Solar-Fabrik AG, Freiburg, Germany

Sustainable ecological Philosophy with Experience, Competence and highest Quality

Renewable Energies – Made in Germany – Symposium 24/10/2005
André Nobre
Solar-Fabrik AG:
Company Profile
Business- and Sales Model
Solar-Fabrik Management Team and Supervisory Board

Management Board

Georg Salvamoser
Chief Executive Officer

Burkhard Holder
Chief Sales Officer

Christoph Paradeis
Chief Financial Officer

Andreas Heymann
Chief Technical Officer

Supervisory Board

Norbert Binder
Member

Alfred T. Ritter
Chairman

Gerhard E. Kulbe
Member
Milestones in the Company's Development

→ 1996: Founding of Solar-Fabrik GmbH in Freiburg (May)
   First admittance of silent partners

→ 1997: Initiation of the first automated manufacturing system
   for solar modules (capacity 5 MW)

→ 1998: Georg Salvamoser is awarded the German Environmental Prize

→ 1999: Construction and opening of the world's first zero-emission plant for solar modules

→ 2000: Break-even (operational) is attained
   Founding of a subsidiary in Pretoria (South Africa)
Milestones in the Company's Development

➤ 2002: **Conversion of the GmbH into an AG**
Admittance of silent partners as shareholder
Initiation of the new production facility (total capacity 15 MW)
24 Mio.€ Turn Over, 90 employees
Development and Introduction of **new series of high quality modules, inverters and fixing systems**
for different housing types

➤ 2003: **Active Involvement in the creation and implementation of the new Feed-In Tariff System**
for Solar Electricity in Germany

➤ 2004: **EBIT 1 Mio €**
52 Mio € Turn Over, 170 employees
**Strategic partnerships** with **Steca** (electronic devices) and **Saint Gobain** (solar facades)

➤ 2005: **Opening of Representative Office Singapore**
International Awards

1995 **Eurosolar Prize** for exemplary communal solar power facilities

1997 **Eurosolar Prize** for the construction of Solar-Fabrik GmbH

1998 **German Environmental Prize** from the German Federal Foundation for the Environment

2000 **2. Energy Globe Prize**, Linz, Austria

2001 Solar-Fabrik is a model project at the EXPO 2000 World Fair

2002 Finalist in the competition **Entrepreneur of the Year**, Frankfurt, Germany
Symbiosis of Ecology and Economics

Solar-Fabrik is integrated in a strictly ecological value chain:

- **Procurement**
  Solar-Fabrik works closely with large, well-known solar cell manufacturers (such as RWE SCHOTT Solar GmbH), thus ensuring the highest quality and the reliable procurement and fulfillment of the company's ecological goals.

- **Production Process**
  Solar-Fabrik strictly pursues the principle of sustainability. For instance, production takes place in a special, award-winning CO$_2$-neutral, zero-emissions plant. Solar-Fabrik has industrial production technologies and produces products in Germany with the highest degree of efficiency and longest service life.

- **Sales Concept**
  Solar-Fabrik has differentiated, well-established sales structures and offers its well-known customers and OEM partners* products of recognized highest quality and guaranteed delivery deadlines.

- **ISO Certification**
  Solar-Fabrik is certificated according to DIN EN ISO 9001 (Management System) and DIN EN ISO 14001 (Environmental Management System) since November 2003

*OEM = Original Equipment Manufacturer
Company Structure and Networking

Solar-Fabrik AG Group
Headquarters, Freiburg, Germany

Solar-Fabrik AG Group
Kuala Lumpur, Malaysia

Global Expertise Wafer Division (GEWD)
Part of Solar-Fabrik AG Group
Kuala Lumpur, Malaysia

Solar-Fabrik AG Group
Representative Office Asia/Pacific, Singapore

International Customers
Module Production in the first Zero-Emission-Factories in Europe

Two Factories in Freiburg with the same Energy Philosophy
Value Chain and previous Involvement

