

Writing exclusively for PES, Dr. Winfried Hoffmann, President of the EPIA, discusses the current state of the industry and his hopes for a bright future...

The global photovoltaic sector has been growing significantly over the last eight years at an average rate of over 40%. In the 60s and 70s, the market developed on niche segments such as space solar cells. During the 80s and 90s several national R&D programmes mainly in Japan, Germany and the US allowed some market development for off-grid and consumer appliances. And since the turn of the century, the photovoltaic sector has entered a "transition phase" towards competitiveness in all market segments and in particular grid-connected applications (thanks to the development of market support programmes). Several leading markets have enabled this transition, these being Germany, Japan and the US (they represent 2/3 of the global market). Due to the grown awareness in the public and the political commitment in these three countries, renewable energies are supported by politically-driven programmes. Local content and a large amount of 'added value' is needed to legitimate these politics.

It is expected that by 2020 photovoltaic (PV) will be able to increasingly contribute to the global electricity demand. With adequate policies in the transition phase,

competitiveness as a decentralised electricity source, both on-grid and off, and increasing prices of conventional electricity production, it is estimated that PV could represent 25% of global electricity consumption in 2040.

Reaching competitiveness

One of the key challenges of the photovoltaic sector is to reduce cost of PV modules to reach competitiveness. Until 2003, the prices of PV modules have been decreasing by 20% each time the cumulative capacity installed was doubled, given the past growth rate; this represented a five percent annual price decrease on average. According to the county and its level of isolation, PV is going to become competitive with peak power prices in the next few years.

Actually, during the day electricity prices are usually higher at peak power times (which happen to be generally around midday). At this time electricity prices can reach peaks which makes it very expensive. Coincidentally, this is the moment when PV naturally has the biggest output. We expect that countries like Spain, Italy or Greece, solar electricity can be competitive with peak power prices within the next ten years, and northern EU countries in the next decade. The same applies to the US, Japan and South-East Asia.

Support mechanisms are necessary in the transition phase

Solar electricity can not compete today with conventional energy sources. It requires, as we have seen before, a further reduction of

PV modules' cost. In order to reduce costs, the existence of mass markets is necessary. To enable it, support mechanisms to initiate these markets must be in place. Energy markets are not ruled as any industrial sector, conventional energy sources are heavily subsidized, which is why renewable energy sources, in order to reduce costs (and if not initiated by market support programmes), cannot be expected to become a new source of electricity generation.

The most effective support mechanism which exists today is the one in place in Germany; the feed-in tariff system. The principle of this mechanism is that it offers the individual investor in solar electricity systems an attractive price for selling their produced electricity to the utility grid, and rewards them for being supplied by clean solar electricity. The tariff set is high enough to enable a positive return on investment and a reasonable pay-back time (for example, ten years). The tariff is paid over a long period of time (20 years, say) enabling a long-term visibility and thus stability for the investor. This system, in place since 2000, has been renewed and improved in 2003 enabling an impressive market take-off in Germany (over 100% market growth in 2004).

The experience of Germany has convinced more European governments to adopt similar systems to develop solar electricity. These are Spain (since 2004), Italy in 2005, and Greece and France since mid-2006.

These countries in Europe are launching a decisive trend toward sustained market

“PV could represent 25% of global electricity consumption in 2040”

Words: Dr. Winfried Hoffmann, President, European Photovoltaic Industry Association



PV Pergola at the Forum in Barcelona: more and more Southern European countries such as Spain, Italy, Greece and France are initiating support programmes to develop the use of solar electricity (copyright: Isofoton)

development. Demand is growing and should not remain unsatisfied, which is why industry has to prepare itself properly to answer consumers' needs. We have seen how adapted support mechanisms could enable the sustainable development of markets in Europe and globally.

EPIA estimates that in 2010, the annual global market could reach 5.4 GWp; approximately 20 GWp cumulative installed capacity globally could be achieved. This is equivalent to the basic needs for about 1 billion people around the globe.

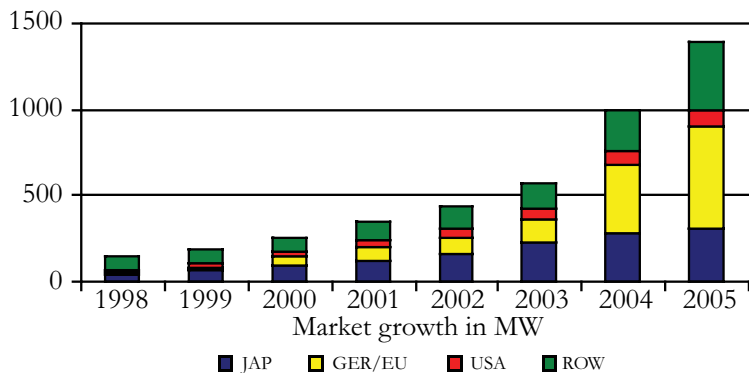
Industry must prepare itself along all the value chain

