



SAXONY-ANHALT

Investment and
Marketing Corporation

**SOLAR VALLEY
CENTER OF PV INDUSTRIES**

www.invest-in-saxony-anhalt.com

SOLAR VALLEY JOIN THE SOLAR FAMILY IN SAXONY-ANHALT



- ▶ Central Germany – SOLAR VALLEY
- ▶ Highest density of PV supply chain worldwide
- ▶ Technology heart beats in Saxony-Anhalt

- ▶ Center for Silicon Photovoltaics
- ▶ Generous investment incentives
- ▶ Rapid project realization
- ▶ Skilled and flexible labour force

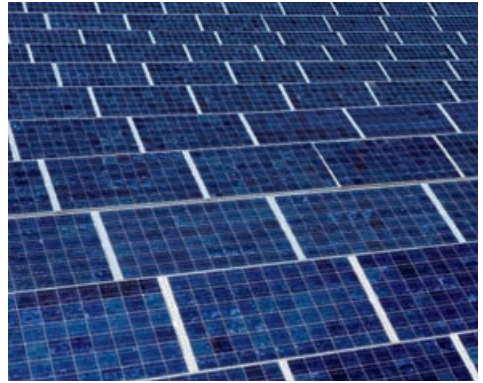
Solar Valley – get a winning position for your business

- ▶ **Generous investment incentives** to cover up to 50 percent of capital expenditure
- ▶ **Fast-track project-realization** due to close proximity of the world's leading PV equipment suppliers and superior engineering as well as local authority services and support
- ▶ **Close R&D cooperation** with Germany's PV research institutes – e.g. the Fraunhofer Institute – CSP: Center for Silicon Photovoltaic
- ▶ **Skilled and flexible workforces**, lower labour costs are the advantages over Central Eastern European Countries
- ▶ **Leading glass producers and gas suppliers** located in Saxony-Anhalt offer best siting conditions
- ▶ **Shorter "time to market"** by state-of-the-art infrastructure for lower rate of long-term transport inventories
- ▶ Nearby **international schools** to join the Solar family life

The PV Market

- ▶ Germany is the largest PV market in the world with app. 5.3 GWp of cumulated PV power in 2008
- ▶ Installations in 2009 enjoy a 20 year long feed-in-tariff of 31.94 to 43.01 € cent/kWh
- ▶ German PV industry turnover: EUR 7 billion in 2008
- ▶ The forecast compound annual growth rate for the period 2007 to 2012 is 28.7 percent
- ▶ Significant investment opportunities exist at all stages of the value chain and in all technologies
- ▶ Already located world's leading PV players (around 60) enjoying the myriad advantages of German PV industry cluster know-how and experience
- ▶ Some EUR 190 million was invested in R&D in 2008 (estimation)

SOLAR VALLEY THE HEART BEATS IN SAXONY-ANHALT



Technology-heart Solar Valley in Saxony-Anhalt

Q.CELLS

▶ Poly- and monocrystalline solar cells

calyxo

▶ Cadmium telluride technology

sontar

▶ Micromorph silicon technology

SOLIBRO

▶ CIGS technology

sovello

▶ String Ribbon technology

malibu

▶ Amorph silicon technology

pv crystalox

▶ Solar-grade silicon

SSF
solar screen factory

▶ High-precision metallisation screens

Glass-industry (capacities)

