e	2011e
Price target 10,00 €					
Up/downside 28,2%					
Rating Buy					
Current price 7,80 €					
Headquarter Pfungstaedter Straße 100 a 64297 Darmstadt Germany					
IR Albert Klein, CEO info@bgi-ecotech.de www.bgi-ecotech.de +49 (0)6151 /95165 0					
Stock data Open Market Entry Standard					
Market cap (m) 33,91 €					
No. of shares (m) 5,24					
Daily volume (shares m) 0,002					
Indices None					
Next event End of March: annual results 2009					
	Profit loss				
	Sales	57	92	183	221
	y-o-y in %	1092.4%	62.7%	98.9%	20.6%
	EBITDA	-1	14	16	20
	EBIT	3	-2	14	15
	EBIT margin in %	6.1%	-1.8%	7.5%	6.9%
	Net income	1	-5	8	9
	EPS SQR (€)	0.21	-1.07	1.53	1.73
	y-o-y in %	-121.0%	-604.8%	-242.5%	13.0%
	EPS consensus (€)		-1.07	1.48	1.68
	DPS (€)	0.00	0.00	0.00	0.00
	Payout ratio %	0.0%	0.0%	0.0%	0.0%
	Dividend yield %	0.0%	0.0%	0.0%	0.0%
	Cash flow				
	Net income	1	-5	8	9
	Depreciation/Amortisation	0	0	0	1
	Working capital movements	-36	3	-5	-5
	Operating cash flow	6	-1	3	5
	Net capex	0	-0	-1	-1
	Free cash flow	9	-1	-2	4
	Free cash flow yield	23.2%	-4.2%	-5.2%	10.0%
	Balance sheet/Key ratios				
	Total Assets	65	60	68	77
	Closing net debt (cash)	-6	-8	-10	-6
	Gearing	52.7%	52.9%	51.6%	34.3%
	Capex ratio (tangible)	0.0%	0.6%	2.2%	2.2%
	ROE	16.0%	-35.6%	47.6%	40.3%
	ROCE	20.8%	-5.4%	39.9%	36.6%
	ROA	-7.9%	58.5%	59.0%	73.6%
	Valuation				
	Enterprise value	38	41	50	49
	Book value	11	16	18	27
	Market cap	38	34	41	41
	EV/Sales	67%	44%	27%	22.0%
	EV/EBITDA	10.5	-31.2	3.5	3.1
	PER	41.6	-7.3	5.1	4.5
	PBV	6.7	2.6	2.4	1.8

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- High reputation of Ralos subsidiary with strong international track record
- Strong project pipeline of more than 100 MWp
- International footprint

Company structure and strategy

On 20 January the company announced several results from its extraordinary general meeting: First of all the company will change its name from BGI Ecotech AG into Ralos New Energies AG, which has become effective with the entry of the new name in the Commercial Register as at 22 February. The management is confident that the new name better expresses the company's focus on global renewable energies markets while using the well established brand of Ralos. Moreover, the shareholders approved a capital increase (authorized and contingent) in order to push the company's future growth. In terms of the capital market, the way was cleared for change to a stock market segment with more stringent regulations (Geregelter Markt) to better address the requirements of international investors.

So far, BGI EcoTech was a holding company with subsidiaries in the field of renewable energies, in particular photovoltaics. BGI EcoTech emerged from BGI, a company that specialized in consulting and project management in the environmental and engineering sector. With the takeover of the non-listed Ralos Group, one of the leading system providers of photovoltaics systems with 136 employees and sales of €125m, in 2008, the profile of BGI Ecotech changed considerably. Ralos develops, plans, builds and operates innovative photovoltaics plants – from private solar electricity systems to large scale, high-output plants and ranks – with its branches and subsidiaries – already among the top 10 comparable photovoltaics companies in Europe. Ralos is striving towards a turnover of €500m in the medium term. Furthermore, at year end 2008, BGI EcoTech divested its previous environmental and engineering business. Hence, Ralos the operating subgroup of BGI EcoTech, is now the core competence center as contractor for PV systems. Ralos' GSS segment (German Small Systems) focuses completely on the installation of small PV systems in the company's domestic market. On the other hand Ralos' GLP segment (Global Large Projects) concentrates on attractive foreign markets with larger scale projects.

The industrial dynamics in both market areas differ significantly. In the GSS segment, i.e. the small roof-top PV systems market, there are many small players as competitors and the customers are mainly private clients and farmers. Moreover, the relevant market is mainly the domestic market. On the other hand, in the GLP segment, i.e. the market for large ground-mounted PV systems, the competitors are mostly larger companies. Customers are mainly industrial clients and investors and the relevant markets are international.

In general, the capacity ramp-up along the entire photovoltaics value chain in the recent years followed by a price drop and a high availability for cells and modules paved the way for the photovoltaic's market's transition from a sellers' market into a buyer's market. In the current buyer's market, knowledge of local markets and access to customers has become of highest priority, which has enhanced the position of downstream players such as Ralos with established sales structures and customer access. The profitability of downstream companies have suffers less than those of cell and module producers, as downstream players do not have to pass on the entire module price decline to the customers. Hence, it is much easier for downstream players to conclude contracts with suppliers on the basis of attractive and more flexible conditions, including working capital management.

In order to achieve its medium term target of €500m sales, Ralos will build its business on two pillars. On the one hand the internationalization of its business and on the other hand the clear focus on larger projects.

Management

The company's Management Board consists of CEO Albert Klein and CTO Heinrich Dauscher. Prior to his appointment to the Management Board in July 2009, Mr. Klein worked for the LTG Group, most recently as Chairman of the Advisory Board and in management functions at a number of LTG subsidiaries. The LTG Group is a leading provider for the production of air conditioning components and drying technology and the provision of packaging printing services.

Mr. Dauscher has been member of the Management Board since 2006, responsible for technology, marketing and sales. Previously Mr. Dauscher formed his own architectural firm, which was focused on low-energy houses and thereafter founded a trading company of renewable energy products. This company later acquired 66% in BGI EcoTech together with an investor.

Recent performance and outlook

According to the company, some 40% of Ralos' sales came from the Global Large Projects (GLP) business in 2008, which was expected to decline to a share of some 30% in 2009, due to the delayed implementation of several major projects. However, in 2010 this share should more than double to a proportion to some 65% (€120m) which should be also a ballpark figure going forward, while the German Small Systems (GSS) should then have a share of some 35% (€65m). Regional wise, Germany accounts for 100% of the GSS business, while Italy accounts for 50% of the GLP business and the remainder of the GLP business is contributed by other countries like Czech Republic, Germany and Middle East. On the back of this shift of regional sales distribution, we expect the company's profitability to increase significantly in 2010, which is mainly backed by the favourable conditions in Sicily, where investors are willing to pay rather high prices for projects located there.

2009 figures have not been published yet. Management guidance for 2009 was a decline in sales yoy and a loss, due to (1) lower investments in the solar sector on the back of the adverse macro environment in H1 2009, (2) numerous postponements of projects, and (3) investments in IT infrastructure and in the improvement of process efficiency.

For 2010 management expects a materially higher sales level as well as a significantly improved profitability, with both, sales and earnings to be above the level of 2008. For 2010, we expect the company to return to the growth path, as Ralos should be able to implement the projects postponed in 2009, especially in Sicily. For 2011 we expect the company to continue its growth. Our scenario is based on the following assumptions, which are confirmed by the management: (1) In Sicily Ralos has 15 MWp projects fully engineered and about to be approved, (2) in Northern Italy Ralos has acquired more than 6 MWp, (3) in the Czech Republic Ralos has more than 20 MWp fully engineered projects, (4) in Canada, the UAE and Slovakia, Ralos has more than 40 MWp projects, (5) further project pipeline amounts to more than 50 MWp. Thus, a sales volume of at least €180m, which would be equivalent to 60 MW, should be realistic for 2010, after 30 MW in 2009, reflecting €92m sales. The company's medium term target of €500m reflects some 150 MW.