If we are going to reach an annual market of 5.4 GWp, manufacturers have to adapt their production capacity all along the value chain. Not only do PV cell and module producers have to up-scale production

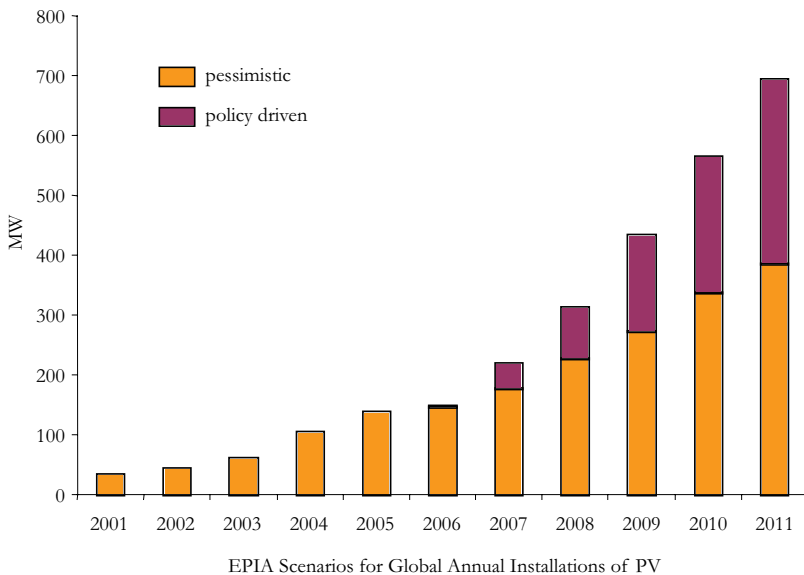
outputs but also balance of system producers (inverters, cabling devices) and top of the chain silicon producers. Today, our sector is facing a temporary shortage of solar grade silicon because the chemical industry did not anticipate such a growth of our sector which relies essentially on politics, which have a decisive impact on market development. For many years the PV industry has been a marginal client for the chemical industry and the raw material provided was considered a way for this sector to get rid of its production surplus. Today, the PV sector has turned to be one of the main and new attractive clients of the chemical industry as well as the equipment suppliers of semiconductors. It is estimated that to reach expected market targets by 2010, current solar grade silicon production must be doubled from current levels to reach an annual output of 30,000 tons. The photovoltaic sector is becoming an attractive business able to reboot some sectors which are facing market slow down.

A solution to poverty eradication

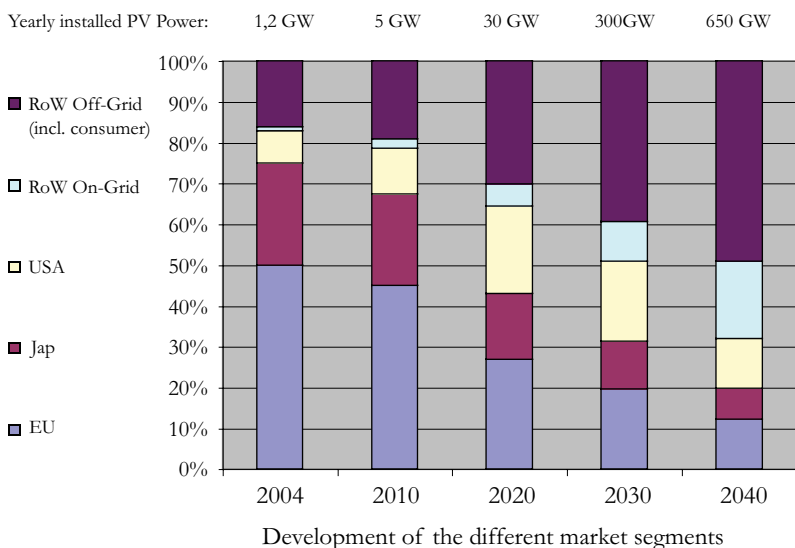
More than two billion people live without electricity today. Because of the fast growing population in remote rural areas, this figure rather is growing, even if many electrification programmes are successfully completed. For these decentralised power needs, PV solar electricity is best. After the continuing price decline in the next decade PV will be cost efficient and affordable to close the energy gap in the new world. Accordingly the rest of the world market, off-grid applications will start to overtake other markets in the middle of 2020 and will have the largest share after 2030. Allocating local content in these future markets will be a major topic in the next years. Today's leading EU on-grid market will be almost saturated in that time as well as the Japanese and US Markets. To prepare for these future changes the PV industry has to set the course today.