GUARDIAN
The American Way

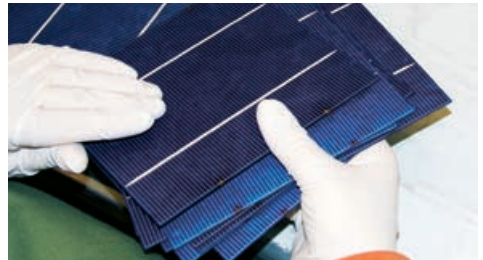
▶ Guardian 250.000 t/a

EUROGLAS

▶ Euroglas 470.000 t/a

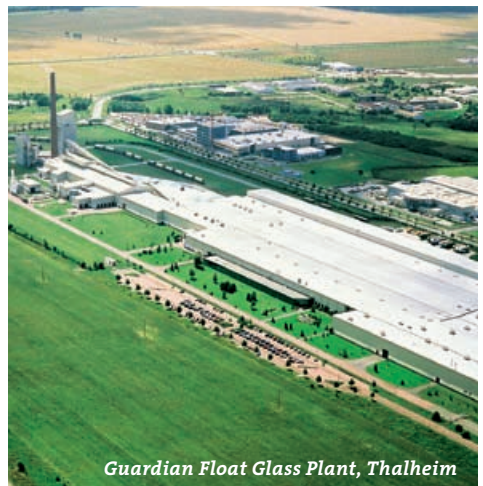
f | glass

▶ f-glass 255.000 t/a



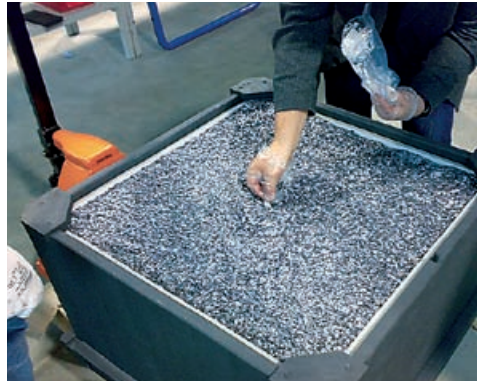
Core region for SOLAR VALLEY

- ▶ Traditional industrial cities with a charming historical background
- ▶ Ambitious core region with high investments of DHL, BMW, Dell, Porsche
- ▶ Several universities, international schools, research institutes are engaged in extensive joint-venture-research programs
- ▶ more than 420 primary schools and 615 secondary schools, with resources of bilingual education, high density of playschools
- ▶ attractive residential areas in the city center as well as in the surroundings
- ▶ four and five star hotels in the region



Guardian Float Glass Plant, Thalheim

SOLAR VALLEY THINK TANK: CRYSTALLIZATION POINT FOR RESEARCH AND DEVELOPMENT – CSP



Crystallization of solar silicon (mc)

Generating more solar power using less silicon

- ▶ The Fraunhofer Center for Silicon Photovoltaics CSP is the world's only crystallization and materials analysis center.
- ▶ CSP conducts project-based, market-oriented research and development together with its industrial partners as well as application-oriented basic research in the field of silicon photovoltaics.
- ▶ The CSP offers economically attractive, time- and cost-efficient projects.
- ▶ It is currently supported with 60 million Euros by the German federal government, the EU and the state Saxony-Anhalt.
- ▶ The resident research facilities offer good opportunities for new innovative people who get access to the most varied technologies of the PV industry in the region of Solar Valley.