On the profitability level, we expect the company to achieve a gross margin of 16%, which is basically a mix effect between high single digit margins in the roof-top business and estimated gross margins of some 30% in the project business in Sicily. Moreover, on the cost side we expect the company to execute on cost management, in particular in lowering the integration cost, the strengthening of its project controlling as well as the improvement of the working capital management. In addition we expect synergies from the controlling as well as in purchasing and marketing.

SWOT analysis

Strengths

- __ High reputation of Ralos with international track record as contractor
- __ Strong project pipeline of more than 100 MWp
- __ Long capital intensity of the business model

Weaknesses

- __ Still sub-critical company size
- __ Low transparency of financial reporting

Opportunities

- __ Possibility to take an active part in the market consolidation

Threats

- __ Project delays, in particular in the GLP segment
- __ Tight liquidity of the group could delay international expansion

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	56.6	92.1	183.2	221.0
Costs of sales	0.0	0.0	0.0	0.0
<i>% of sales</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
Costs of materials	-42.8	-79.7	-153.8	-186.7
<i>% of sales</i>	<i>-75.6%</i>	<i>-86.5%</i>	<i>-84.0%</i>	<i>-84.5%</i>
Gross Profit	13.8	12.4	29.4	34.3
<i>Gross ROS</i>	<i>24.4%</i>	<i>13.5%</i>	<i>16.0%</i>	<i>15.5%</i>
Other operating income	0.0	1.1	0.4	0.5
Labour costs	-2.4	-6.2	-7.9	-10.2
<i>% of sales</i>	<i>-4.5%</i>	<i>-6.7%</i>	<i>-4.3%</i>	<i>-4.6%</i>
Other operating expenses	-4.1	-8.7	-7.8	-8.8
EBITDA	3.6	-1.3	14.0	15.8
<i>EBDITA ROS</i>	<i>6.4%</i>	<i>-1.4%</i>	<i>7.7%</i>	<i>7.2%</i>
EBIT	3.5	-1.6	13.7	15.3
<i>EBIT margin</i>	<i>6.1%</i>	<i>-1.8%</i>	<i>7.5%</i>	<i>6.9%</i>
Interest expenses	-0.7	-2.6	-2.4	-2.5
Interest income	0.1	0.0	0.0	0.0
Net interest expenses	-0.5	-2.6	-2.4	-2.5
PTP	2.2	-4.3	11.3	12.8
<i>PTP ROS</i>	<i>3.8%</i>	<i>-4.6%</i>	<i>6.2%</i>	<i>5.8%</i>
Income taxes	-1.3	-0.4	-3.3	-3.7
<i>Tax rate</i>	<i>57.8%</i>	<i>-9.7%</i>	<i>29.0%</i>	<i>29.0%</i>
Net Profit	0.9	-4.7	8.0	9.1
<i>Net Profit ROS</i>	<i>1.6%</i>	<i>-5.1%</i>	<i>4.4%</i>	<i>4.1%</i>
Minorities	0.0	0.0	0.0	0.0
Attributable income	0.9	-4.7	8.0	9.1
Adjusted Net Profit	0.9	-4.7	8.0	9.1
Total aver. # of shares (m)	4.29	4.35	5.24	5.24
Attributable EPS	0.21	-1.07	1.53	1.73
Adjusted EPS	0.21	-1.07	1.53	1.73
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	20.8%	-5.4%	39.9%	36.6%
FCFF return on sales	3.1%	-1.7%	5.2%	4.9%
ROE	16.0%	-35.6%	47.6%	40.3%
Sales/Capital employed (x)	3.40	2.99	5.35	5.29
Interest cover (x)	6.22	0.37	6.75	7.04
Payout ratio	0.0%	0.0%	0.0%	0.0%

Source: company data, Silvia Quandt Research

S.A.G. Solarstrom AG

	<i>Year end Dec., in € millions</i>	2008	2009e	2010e	2011e
Price target 4,00 €					
Up/downside 5,3%					
Rating Neutral					
Current price 3,80 €					
Headquarter S.A.G. Solarstrom AG 79111 Freiburg Germany					
IR Christoph Koch, CFO ir@solarstromag.com www.solarstromag.de +49 (0)761 / 4770 368					
Stock data					
Open Market Entry Standard					
Market cap (m) 46,66 €					
No. of shares (m) 12,28					
Daily volume (shares m) 0,021					
Indices None					
Next event 2009 results 22 April 2010					
	Profit loss				
	Sales	98	140	190	230
	y-o-y in %	126.9%	43.4%	35.7%	21.1%
	EBITDA	4	10	11	12
	EBIT	3	8	9	10
	EBIT margin in %	2.9%	5.7%	4.5%	4.2%
	Net income	2	5	6	7
	EPS SQR (€)	0.16	0.42	0.51	0.58
	y-o-y in %	597.0%	160.2%	21.7%	13.6%
	EPS consensus (€)		0.34	0.43	0.53
	DPS (€)	0.00	0.00	0.00	0.00
	Payout ratio %	0.0%	0.0%	0.0%	0.0%
	Dividend yield %	0.0%	0.0%	0.0%	0.0%
	Cash flow				
	Net income	2	5	6	7
	Depreciation/Amortisation	1	2	2	2
	Working capital movements	-22	-20	-8	-10
	Operating cash flow	15	-4	11	12
	Net capex	0	0	0	0
	Free cash flow	18	-4	11	12
	Free cash flow yield	16.9%	-8.9%	24.1%	26.6%
	Balance sheet/Key ratios				
	Total Assets	110	121	138	158
	Closing net debt (cash)	-11	-16	-4	8
	Gearing	18.5%	30.0%	20.4%	-3.3%
	Capex ratio (tangible)	0.0%	0.0%	0.0%	0.0%
	ROE	4.6%	11.4%	12.8%	12.7%
	ROCE	11.4%	31.0%	30.4%	42.5%
	ROA	13.2%	14.5%	17.2%	22.0%
	Valuation				
	Enterprise value	109	60	57	45
	Book value	44	46	51	60
	Market cap	109	47	47	47
	EV/Sales	111%	43%	30%	19.5%
	EV/EBITDA	25.9	6.2	5.4	3.7
	PER	55.1	9.1	7.5	6.6
	PBV	2.5	1.0	1.0	0.8

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- One of the very few players which includes the very end of the downstream segment, i.e. the operation of PV power plants, albeit still on a low basis with some 2% of total sales
- Via its subsidiary meteocontrol, the group provides its customers with professional web based online monitoring system and monitors plants worldwide, which helps customers to optimize its own operations

Company structure and strategy

SAG Solarstrom is an independent integrator of residential and commercial solar systems. The company is also active in solar partner sales and has since its inception in 1998 produced over 2500 installations. Moreover, the company operates over 70 own solar parks in Europe – reflecting some 11.8 MW and monitors a further 11000 facilities totaling some 1.2 GW in output elsewhere in the world via its subsidiary meteocontrol.

SAG Solarstrom operates in the following four business areas: (1) Project Planning and Plant Construction, (2) Partner sales, (3) Plant Operation and Services, (4) Power Production.

