

# Photovoltaics — made in Germany

## Leading PV Manufacturers Produce in Germany

February 2013

Value Chain	No.	Company	Locations	Production Capacity [MWp]	Empl. <sup>1</sup>	
Silicon	01	Wacker Chemie	Burghausen, Nünchritz	52,000t	700	
	02	PV Crystalox Solar Silicon	Bitterfeld-Wolfen	1,800t	125	
	03	Schmid Polysilicon Production	Schwarze Pumpe	180t	85	
Wafer	04	PV Crystalox - PV Silicon	Erfurt	150*	145*	
Cell	05	Q-Cells (Hanwha Q-Cells)	Bitterfeld-Wolfen	200	799	
	06	ITS Innotech Solar	Halle	100	54	
	07	Sunways (LDK)	Arnstadt	100	120	
Module	08	aleo solar (Bosch)	Prenzlau	280	664	
	09	CENTROSOLAR	Wismar	350	350	
	10	SOLARWATT	Dresden	300	350	
	11	Conergy	Frankfurt (Oder)	280	320-370	
	12	Solar-Fabrik	Freiburg	210*	240	
	13	SOLON (Microsol)	Berlin	80	356	
	14	Scheuten Solar Technology (Aikosolar)	Gelsenkirchen	200*	n/a	
	15	Heckert Solar	Chemnitz	77	200	
	16	Q-Cells (Hanwha Q-Cells)	Bitterfeld-Wolfen	135*	1231*	
	17	ALGATEC Solar	Prösen, Großbräschen	120*	131*	
	18	alfasolar	Hannover	40	101	
	19	Sunset Solar	Löbichau	40	40	
	20	GSS	Korbußen	20	36	
	21	Webasto	Schierling	10*	10*	
	22	JuraWatt	Neumarkt	20**	26	
	23	Mage Sunovation	Eisenfeld	<5	12	
	24	Q-mo solar	Teltow	<1	5	
	25	Sunware	Duisburg	n/a	n/a	
	26	Galaxy Energy	Berghülen	-**	35	
	27	Soluxtec	Bitburg	n/a	55	
	28	Solar Industries Module	Freiburg	n/a	25	
	Fully Integrated	29	SolarWorld	Freiburg	750/300/500	1745***
		30	Bosch Solar Energy	Arnstadt	430/550/210	2000
	CPV	31	Soitec	Freiburg	70	175
	Thin Film	32	Inventux Solar Technologies GmbH	Berlin	100	90
	a-Si	33	Masdar PV	Ichtershausen	80*	200*
	a-Si/µc-Si	34	SCHOTT Solar Thin Film	Jena	40	160
	CIS	35	Q-Cells	Bitterfeld-Wolfen	120	799
36		AVANCIS	Torgau	120*	400*	
37		Nanosolar	Luckenwalde	115	90	
CIGSSe	38	Solarion	Leipzig, Zwenkau	20	120	
CIGS	39	Bosch Solar CIS Tech	Brandenburg	15	150	
	40	Manz CIGS Technology GmbH	Schwäbisch Hall	6	120	
CdTe	41	Calyxo (Q-Cells)	Bitterfeld-Wolfen	60	150	
	42	Second Solar Century	Halle	-**	-**	
GaAs	43	Azur Space Solar Power	Heilbronn	350*	150*	
OPV	44	heliatek	Dresden	2	63	
PV & Thermal	45	Solarzentrum Allgäu	Altdorf-Biessenhofen	25	60	
	46	Heli Solar	Blankenburg	n/a	n/a	

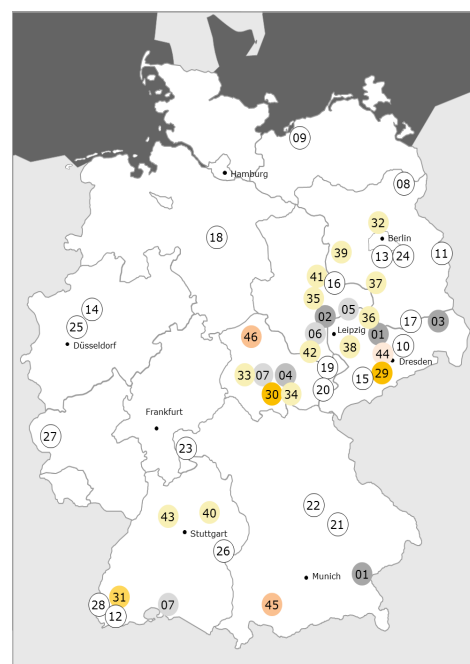
1) Current total number of employees at respective locations

\*) 2012

\*\*\*) Planned/Under construction

\*\*\*\*) including employees in Bonn

Source: Germany Trade & Invest, Information provided by the respective company, February 2013



## The Industry and Market

Germany is home to around 46 manufacturers of silicon, wafers, cells, and modules. In addition, there are over 200 PV material and equipment suppliers, more than 100 balance-of-system (BOS) component manufacturers, more than 50 PV research institutes and hundreds of project development, system integration and installation companies. The German PV industry currently employs a workforce of more than 120 thousand people.