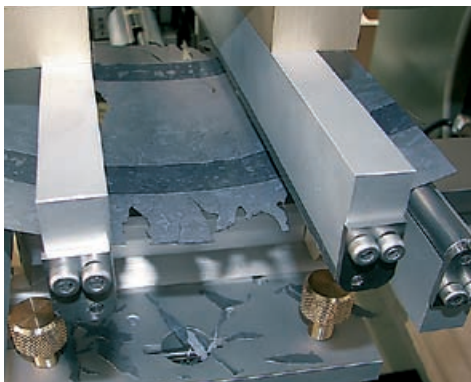


Integrated education concept Photovoltaics

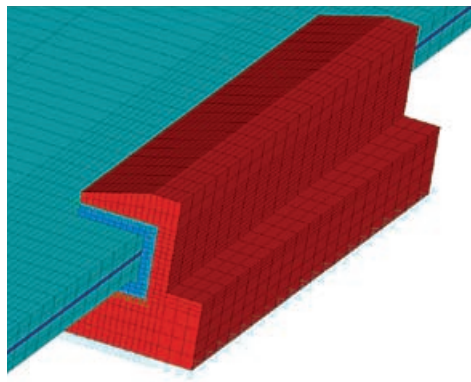
- ▶ Silicon crystallisation, incl. wafer sawing and cleaning
- ▶ Coating technologies
- ▶ Junction technologies in module making
- ▶ Micro-structure diagnostic of solar materials and cells
- ▶ Mechanical assessment of thin wafer and solar cells
- ▶ Electrical characterisation of solar materials
- ▶ Photon management and optical characterisation
- ▶ Reliability assessment of solar modules

"The Fraunhofer CSP conducts a combination of crystallisation experiments, microstructural analysis for the characterisation of Si wafers and material mechanic experiments on solar modules, including alterations in their properties during the production process and while in operation, all at the highest levels of competence. The results can be used to evaluate the working life and reliability of modules as well as to improve their application properties and functionality."

Dr Jörg Bagdahn, Director CSP



Testing of mechanical properties of solar cells



Long term reliability of solar modules

SOLAR VALLEY

LIKES TO HAVE NEW FRIENDS-CUSTOMERS-SUPPLIERS-PARTICIPATORS

- ▶ Solar Valley Mitteldeutschland – a joint project of Saxony, Thuringia and Saxony-Anhalt is one of the Winner of the Excellence Cluster of Germany launched by the German Federal Research Ministry (BMBF).
- ▶ Therefore will be received research grants totalling 120 million EUR over the next five years.

Goals

- ▶ Grid parity for PV generated power in Germany up to 2015
- ▶ Joint R&D activities to keep the scientific-technological advantage worldwide



- ▶ The research incentives will contribute to further strengthening the leading position of Germany-based solar firms and their headquarters in Central Germany.

Partners representing the whole PV supply chain

- ▶ 29 companies
- ▶ 7 R&D institutes
- ▶ 4 universities
- ▶ 3 federal states

Development concept from fundamental research to innovative



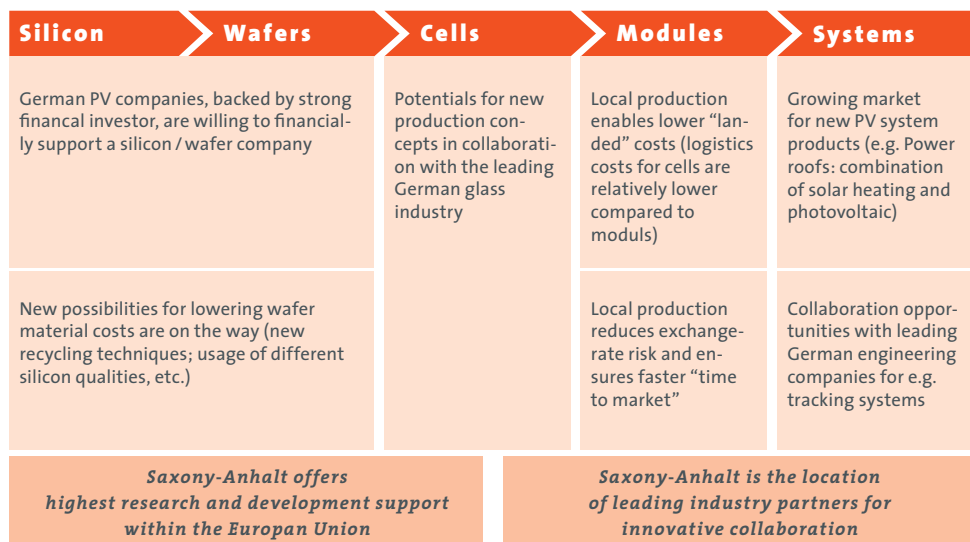
SOLAR VALLEY SUPPORTS YOU IN SAXONY- ANHALT – STEP IN “MADE IN GERMANY” QUALITY



Solar field in Solar Valley.