The Project Planning and Plant Construction business (60% of 9M / 09 sales) comprises project development and the construction of high-quality PV facilities of all sizes – from smaller rooftop installations for house roofs and factory buildings to large, free-standing facilities capable of double-digit MWp output virtually anywhere in the world. As part of these activities, the company also handles the acquisition of suitable real estate, project planning for solar power installations, and turnkey facility construction for private and commercial customers. Key to the company's ability to execute in 2010 is the access to modules. The company has already in the past established a close relationship to Yingli, e.g. having completed a supply agreement for 37 MW in 2008, with roughly the same volume secured for 2010.

The company's second segment, Partner Sales (30% of 9M / 09 sales), concentrates on targeted international sales and distribution through strong and exclusive partners in Germany, Spain, Italy and France. The partners procure solar-power components, technical support, and marketing services from SAG Solarstrom and contribute to the ongoing optimization of the group's facilities and competence in sales and distribution by participating in advanced training and working closely with them in other areas.

In the third segment, Plant Operations and Services (8% of 9M / 09 sales), the company provides its customers with plant operation services such as monitoring, as well as related services and deliveries data itself. Through its subsidiary meteocontrol, the group has access to Europe's densest weather data network, which spans over 14 000 weather stations throughout the world, as well as 300 000 satellite based irradiation data per hour, both for current and historical data over 15 years. Along with services – such as forecasts of solar electricity and wind energy, as well as solar radiation data and maps – one of SAG Solarstrom's further essential areas of competence lies in meteocontrol's ability to conduct appraisals recognized by banks and insurance companies for renewable energy facilities. meteocontrol has a global market share of 5% based on the installed capacity, and 10% in Europe (thereof 25% in Spain).

In Power Production (2% of 9M / 09 sales), SAG Solarstrom's fourth business is, the company maintains 70 PV facilities in Germany, Switzerland, Austria, and Spain either directly or through subsidiaries and holdings. Hence, the group both generates a continuous cash flow and accumulates valuable experience as they hone their experience in building and operating solar power plants of all sizes. This enables the group to gain crucial insights into the configuration and potential optimization of PV facilities. Such competency also provides a key basis for long-term collaboration with important component suppliers.

Regarding our peer group categorization on domestic / foreign sales exposure and roof-top / ground mounted sales exposure, we estimate 2010 sales to be 40% in Germany / 60% abroad, and 50% roof-top related, while 50% should come from ground-mounted PV systems.

Management

The Executive Board consists of CEO Dr. Karl Kuhlmann, who is Graduate Engineer, as well as Oliver Guenther and Christoph Koch. Since the appointment of Supervisory Board Chairman Dr. Karl Kuhlmann to the position of executive Board Chairman effective July 2008, the Executive Board of SAG Solarstrom has consisted of three individuals. Since taking on the position, Dr. Karl Kuhlmann has been responsible for the areas of strategy, technology, human resources, and legal affairs. Mr. Oliver Guenther has directed the group's sales, distribution, and purchasing, and Mr. Christoph Koch has handled the area of finances.

Recent performance and outlook

2009 results are not yet announced, The full year earnings release is scheduled for 22 April 2010. After the release of its Q3/09 figures, the company has confirmed its 2009 guidance of sales between €125m to €140m and an EBIT of between €5m and €8m. Moreover, in December 2009 the company announced the completion of its 14 MW Stribro project, 2.3MW NBC Franken Solarfonds I, and 4.6 MW Dehner Garden Center, which implies that the company has completed projects of some 21MW and, thus, should be able to reach the 2009 guidance.

According to the latest update of the company from 3 February 2010, management expects sales of between €190m and €210m and EBIT of between €8m and €11m. We expect the company to complete some 70MW in 2010, mainly in Germany, Italy and France, with the potential to expand to Eastern Europe. H1 is likely to be particularly strong backed by the likely completion of its 10MW project in Italy by the end of April and the arrangement of a bridge financing for its Stribro project. The decline in EBIT margin in 2010 reflects management's conservatism as well as potentially increasing sales shares of the lower-margin Partner Sales segment. In our forecasts we have preferred to remain on the cautious side and expect the company to reach the lower end of its guidance.

SWOT analysis

Strengths

- Well established company with critical size

Weaknesses

- Still high sales exposure to the German market

Opportunities

- Expansion to Eastern Europe and the US

Threats

- Projects delays

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	99.9	140.0	190.0	230.0
Costs of sales	0.0	0.0	0.0	0.0
<i>% of sales</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>
Costs of materials	-84.5	-114.2	-156.0	-190.0
<i>% of sales</i>	<i>-84.6%</i>	<i>-81.6%</i>	<i>-82.1%</i>	<i>-82.6%</i>
Gross Profit	15.4	25.8	34.0	40.0
<i>Gross ROS</i>	<i>15.4%</i>	<i>18.4%</i>	<i>17.9%</i>	<i>17.4%</i>
Other operating income	1.1	1.0	1.5	2.0
Labour costs	-6.5	-9.1	-16.0	-20.0
<i>% of sales</i>	<i>-6.5%</i>	<i>-8.0%</i>	<i>-8.5%</i>	<i>-8.5%</i>
Other operating expenses	-5.9	-8.0	-9.0	-10.0
EBITDA	4.2	9.7	10.5	12.0
<i>EBDITA ROS</i>	<i>4.3%</i>	<i>6.9%</i>	<i>5.5%</i>	<i>5.2%</i>
EBIT	2.8	8.0	8.5	9.7
<i>EBIT margin</i>	<i>2.9%</i>	<i>5.7%</i>	<i>4.5%</i>	<i>4.2%</i>
Interest expenses	-1.0	-1.2	-1.5	-1.8
Interest income	1.0	1.1	1.4	1.7
Net interest expenses	-0.1	-0.1	-0.1	-0.1
PTP	2.8	7.9	8.8	10.0
<i>PTP ROS</i>	<i>2.8%</i>	<i>5.6%</i>	<i>4.6%</i>	<i>4.3%</i>
Income taxes	-0.8	-2.8	-2.6	-2.9
<i>Tax rate</i>	<i>29.0%</i>	<i>35.0%</i>	<i>29.0%</i>	<i>29.0%</i>
Net Profit	2.0	5.1	6.2	7.1
<i>Net Profit ROS</i>	<i>2.0%</i>	<i>3.7%</i>	<i>3.3%</i>	<i>3.1%</i>
Minorities	0.0	0.0	0.0	0.0
Attributable income	2.0	5.1	6.2	7.1
Adjusted Net Profit	2.0	5.1	6.2	7.1
Total aver. # of shares (m)	12.28	12.28	12.28	12.28
Attributable EPS	0.16	0.42	0.51	0.58
Adjusted EPS	0.16	0.42	0.51	0.58
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	11.4%	31.0%	30.4%	42.5%
FCFF return on sales	3.4%	4.9%	4.2%	4.0%
ROE	4.6%	11.4%	12.8%	12.7%
Sales/Capital employed (x)	3.94	5.42	6.79	10.08
Interest cover (x)	3.72	7.67	6.67	6.39
Payout ratio	0.0%	0.0%	0.0%	0.0%