With the own-consumption model growing successfully in Germany, the German PV sector is about to develop a customer base independent of feed-in tariff-based subsidy schemes. Independence from subsidies will help make the PV market even more stable in the future. New PV sales strategies, system configurations, and integration processes required in the future grid-parity environment are intrinsic components of the specialist expertise currently being developed in Germany.

## Advantages

As a member of the world's most holistic PV cluster, investors can benefit from:

### Proximity to the customer

- "Made in Germany" premium brand: easier access to private customers, especially for own-consumption
- Test grid-parity and own-consumption solutions
- Direct link to customer (e.g. "transparent factory" concept)
- Easier customization (e.g. BIPV, battery and smart home systems)
- Distinction against competitors at home

### Shorter time to market

- Short reaction time, just-in-time delivery, optimized supply chain - especially in volatile market
- Close proximity to other European markets

### Optimized costs

- Less transportation costs
- Reduced long-term transport inventories
- Moderate production costs, cash grants of up to 50% available

### Lowered risks

- Reduced price risks
- Eurozone: single currency means no exchange rate risk
- Potential trade barriers eliminated
- Lobby power

### Many partners

- Access to large local supplier base for materials (e.g. glass) and equipment
- Cooperation with utilities, test houses, banks, insurances, system integrators,

## Our services

- Market research
- Competitive analysis
- Legal information
- Site selection support
- Financing and incentive consultancy
- Project management

## About Us

*Germany Trade & Invest* is the economic development agency of the Federal Republic of Germany. Our team of industry experts supports international companies from market entry to business start-up in Germany.

We want to make sure you make the right location decision. That's why we organize on-site visits and fact-finding missions in one of Europe's most attractive investment locations. We are also there to help you find the right local partners.

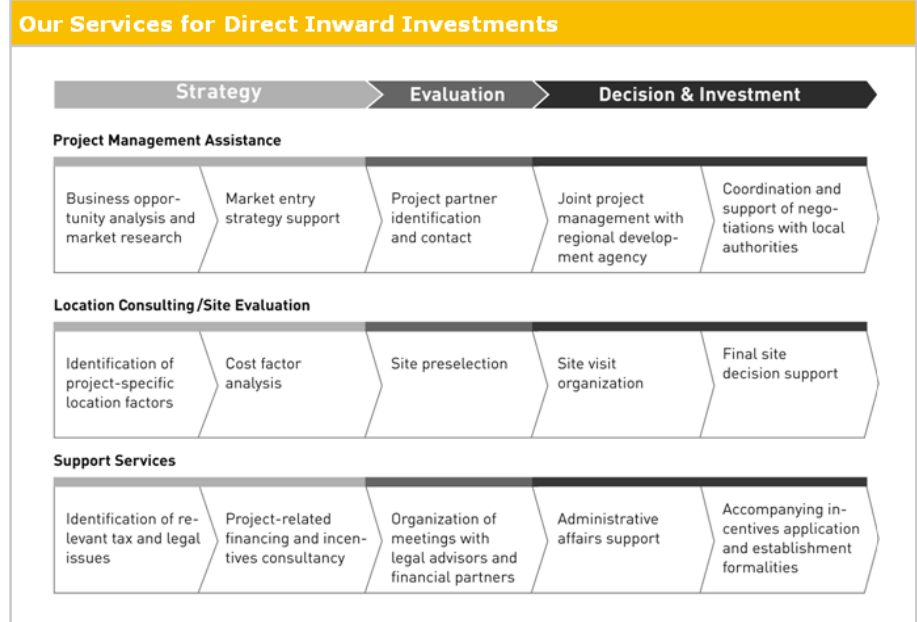
All inquiries relating to Germany as a business and investment location are treated confidentially. Our investment services are provided entirely free of charge.

## References

- AVANCIS (FR)
- Innotech Solar (NO)
- Masdar PV (AE)
- Nanosolar (US)
- SGS Institut Fresenius (CH)
- Vetro Solar (NO)

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