PUBLIC GRANTS AND SUBSIDIES SUPPORT YOUR INVESTMENT PROJECT IN SOLAR VALLEY

<i>Reduction of capital expenditure</i>			<i>Reduction of operating expenditure</i>	
Cash Incentives	Loans / financing equity capital	Public Guarantees	Labor-Related Incentives	Promotion of R&D
Investment grants	KfW Loans (National level)	State	Recruitment	Grants
Investment allowance	State Development Bank Loans	Combined State / Federal	Training	Loans
			Wage subsidies	Silent / Direct Partnership





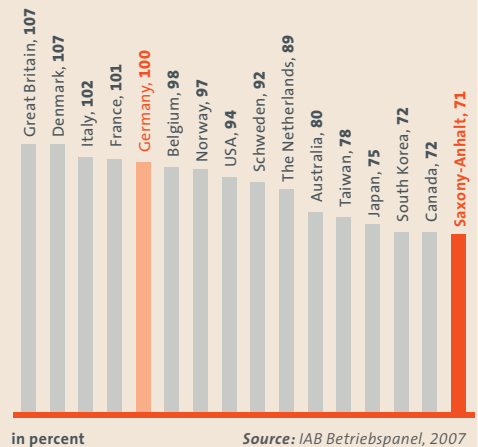
Q-Cells SE

SOLAR VALLEY

SUNNY PROSPECTS ALSO FOR THE LABOR MARKET

Unit labour costs in the manufacturing industry 2007 in Saxony-Anhalt (based on gross value added)

- ▶ Low unit labour costs in manufacturing industry: 30 % below German average
- ▶ Generally fewer additional employee benefits



in percent

Source: IAB Betriebspanel, 2007

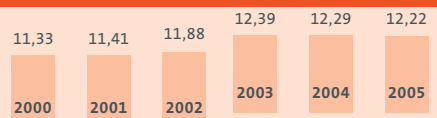
Less tariff bonding than in West Germany

- ▶ 75 % of companies are not unionised

Flexibility, motivation, education are very high

- ▶ 90 % of all employees are professionally trained
- ▶ Readiness for flexible work time models (about 13 % part timers) and high mobility (about 12 % commuters)
- ▶ 24/7 working time is possible – shortest permit periods for this model

Development of Gross wages per hour in EUR



Semiconductor industry

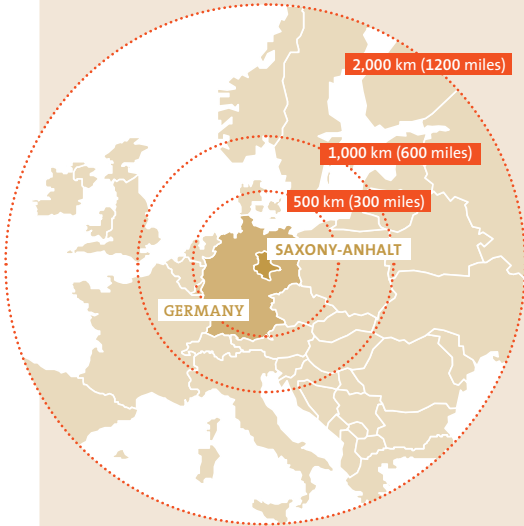
Group	Gross wage
▶ Technican	13,95 per h/EUR 2.420 per month/EUR
▶ Operator	10,10 per h/EUR 1.750 per month/EUR
▶ Semi prof.	8,86 per h/EUR 1.500 per month/EUR

Source: DIS AG and own calculation (2007)

YOUR PARTNER

- ▶ for site selection
- ▶ for subsidy and financing issues
- ▶ for dealing with authorities
- ▶ for full line project management

*All inquiries are kept strictly confidential.
Our services are free of charge!*



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