Source: company data, Silvia Quandt Research

Solarhybrid AG

	Year end Dec.. in € millions	2008	2009e	2010e	2011e
Price target					
5,00 €					
Up/downside					
8,7%					
Rating					
Neutral					
Current price					
4,60 €					
Headquarter					
Keffelker Straße 14					
59929 Brilon					
Germany					
IR					
Crossalliance Communications					
Susan Hoffmeister					
info@solarhybrid.ag					
www.solarhybrid.ag					
+49 (0)8142 / 652 4554					
Stock data					
Open Market					
Entry Standard					
Market cap (m)					
20,70 €					
No. of shares (m)					
4,50					
Daily volume (shares m)					
0,018					
Indices					
None					
Next event					
N.A.					
	Profit loss				
	Sales	1	16	192	134
	y-o-y in %	n/a	1500.0%	1100.0%	-30.5%
	EBITDA	-3	15	11	12
	EBIT	-5	-4	15	11
	EBIT margin in %	-490.0%	-21.9%	7.7%	8.0%
	Net income	-5	-4	11	6
	EPS SQR (€)	-1.09	-0.89	2.47	1.40
	y-o-y in %	-70220.2%	-17.9%	-375.8%	-43.1%
	EPS consensus (€)		n.a.	n.a.	n.a.
	DPS (€)	0.00	0.00	0.00	0.00
	Payout ratio %	0.0%	0.0%	0.0%	0.0%
	Dividend yield %	0.0%	0.0%	0.0%	0.0%
	Cash flow				
	Net income	-5	-4	11	6
	Depreciation/Amortisation	0	0	0	1
	Working capital movements	-1	-10	-20	-20
	Operating cash flow	-3	-9	2	-3
	Net capex	-1	-5	-10	-12
	Free cash flow	-1	-14	-8	-15
	Free cash flow yield	-2.0%	-66.3%	-41.1%	-73.3%
	Balance sheet/Key ratios				
	Total Assets	2	3	44	61
	Closing net debt (cash)	-1	-15	-3	-18
	Gearing	-70.0%	178.2%	88.7%	107.1%
	Capex ratio (tangible)	71.4%	82.0%	63.7%	44.1%
	ROE	762.1%	-92.4%	111.0%	63.2%
	ROCE	-426.1%	-75.3%	88.1%	28.5%
	ROA	-93.3%	135.8%	49.7%	31.4%
	Valuation				
	Enterprise value	40	28	30	31
	Book value	-1	10	10	10
	Market cap	40	21	21	21
	EV/Sales	3983%	178%	15%	24%
	EV/EBITDA	-8.5	-8.9	1.9	2.8
	PER	-8.1	-5.1	1.9	3.3
	PBV	-61.9	4.8	2.1	2.1

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Broad product range for solar thermal and photovoltaic solutions (hybrid collector, energy column, heat exchanger pump)
- Excellent distribution network with direct access to end customers
- Official distribution partner of Suntech Power
- Long term cooperation contract with Interstrom AG for large projects
- Experienced board and management team
- High growth potential in Southern Europe

Company structure and strategy

Solarhybrid has two business units. The first business area is Solar Thermal which focuses on the production of solar thermal collectors, hybrid collectors and solar thermal components. The distribution is accomplished via suppliers of heating companies, construction companies and solar specialist companies. Within this business unit the company targets private and commercial customers with single and duplex houses, as well as other real estate with high energy requirements like hotels, hospitals, swimming pools etc. The second business unit is Solar Power, where the company distributes solar modules of leading suppliers, like Suntech as the largest and strategic partner, and is also involved in the development of large projects. The distribution business is accomplished via the same channel as in the Solar Thermal business, with over 600 resellers, as well as via insurance companies or other large players with strong access to end customers. The contacts to end customers are established via resellers, which buy the components at Solarhybrid. Contacts with a big potential will be serviced delivered by the project units of Solarhybrid, while the project development business is accomplished via the company's cooperation with Interstrom AG. The target customers of the photovoltaics business unit are private and commercial clients with sufficient roof space.

Recently the company has announced a strategic partnership with Interstrom and Enerparc. Interstrom is an investor in large solar projects, which Solarhybrid builds as a general contractor. The largest project is currently built near Berlin with a capacity of 24.5 MW. With the long-term cooperation agreement with Enerparc, both companies will capitalize on Solarhybrid's expertise in project acquisition and project development, as well as economies of scale in project acquisition and distribution on the purchasing side, while Enerparc will provide value added in the areas of project planning and project controlling. The function of Solarhybrid is to be general contractor.

Over the next six months, the company targets the accomplishment of an own standard as well as the BAFA promotion for its hybrid collectors. Moreover, it wants to expand the assembly for its new products heat exchanger pumps and energy columns in Germany. In addition, the strengthening of the company's cooperation with Interstrom AG for its project development business in a strategic target. Furthermore, within one year, the company wants to establish sales teams in two or three countries with the operations being organized from Germany. Its medium- to long term goal over the next five years is to establish itself as a full solutions provider for stand-alone / decentralized systems and becoming market leader for hybrid collectors.

Management

The company's consists of CEO Tom Schroeder, who is also the major shareholder of the company with a 28% stake. He has founded the German Hardcopy AG (Geha) and sold the company to Pelikan in 2007. Together with several of his former colleagues and the investor H2M Energy, which owns 33% in the company, Mr. Schroeder founded Solarhybrid AG in 2007. In addition the company appointed Olaf Krückemeier and Claus Mattheis as new management board members as of January 2010. While Mr. Krückemeier is responsible for purchasing, Mr. Mattheis is in charge of the project business.

Recent performance and outlook

As the company has yet released neither its 2008 results nor its 2009 figures, the financial performance of the company is hard to judge. We have based our forecast on estimated 2008 and 2009 results, which are roughly in line with management expectations. In 2009 the company should have reached €16m sales, of which 85% were contributed by the revenues from the photovoltaics business.

For 2010 we expect the company to boost its sales to €192m, which might look somewhat ambitious at a first glance. However, taking a closer look at the input parameters, this figure is not unrealistic. We expect 93% or €180m of total sales to be contributed from the business unit Solar Power. Roughly 1/3, i.e. €60m revenues, of this amount is already safe at the beginning of this year due to the FinowTower project in Eastern Germany. Further €23m is fixed by a contract with Hamburg Energie Solar. The distribution unit has an order backlog of €20m and a promising pipeline and the project unit of Solar Power over €20m orders on hand. In total the solar project business should amount to €155m sales in 2010.

Within the Solar Power unit, the distribution business should account for another €25m sale. The business unit Solar Thermal should result into €12m sales for 2010. For 2011 we have adopted a somewhat more cautious stance. In particular, we expect the project business within the Solar Power business unit to be some 50% below the extraordinarily high revenues in 2010, as we consider it as unlikely that the amount of projects to be realized in 2010 will be repeated in the following year. Hence, the Solar

Power project business should reach €80m in 2011. However, the distribution business within the Solar Power unit should continue to grow, as well as the Solar Thermal business unit. As a result, we expect total sales of €133m for 2011. We consider the company's partnership with Suntech as one of the main advantages of the company, from which the company will benefit given the cuts in FIT.

