Solar Hybrid Systems in China

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Content

- What SMA do?
- The German Solar Energy Program of the Sino-German Financial Cooperation
- Overview about the successful realization of PV/Hybrid Systems
SMA - heart and brain of every solar power system

- Founded 1981
- Headquartered in Niestetal, Germany
- Total turnover 200 million EUR
- 1,200 employees
- Worldwide presence:
  - SMA America
  - SMA China
  - SMA France
  - SMA Spain
  - SMA Italia
Inverters for all applications more than 1500 MW installed

Grid feeding of photovoltaic plants

Sunny Boy

Sunny Central

Island grids

Sunny Island
The Sino-German “Solar Energy Program”

- Improvement of quality of live in remote areas of West China provinces (Yunnan, Xinjiang, Qinghai, Gansu)
- Electrification of remote villages by PV/Hybrid Energy Systems
- Use of productive applications
- Ability and willingness of inhabitants to pay electricity tariffs
- Inhabitants contribute to the program by participating in installation and maintenance works
- Sustainable Operation by provincial Service Companies
Objective of the “Solar Energy Program” in China

Province | Yunnan | Xinjiang | Qinghai | Gansu
---|---|---|---|---
Households | 1859 | 2335 | 3213 | 847
Villages | 52 | 35 | 65 | 26
Total PV Power [kWp] | 337 | 426 | 450 | 126
Participants in the Program

1. **Financing Agencies**
   - Germany: KfW (German Bank of Reconstruction)
   - China: Ministry of Finance and Provincial Bureaus of Finance

2. **International Consulting Teams**
   - Beijing Jikedian RE Development Center
   - Project Consult GmbH

3. **Project Executing Agencies**
   - Service companies in each Province
Participants in the Program

4. **Goods and Services provided by**
   - System integrator:
     - Shell Solar GmbH and Schott Solar
     - German and Chinese sub-suppliers
   - Provincial grid construction companies
   - Provincial companies for civil works

5. **Local Institutions and Participants**
   - Prefecture and country governments
   - Village committees
   - Villagers
Technical Realization PV Village electrification systems in China

- Off-Grid Inverter: 9 – 40.5 kW
- Photovoltaic: 4.5 – 18 kWp
- Battery: 72 – 190 kWh
- Generator: 10 – 30 kW
Project Contribution from SMA Technologie AG

- Classroom training for local installers

Photos: Schott Solar
Project Contribution from **SMA Technologie AG**

- On the site training for local installers
- Preparation of documents for technical installation

Photos: SMA Technologie AG
Reference Installation on site

Photos: Schott Solar
PV Hybrid System in Yunnan Province

Solar Hybrid System in China
PV Hybrid System in Xinjiang Province

Solar Hybrid System in China
PV Hybrid System in Gansu Province
PV Hybrid System in Qinghai Province
Solar Hybrid System in China

Villagers in Xinjiang Province
Sales of prepaid cards
Challenge of the sustainable Operation

Tasks of the Provincial Service Companies

1. Continuous support of customers:
   - Permanently observing the development of electricity consumption in each village
   - Immediate reaction in case of unexpected situation
   - Regularly collect fees and adjust tariffs if needed

2. Guarantee sufficient income to ensure payment of:
   - Running costs (e.g. staff, infrastructure)
   - Re-investment costs (e.g. battery, electronics)
Sustainable and flexible system concept for the future based on standard useable modular components

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