Source: Dr. Winfried Hoffmann, Schott Solar, 2006 IEEE WCPE C Hawaii, 8 May 2006



EPIA Scenarios for Global Annual Installations of PV



Source: Dr. Winfried Hoffmann, Schott Solar, 2006 IEEE WCPEC Hawaii, 8 May 2006

A sector with high business and job creation potential

Not only does photovoltaic electricity have high potential over the long term to meet electricity needs, but it will also become a leading business. Today, the PV industry generates over five billion Euro turnover per year. It is estimated that in 2040 it will be 500 billion.

Over 40000 people already work for PV in Europe today. In terms of job creation, to meet 2020 market objectives it is estimated that PV can employ directly and indirectly two million people worldwide.

EPIA, the strength of a single photovoltaic voice

EPIA represents over 95% of the European Photovoltaic Industry and 80% of the global manufacturers. It exists to deliver a distinct and valuable service driven from the strength of a single photovoltaic voice. The role of EPIA is to accompany the industry along the expected market growth. On one hand, by ensuring political support and the adoption of adequate support mechanism to ensure demand. On the other hand, by working together with all the stakeholders and ensure that industry can actually meet the demand created.

This will be done by following four main driving directions: competitiveness, innovation, quality and promotion...

Competitiveness, because it is key to be able to compete soon with peak power in the conventional electricity market. To fulfil the demand created by new political support programmes in Europe and worldwide, the industry is up-scaling its production capacities to reach the critical mass and realise economies of scale.

Innovation is decisive to make the difference among other technologies. Adapting products to consumers' needs is key. This requires closer work with research centres, and the adaptation of production processes and technologies. A quick transfer of laboratory results to piloting and production processes in the industry is necessary.

Quality. PV is considered a clean source of energy. This requires us to adapt our production processes to environmental requirements. PV must be reliable to be able to meet customers' expectations. The sector has already developed a full life-cycle analysis for each adequate solution, including proven recycling technology.

Promotion is indispensable to raise

awareness for renewable energies (and in particular PV). Promotion towards decision makers at national, European and global level is key to obtaining necessary interim policies until competitiveness is reached. This should happen within five to ten years at peak power prices on Southern European electricity markets – and in the next decade in Northern Europe. A constant dialogue must be undertaken with all involved stakeholders (architects, utilities, construction sector). Finally, media is the channel through which we have to promote our sector.

EPIA has chosen to develop its strategy along these four pillars through the development of partnerships. The key for success to undertake this action plan is to work with the right partner such as professional associations, local governments, research institutes or media. Preparing reports or position papers, organising seminars or promotion campaigns requires us to be transparent and to work in close collaboration with the right stakeholders. This is fundamentally important to obtain reliable, credible and widely-accepted results. ■

There are many applications which exist to integrate photovoltaic in buildings: here a semi-transparent module is integrated in a roof which also protects from direct sunlight (copyright: BEAR architects, M. van Kerckhoven)



Events Reminder

Renewable Energy Europe 2007

Date: 26 - 28 June 2007

Summary

The largest number of power professionals under one roof - at the Feria de Madrid, Spain

Notes

By launching Renewable Energy Europe and co-locating this exciting new event with POWER-GEN Europe and POWER-GRID Europe, Pennwell Corporation has put together a total-solutions package. POWER-GEN Europe is already the established home of the conventional power generation industry in Europe. Bring in the key players from the renewable industry and the transmission and distribution industry and your entire market is in one place.

The exhibition will be complemented by a high-level conference that addresses the key technological and strategic issues facing you and your company.

Renewable Energy Europe is your chance to make contact with leaders and decision-makers from the top European power utilities. This is your chance to talk to the power industry as a whole and not just a smaller section interested in just one form of generation or issue.

In 2006, POWER-GEN Europe had a total attendance of over 8,200 visitors, representing 97 countries. Renewable Energy Europe will build its own dedicated attendance on top of this existing base.

Events Reminder

Renewable Energy Europe 2007 will target high-level executives tasked with the provision of long-term, sustainable energy solutions for:

- * Their utility
- * Their customers
- * Their country
- * The eventual fuel-mix employed
- * The technologies to be implemented

Exhibitors will feature those from industries including:

- * Electric utilities
- * Renewable energy technology producers
- * Research facilities
- * Independent power producers
- * Industrial facilities
- * Project developers
- * Architect/ engineering firms
- * Waste-to-energy plant operators
- * Financial/ legal firms
- * Environmental Groups

Contact

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Activities

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