SWOT analysis

Strengths

- __ Broad product range
- __ High rate of innovation
- __ Strong management expertise
- __ Cooperations with insurance companies with direct access to end customers

Weaknesses

- __ Low transparency as last annual report available form 2007
- __ Critical size is missing

Opportunities

- __ Internationalization

Threats

- __ Successful internationalization to be proven
- __ Potential delays of product approvals

P & L

(€ m)	2008	2009e	2010e	2011e
Sales	1.0	16.0	192.0	133.5
Costs of sales	0.0	0.0	0.0	0.0
% of sales	0.0%	0.0%	0.0%	0.0%
Costs of materials	-1.2	-13.8	-168.3	-113.5
% of sales	-120.0%	-86.3%	-87.7%	-85.0%
Gross Profit	-0.2	2.2	23.7	20.0
Gross ROS	-20.0%	13.8%	12.3%	15.0%
Other operating income	0.0	0.0	0.0	0.0
Labour costs	-1.2	-1.6	-4.9	-5.3
% of sales	0.0%	-10.0%	-2.6%	-4.0%
Other operating expenses	-3.3	-3.8	-3.6	-3.5
EBITDA	-4.7	-3.2	15.2	11.2
EBDITA ROS	-470.0%	-20.0%	7.9%	8.4%
EBIT	-4.9	-3.5	14.8	10.7
EBIT margin	-490.0%	-21.9%	7.7%	8.0%
Interest expenses	0.0	0.0	-0.2	-0.2
Interest income	0.0	0.0	0.0	0.0
Net interest expenses	0.0	0.0	-0.2	-0.2
PTP	-4.9	-3.5	12.4	8.7
PTP ROS	-490.0%	-21.9%	6.5%	6.5%
Income taxes	0.0	-0.5	-1.3	-2.3
Tax rate	0.0%	-15.0%	10.5%	27.0%
Net Profit	-4.9	-4.0	11.1	6.3
Net Profit ROS	-490.0%	-25.2%	5.8%	4.7%
Minorities	0.0	0.0	0.0	0.0
Attributable income	-4.9	-4.0	11.1	6.3
Adjusted Net Profit	-4.9	-4.0	11.1	6.3
Total aver. # of shares (m)	4.50	4.50	4.50	4.50
Attributable EPS	-1.09	-0.89	2.47	1.40
Adjusted EPS	-1.09	-0.89	2.47	1.40
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	-426.1%	-75.3%	88.1%	28.5%
FCFF return on sales	-570.0%	-54.5%	1.9%	-2.8%
ROE	762.1%	-92.4%	111.0%	63.2%
Sales/Capital employed (x)	0.87	3.44	11.43	3.57
Interest cover (x)	n/a	n/a	75.02	54.30
Payout ratio	0.0%	0.0%	0.0%	0.0%

Source: company data, Silvia Quandt Research

Solar Millennium AG

	Year end Oct., in € millions	2008	2009	2010e	2011e
Price target 33,00 €					
Up/downside 15,8%					
Rating Buy					
Current price 28,50 €					
Headquarter Nägelsbacherstraße 40 91052 Erlangen Germany					
IR Dr. Stefan Eckhoff investor@solarmillennium.de www.solarmillennium.de +49 (0)9131 / 9409 0					
Stock data					
Open Market Entry Standard					
Market cap (m) 356,25 €					
No. of shares (m) 12,50					
Daily volume (shares m) 0,200					
Indices None					
Next event AGM 6 May 2010					
	Profit loss				
	Sales	32	201	332	384
	y-o-y in %	2.9%	529.1%	64.9%	15.7%
	EBITDA	44	44	59	61
	EBIT	11	43	43	58
	EBIT margin in %	35.0%	21.4%	13.0%	15.0%
	Net income	6	24	27	36
	EPS SQR (€)	0.50	1.92	2.12	2.86
	y-o-y in %	-58.5%	285.5%	10.3%	35.0%
	EPS consensus (€)		1.92	2.71	3.43
	DPS (€)	0.00	0.00	0.00	0.00
	Payout ratio %	0.0%	0.0%	0.0%	0.0%
	Dividend yield %	0.0%	0.0%	0.0%	0.0%
	Cash flow				
	Net income	6	24	27	36
	Depreciation/Amortisation	0	1	1	1
	Working capital movements	9	-76	-39	-39
	Operating cash flow	61	-36	-3	7
	Net capex	-2	-4	-8	-11
	Free cash flow	63	-52	-20	-7
	Free cash flow yield	56.5%	-14.7%	-5.6%	-1.9%
	Balance sheet/Key ratios				
	Total Assets	272	415	456	507
	Closing net debt (cash)	-34	-92	-112	-124
	Gearing	49.3%	52.5%	68.6%	66.1%
	Capex ratio (tangible)	32.6%	15.2%	24.9%	24.6%
	ROE	8.7%	20.1%	17.9%	20.1%
	ROCE	36.2%	45.3%	23.7%	26.1%
	ROA	101.3%	118.9%	119.9%	96.7%
	Valuation				
	Enterprise value	111	425	458	474
	Book value	103	136	161	195
	Market cap	111	356	356	356
	EV/Sales	346%	211%	138%	123.4%
	EV/EBITDA	9.5	9.7	10.4	8.1
	PER	17.7	14.8	13.4	10.0
	PBV	1.5	3.0	2.4	2.0

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- The only listed CSP pure player in Germany
- Focus on parabolic trough technology as the most promising technology within CSP
- Experienced management team

Company structure and strategy

Solar Millennium is a leading project development and technology company in the solar thermal power business, also known as concentrating solar power (CSP) business. The company's activities include project development, project financing, technology provision, construction and power plant investment. Its technological focus is the commercially proven parabolic trough technology, which has been introduced with the development and construction of the Andasol 1 & 2 projects in Spain in cooperation with ACS / Cobra Group since 2003. Andasol 3 is just under construction and is to be realized with partners Stadtwerke München, RWE Innogy, Rheinenergie and Ferrostaal. However, the company is also pursuing alternative technological approaches such as solar chimney technology and hybrid power plants on a regenerative basis. The strong expertise in CSP technology has made Solar Millennium an attractive partner for blue-chip companies which has turned into cooperation, e.g. with Ferrostaal. Given the significant size and consequent funding needs of CSP projects, Solar Millennium's business includes the sale of project stakes to partners such as Stadtwerke München, RWE Innogy and Rheinenergie. Hence, the company has not only strengthened its project financing capabilities, but also diversified into the construction of CSP power plants now offering the whole spectrum of the CSP value chain with turnkey delivery of power plants (50-250 MW) and related services. The regions focus of projects is in highly solar radiated locations like Spain, US, Greece, MENA and China.

Solar Millennium's strategy includes five elements to be achieved in the medium term: (1) Extend its first mover advantage on an international scale: the company has taken a first mover role with the promoting its parabolic trough plants for the Andasol projects in Spain, and tries to promote this technology to other regions. (2) Achieve and maintain a sustainable technological leadership within parabolic trough technology contributing further to cost reduction. (3) Strengthen its business model with strategic alliances with experienced partners, which should enable the company to exploit business opportunities on a global scale. (4) Diversification of product portfolio, e.g. the use of parabolic trough technology for sea water desalination, generation of process heat for industry applications or cooling of buildings and industry machinery. (5) Alternative financing strategies for its CSP projects, e.g. direct project financing through major investors in addition to the typical debt financing (in order to be less dependent on overall credit availability by banks), or selling project stakes into closed solar funds and offering these to investors.

Management

The company's Management Board consists of four members and is characterized by high experience and strong relationship to Solar Millennium, as one of them is a co-founder and significant shareholder of the company, while another co-founder is member of the supervisory board. Utz Claassen has been appointed as CEO as of 1 January 2010 and is responsible for strategy, corporate management & development, technology development, organization, corporate investment management, legal affairs, auditing, risk management, public relations. Christian Beltle is responsible for strategy, business development and sales. Dr. Henner Gladen is responsible for R&D as well as investor relations, while Thomas Mayer is responsible for finance & controlling, human resources and marketing.

Recent performance and outlook

With the release of its final 2008/2009 figures (FY end October 2009) on 23th February 2009, the company has largely confirmed its preliminary results from December 2009. Consolidated sales of €201m were positively affected by an extraordinary effect of €48m – which has been previously announced – resulting from the sales of stakes from Andasol 1-3 and the Ibersol projects planned for FY07/08 and successfully concluded in FY08/09. EBIT was €43m and included an extraordinary effect of €12m from above mentioned projects.