Value Chain

- Silicon / Silicon wafers
- Solar cells
- Solar power modules
- System-Services

Customer

Fields of Application

- On-grid facilities for homes and commercial buildings
- Off-grid applications
- Central solar power plants
Standardized Solar Modules „Made in Germany“

- **Standard modules** 100-150 Wp
- Use of **high-quality solar cells**
- **Long-term stability** due to special solar glass with UV filter
- Connectivity secured via spring-type terminal technology
- **Power output guarantee** of 25 years
High Reliability and Long-lasting Efficiency

- **Highest Quality**
  Solar-Fabrik modules are internally equipped with 2 bypass diodes and certified under Protection Class II. The equipment has been tested and certified by international institutes (ISPRA certificate).

- **Greatest Degree of Efficiency**
  Even in diffuse sunlight thanks to the use of polycrystalline and monocrystalline solar cells with anti-reflexion coatings. The modules have a unique minimal performance tolerance of +/- 5%.

- **Reliable Protection**
  From thermal expansion provided by embedding the solar cells in a soft ethylene-vinyl-acetate (EVA) laminate for the module.

- **Maximum Solar Power Gains**
  With the use of highly transparent, purpose hardened cover glass that also offers special protection from all kinds of mechanical influences. Solar-Fabrik facilities provide the highest annual yields, which is crucial for a fast return on investment.
Solar Systems with Top Performance
Experts Certify High Quality


- This is a 9% surplus over the average result from comparable analyses.

- Conclusion of Fraunhofer ISE: “Outstanding result“ ... “only possible because of the use of high-quality modules and inverters, a good system design, high installation skills, and failure-free operation.“*

* Download at: www.solar-fabrik.de
Solar-Fabrik Development:
ProfiLink Fixing Systems for different Solutions

- For modules without frame
- For framed modules
- For flat roof mounting
Business and Sales Model

Solar-Fabrik

- Consulting
- Training
- Production
- Sales
- Research and Development
- System-configuration
- Warranty

Customers
- Installation Companies
- Manufacturers/OEM
- Specialist shops/Retailers
- Operators/Utilities

Users
- Retail/private/corporate

Suppliers

Retail/private/corporate

Germany
Europe
Worldwide
Best Practices: Realised Innovative Solar-Fabrik Projects

Central Railroad Station
Freiburg
Facade design
Modules: Okacell
34 kWp, 230m²

Soccer Stadium
SC Freiburg
Modules: SF115 and other types
290 kWp, 2400 m²

Greenpeace Office
Bad Oeynhausen
Modules: SF115
300 kWp, 2530 m²
Best Practices: Realised Innovative Solar-Fabrik Projects

Mr Jordt, Managing Director, Trautwein GmbH:

„Our customers and employees are excited about our commitment to the environment. The Solar-Fabrik technology we use underlines our company’s quality demands.”

Trautwein GmbH
Emmendingen

Modules: SF 100/2
75 kWp, 800 m²

Housebuilding company
Freiburg

Modules: Solar Facell 130
54 kWp, 530 m²
Mr. Ganter, Managing Director, Ganter Brewery:

“As a company with a regional focus, it is natural for our brewery to support solar energy. Using Solar-Fabrik’s regionally, CO₂ neutrally produced solar power modules on our company’s roof rounds off our image as a modern company with a sense of responsibility towards the environment and future generations.”
Solar-Fabrik AG: Further Strategy
Value Chain and current Involvement

Value Chain

Silicon / Silicon wafers → Solar cells → Solar power modules → System-Services → Customer

International Trading House
Global Expertise
Wafer Division (GEWD)
Location Singapore

- High-tech Hub

- Strong support from the government

- Strategic global positioning for the coordination of raw material
Solar-Fabrik in Singapore: offering a long-term and successful partnership

- Development of new international solar markets
- Promote the use of renewables
- Experience, competence and highest quality
We wish the companies from Singapore all the best for our future Solar Business Development!

Thank you for Your attention!