Recently there was some trouble causing newspaper article in the German business magazine *Wirtschaftswoche*, claiming that the company's accounting policy is questionable, which lead to a one day share price drop of 20%. The article mentioned that the company sells its stakes in solarthermal power plants to its subsidiaries, which are not consolidated in the accounts of the company. Hence, the income from these sales is booked as external revenue. Some 40% of the sales in the last years were based on such sales, according to the article. However, according to the company, this accounting policy is in accordance with the legal framework. Hence, there should be no need to change the annual reports for the recent years. In addition, the accounting policy will not be changed going forward.

For 2010 the company's management has increased its sales target from previously €300m to €350m, representing a sales growth of 130% yoy excluding the extraordinary effects in the previous year and 74% yoy including the extraordinary effects in the previous year. On the EBIT level the company expects to reach €45m in 2010, which is only 5% up yoy. Management explains the lower operating margins, as a mix effect resulting from (1) an increase in the sales share of the lower margin EPC business (mainly Andasol), (2) high up-front costs for the first US project and (3) an increase in R&D expenses in order to secure the market leadership in the CSP business.

We have preferred to remain on the cautious side, in order to reflect potential uncertainties resulting from the project related nature of the company's business and expect Solar Millennium to reach sales of €332m and an EBIT of €43m in 2010.

SWOT analysis

Strengths

- __ Technological leadership
- __ Strong management expertise
- __ Partnerships with numerous utility companies

Weaknesses

- __ Low transparency as no quarterly reporting available
- __ Significant sales and earnings fluctuations possible due to project related nature of business

Opportunities

- __ Favourable regulations for CSP technology
- __ Internationalization of business model

Threats

- __ High dependency on management
- __ Potential technological competition for parabolic trough technology
- __ Project related business model depends on numerous project parameters, which could change over time and could cause project delays

P & L

(€ m)	2008	2009	2010e	2011e
Sales	38.0	223.4	332.0	384.0
Costs of sales	0.0	0.0	0.0	0.0
% of sales	0.0%	0.0%	0.0%	0.0%
Costs of materials	-12.6	-140.9	-206.8	-225.6
% of sales	-33.2%	-63.1%	-62.3%	-58.8%
Gross Profit	25.4	82.4	125.2	158.4
Gross ROS	66.8%	36.9%	37.7%	41.3%
Other operating income	1.7	2.0	2.8	10.6
Labour costs	-7.2	-14.2	-39.4	-53.4
% of sales	-18.9%	-9.8%	-11.9%	-13.9%
Other operating expenses	-8.3	-26.5	-44.4	-56.8
EBITDA	11.6	43.6	44.2	58.8
EBDITA ROS	36.2%	21.7%	13.3%	15.3%
EBIT	11.2	43.1	43.2	57.6
EBIT margin	35.0%	21.4%	13.0%	15.0%
Interest expenses	-12.2	-12.8	-11.6	-11.6
Interest income	0.1	5.2	0.0	0.0
Net interest expenses	-12.1	-7.6	-11.6	-11.6
PTP	8.0	26.3	35.4	49.0
PTP ROS	25.1%	13.1%	10.7%	12.8%
Income taxes	-1.8	-1.9	-8.8	-13.2
Tax rate	22.4%	23.0%	25.0%	27.0%
Net Profit	6.2	24.4	26.5	35.8
Net Profit ROS	19.5%	12.1%	8.0%	9.3%
Minorities	0.0	-0.4	0.0	0.0
Attributable income	6.2	24.0	26.5	35.8
Adjusted Net Profit	6.2	24.0	26.5	35.8
Total aver. # of shares (m)	12.50	12.50	12.50	12.50
Attributable EPS	0.50	1.92	2.12	2.86
Adjusted EPS	0.50	1.92	2.12	2.86
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	36.2%	45.3%	23.7%	26.1%
FCFF return on sales	20.0%	13.3%	7.5%	8.5%
ROE	8.7%	20.1%	17.9%	20.1%
Sales/Capital employed (x)	1.03	2.11	1.83	1.74
Interest cover (x)	1.92	4.37	4.72	5.97
Payout ratio	0.0%	0.0%	0.0%	0.0%

Source: company data, Silvia Quandt Research



Solon

	Year end 31 Dec., in €m	2008	2009*)	2010e	2011e
Price target					
5,00 €					
Up/downside					
-16,7%					
Rating					
Sell					
Current price					
6,00 €					
Headquarter					
Solon AG					
Berlin					
Germany					
IR					
Therese Ratz					
therese.ratz@solon.com					
www.solon.com					
+49 (0)30 / 81879 9305					
Stock data					
Main Market					
Prime Standard					
Market cap (m)					
120,9 €					
No. of shares (m)					
12,53					
Daily volume (shares m)					
0,04					
Indices					
DAX sector ALL INDUSTRIAL					
Next event					
FY 09, 31 March 2010					
	Profit loss				
	Sales	815	354	529	639
	y-o-y in %	62.0%	-56.6%	49.4%	20.8%
	EBITDA	73		28	41
	EBIT	58	-195	8	21
	EBIT margin in %	7.1%	-55.1%	1.6%	3.2%
	Net income	33	-276	-9	1
	EPS SQR (€)	2.61	-22.03	-0.72	0.11
	y-o-y in %	-30.2%	-944.0%	-96.7%	-115.3%
	EPS consensus (€)			-1.09	0.10
	DPS (€)	0.00		0.00	0.00
	Payout ratio %	0.0%		0.0%	0.0%
	Dividend yield %	0.0%		0.0%	0.0%
	Cash flow				
	Net income	33		-9	1
	Depreciation/Amortisation	15		20	20
	Working capital movements	-145		0	-5
	Operating cash flow	-88		13	20
	Net capex	-96		-20	-15
	Free cash flow	-219		-12	-0
	Free cash flow yield	-47.9%		-18.8%	-0.5%
	Balance sheet/Key ratios				
	Total Assets	903		740	745
	Closing net debt (cash)	-393		-481	-481
	Gearing	69.4%		162.3%	167.1%
	Capex ratio (tangible)	43.9%		8.7%	6.7%
	ROE	8.8%		-3.1%	0.5%
	ROCE	13.3%		1.6%	4.1%
	ROA	17.1%		2.2%	5.6%
	Valuation				
	Enterprise value	223		540	546
	Book value	376		288	288
	Market cap	457	121	65	65
	EV/Sales	27%		102%	85.4%
	EV/EBITDA	3.1		19.1	13.5
	PER	14.0		-7.3	47.5
	PBV	1.2		0.2	0.2

Source: Bloomberg, Silvia Quandt Research; *) 2009 preliminary figures

Unique selling points

- Large scale projects critical for future success, no impact on revenues and earnings until 2011 due to lead time of execution
- Poor financial shape (elevated net gearing), high working capital requirement profile

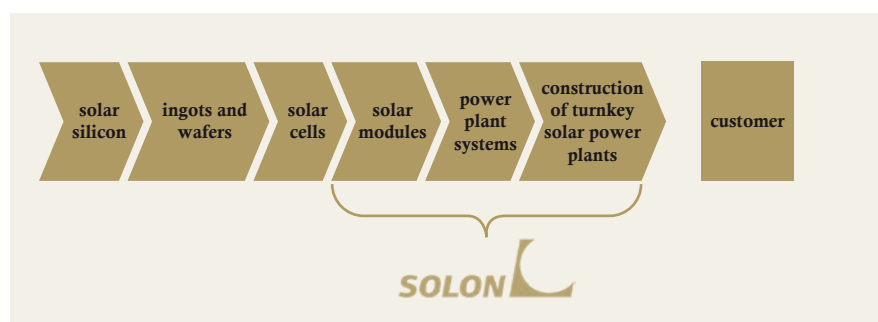
Company structure and strategy

Solon SE is a Germany-based holding company engaged in the solar technology sector. It is one of the largest manufacturers of solar modules in Europe as well as a supplier of solar system technology for large-scale rooftop and greenfield installations, structured into two segments:

- Components, which comprises solar modules with output ratings ranging from 130 to 240 watts, consisting of mono crystalline and polycrystalline solar cells, and
- System Technology, involved in the production of power plant systems, construction of turnkey solar power plants and management of solar module projects.

SOLON's customers are building professionals, project developers, architects and construction engineers, among others. The company operates through ten subsidiaries in Europe and the United States.

Solon value chain



Source: Solon SE

Management

The new CEO Stefan Säuberlich previously served as CFO for the Wadan Yards in Wismar and Warnemünde (formerly: AKER MTW Werft GmbH and AKER Warnow Werft GmbH). Before his time at AKER, Säuberlich was a management board member responsible for finance, financial controlling, legal affairs and IT of Scandlines AG in Rostock. Prior to that he was the head of equity holdings of DB Cargo AG where he participated in numerous major transactions and mergers.

Simone Prüfer, the CFO, joined Solon in 2006. She became a member of the Management Board in 2008.

Dr. Gero Wiese is the company's COO. He is a member of the Executive board since October 2007.

Recent performance and outlook

For the nine months period 2009, Solon SE's total revenue decreased 63% to €238.6m. Net loss for the period totaled €146.7m, vs. a profit of €27.3M. Total revenue reflects a significant decrease in demand for the company's products in the Solar Components and Systems Technology business segments. Net loss for the period reflects decreased gross profit margins as well as a significant loss on other investments.

SOLON SE announced that based on the current business trend, the Management Board expects sales for the fourth quarter of 2009 to continue rising steadily, as was the case in the preceding quarters of 2009. However, SOLON will close fiscal 2009 with a substantial operating loss. In 2010, global demand for solar technology should pick up considerably, while sales prices should soften slower than in 2009. The SOLON Group's goal for 2010 is to return to double-digit sales growth and a break-even operating result.

SWOT analysis

Strengths

- Strong position in growth markets: Italy, the US, Czech Republic, France

Weaknesses

- Poor financials
- strong net working capital consumption imposes stress on financials

Opportunities

- Slimmer cost basis from 2011 through higher efficiency in module and system manufacturing

Threats

- Continued high inventory levels due to nature of Solon's business, imposing stress on earnings if interest rates rise

P & L

(€ m)	2008	2009 *)	2010	2011
Sales	815.1	354.0	529.0	639.3
Costs of sales	-698.6		-431.1	-511.4
% of sales	81.8%		81.5%	80.0%
Gross Profit	116.5		97.9	127.9
Gross ROS	14.3%		18.5%	20.0%
Other operating income	21.5		15.0	15.0
Labour costs	-39.0		-42.3	-51.1
% of sales	-4.6%		-8.0%	-8.0%
Other operating expenses	-65.1		-42.3	-51.1
EBITDA	72.6		28.2	40.6
EBDITA ROS	8.9%		5.3%	6.3%
EBIT	57.7	-195.0	8.2	20.6
EBIT margin	7.1%	-55.1%	1.6%	3.2%
Interest expenses	-21.0		-30.0	-30.0
Interest income	10.8		10.8	10.8
Net interest expenses	-10.2		-19.2	-19.2
PTP	55.2		-11.0	1.4
PTP ROS	6.8%		-2.1%	0.2%
Income taxes	-22.5		2.0	0.0
Tax rate	40.8%		18.2%	0.0%
Net Profit	32.7		-9.0	1.4
Net Profit ROS	4.0%		-1.7%	0.2%
Minorities	0.0		0.0	0.0
Attributable income	32.7		-9.0	1.4
Adjusted Net Profit	32.7	-276.0	-9.0	1.4
Total aver. # of shares (m)	12.53	12.53	12.53	12.53
Attributable EPS	2.61	-22.03	-0.72	0.11
Adjusted EPS	2.61	-22.03	-0.72	0.11
DPS (€)	0.00	0.00	0.00	0.00
Ratios				
ROCE	13.3%		1.6%	4.1%
FCFF return on sales	-5.5%		1.3%	4.0%
ROE	8.8%		-3.1%	0.5%
Sales/Capital employed (x)	1.89		1.04	1.26
Interest cover (x)	3.75		1.27	1.69
Payout ratio	0.0%		0.0%	0.0%

Source: company data, Silvia Quandt Research; *) 2009 preliminary figures



Systaic AG

	Year end Dec., in € millions	2008	2009e	2010e	2011e
Price target 4,00 €					
Up/downside -11,1%					
Rating Neutral					
Current price 4,50 €					
Headquarter Systaic AG 40213 Düsseldorf Germany					
IR Sonja Teurezbacher ir@systaic.com www.systaic.com +49 (0)211 / 828559 0					
Stock data					
Main Market Prime Standard					
Market cap (m) 42,12 €					
No. of shares (m) 11,60					
Daily volume (shares m) 0,02					
Indices DAX sector ALL INDUSTRIAL					
Next event FY 09 results, 25 March 2010					
	Profit loss				
	Sales	199	218	240	270
	y-o-y in %	551.9%	9.7%	10.1%	12.5%
	EBITDA	13		21	23
	EBIT	10	9	10	12
	EBIT margin in %	4.8%	4.2%	4.2%	4.4%
	Net income	3		3	5
	EPS SQR (€)	0.44		0.25	0.45
	y-o-y in %	-39.4%		n/a	77.8%
	EPS consensus (€)		0.68	1.28	1.36
	DPS (€)	0.00		0.00	0.04
	Payout ratio %	0.0%		0.0%	10.0%
	Dividend yield %	0.0%		0.0%	1.0%
	Cash flow				
	Net income	3		3	5
	Depreciation/ Amortisation	2		7	9
	Working capital movements	-172		-5	-7
	Operating cash flow	-69		27	31
	Net capex	-19		-14	-15
	Free cash flow	-85		13	16
	Free cash flow yield	-139.7%		24.0%	31.0%
	Balance sheet/Key ratios				
	Total Assets	226		250	280
	Closing net debt (cash)	-60		10	25
	Gearing	106.1%		-2.8%	-11.5%
	Capex ratio (tangible)	68.3%		30.1%	28.4%
	ROE	9.0%		2.4%	3.4%
	ROCE	12.3%		9.6%	10.7%
	ROA	26.1%		23.7%	24.5%
	Valuation				
	Enterprise value	61	77	49	35
	Book value	50	106	134	169
	Market cap	61	46	52	52
	EV/Sales	31%	35%	20%	13.0%
	EV/EBITDA	5.5	5.9	2.8	1.7
	PER	20.0	20.7	17.8	10.0
	PBV	1.8	0.6	0.4	0.3

Source: Bloomberg, Silvia Quandt Research

Unique selling points

- Disappointing preliminary FY 2009 results, substantially lower than previous guidance
- SYSTAIC gains from depressed PV cells and module prices (to remain foreseeable depressed), operating at the very upper end of the value adding chain
- SYSTAIC is the only global large-scale producer of photovoltaic (PV) systems for car roofs. In-house manufacturing of modules integrated in the roof also secures high and steady quality as the company can control production processes.

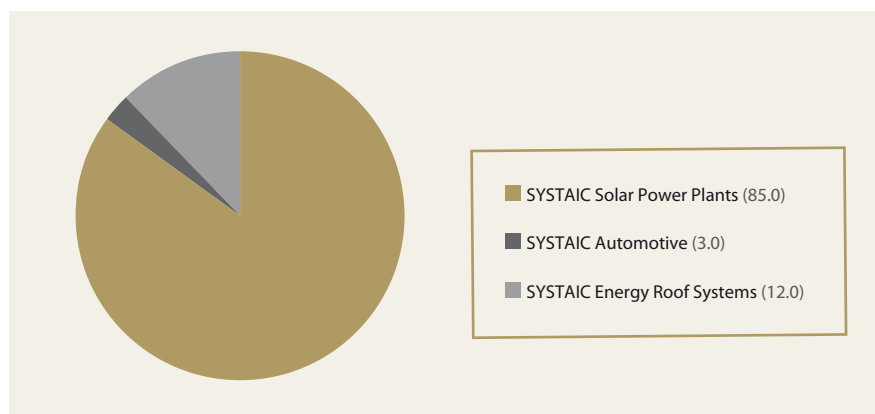
Company Structure and strategy

SYSTAIC AG is a Germany-based company offering solar technology solutions. It is involved in the planning, design, production, installation and maintenance of solar power systems. The Company's patented photovoltaic solution is based on crystalline silicon solar cells and is applied to roofs, facade units, paneling and railing units, entryway roofing, roofs for the automobile industry and skylights.

It is the largest European specialist in the solar power plant area who is exclusively active in ramping up major photovoltaic (PV) projects boasting a minimum output of 10 MWp.

The company owns a network of energy design centers, providing technology consulting services for architects and planners. In addition, SYSTAIC constructs and operates photovoltaic plants in Germany and Spain for investors and business customers. The plants involve both roof-fitted systems and standalone systems.

Systaic divisional sales split (2009e)



Source: Silvia Quandt Research GmbH estimates

Management

CEO Michael Pack has a degree in industrial engineering. Before joining SYSTAIC in 2007 he was managing director at VELUX Deutschland and marketing director at Pfeilderer. He is appointed to the SYSTAIC Executive Board until March 2011.

Udo Zimmer was appointed CFO with effect from 1 January 2010. He is responsible for Finance & Controlling, Investor Relations, Legal, Human Resources, IT and Purchasing. From 1996 to 2007 Mr. Zimmer was Financial Director of Augusta Technologie AG. He has extensive experience in the capital market and over the past 15 years has effected and integrated more than 30 acquisitions worldwide.

COO Hans-Jörg Hölzenbein has been with SYSTAIC since 2005 and has become as member of the Executive Board of the company since 2008. He is the managing director for the company's foreign subsidiaries in Spain, France, and Italy.

CNO Olaf Achilles joined SYSTAIC in 2006, working as a consultant. He was appointed to the company's Executive Board in 2007.

Recent performance and outlook

Systaic released preliminary FY 2009 results showing sharply lower revenues, i.e. approx. €218m which is only approx. 10% higher than in the previous year. The drastic shortfall is due to not accounting for a large scale project which was hitherto accounted for as revenues (as a security of receivables). As a result, EBIT came in much lower than previously assumed, at €9.1m compared to €9.5m earned in 2008.

During Q4 2009 SYSTAIC was just raising the guidance for group revenue to above €300m while anticipating €400-450m sales for FY 2010. The company now looks for at least 20% upside for revenues in 2010, however, the management is now excluding from financial planning various large-scale PV projects to be realized (presumably in Italy) while still expecting a positive group result.

SWOT analysis

Strengths

- First mover in the Solar Energy Roof systems and Automotive solar rooftops lifts reputation among customers
- Systaic is a beneficiary of depressed PV cells and module prices, to remain depressed foreseeably so, operating at the upper end of the value adding chain
- Prudent cash management during project execution via milestone-payment agreement preserves positive liquidity levels during construction period
- Net gearing almost nil

Weaknesses

- Strong reliance on banks for project financing may cause delays in funding projects

Opportunities

- Foreign PV markets (France, Italy, etc.) to record disproportional growth (relative to Germany) in coming years; Centrosolar best positioned in French roof-systems market

Threats

- Disappointing FY 2009 results and substantially lower guidance for 2010 likely to undermined investors confidence in stock

P & L

(€ m)	2008	2009 *)	2010	2011
Sales	198.7	218.0	240.0	270.0
Costs of sales	-171.7		-198.9	-223.9
% of sales	-86.4%		-82.9%	-82.9%
Gross Profit	27.0	218.0	41.1	46.1
Gross ROS	13.6%		17.1%	17.1%
Other operating income	3.5		3.9	3.7
Labour costs	-7.7		-9.8	-11.3
% of sales	-3.9%		-4.1%	-4.2%
Other operating expenses	-11.7		-12.0	-13.0
EBITDA	11.0		17.3	20.6
EBDITA ROS	5.6%		7.2%	7.6%
EBIT	9.5	9.1	10.0	12.0
EBIT margin	4.8%	4.2%	4.2%	4.4%
Interest expenses	-4.0		-6.5	-6.0
Interest income	0.2		1.0	2.0
Net interest expenses	-3.8		-5.5	-4.0
PTP	5.7		4.5	8.0
PTP ROS	2.9%		1.9%	3.0%
Income taxes	-2.7		-1.6	-2.8
Tax rate	47.1%		35.0%	35.0%
Net Profit	3.0		2.9	5.2
Net Profit ROS	1.5%		1.2%	1.9%
Minorities	0.0		0.0	0.0
Attributable income	3.0		2.9	5.2
Adjusted Net Profit	3.0		2.9	5.2
Total aver. # of shares (m)	6.99	10.15	11.60	11.60
Attributable EPS	0.44		0.25	0.45
Adjusted EPS	0.44		0.25	0.45
DPS (€)	0.00		0.00	0.04
Ratios				
ROCE	12.3%		9.6%	10.7%
FCFF return on sales	-6.3%		-0.1%	0.5%
ROE	9.0%		2.4%	3.4%
Sales/Capital employed (x)	2.56		2.30	2.41
Interest cover (x)	3.38		2.54	3.00
Payout ratio	0.0%		0.0%	10.0%

Source: company data, Silvia Quandt Research, *) 2009 preliminary figures

This analysis was prepared by Harald Gruber, Head of Chemicals, Basic Goods/ Renewables and was first published 10 March 2010. Silvia Quandt Research GmbH, Grüneburgweg 18, 60322 Frankfurt is responsible for its preparation. German Regulatory Authority: Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), Graurheindorfer Str. 108, 53117 Bonn and Lurgiallee 12, 60439 Frankfurt.

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Buy total: 48	23
Neutral total: 17	4
Avoid total: 6	0

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- (e) is party to an agreement with the company or companies that is the subject of the analysis relating to the production of the recommendation;
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Silvia Quandt Research GmbH . Grüneburgweg 18 . 60322 Frankfurt am Main . Germany . Tel: + 49 69 95 92 90 93 -0 . Fax: + 49 69 95 92 90 93 – 11



SILVIA QUANDT
RESEARCH GMBH

Silvia Quandt Research GmbH

Grüneburgweg 18
60322 Frankfurt, Germany
Fon: +49 (69) 95 92 90 93-0
Fax: +49 (69) 95 92 90 93-11
info@silviaquandt.de

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