Showcasing Innovative Austrian Clean Energy Technologies

Solar Thermal Projects in Developing Countries – Reference Projects, Barriers and Potentials

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AGENDA:

- SOLID activities and technology
- Green projects in developing countries: barriers and potentials
- Best practice examples

since 1992

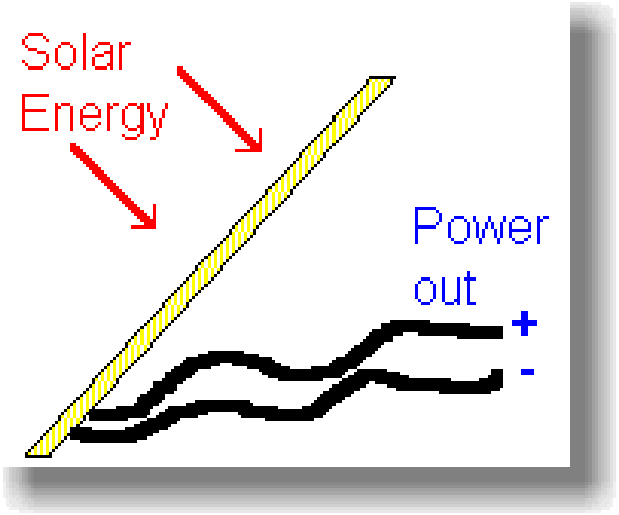
SOLID activities and technology:

Turn-key solutions for large-scale solar thermal systems (more than 1 MW)

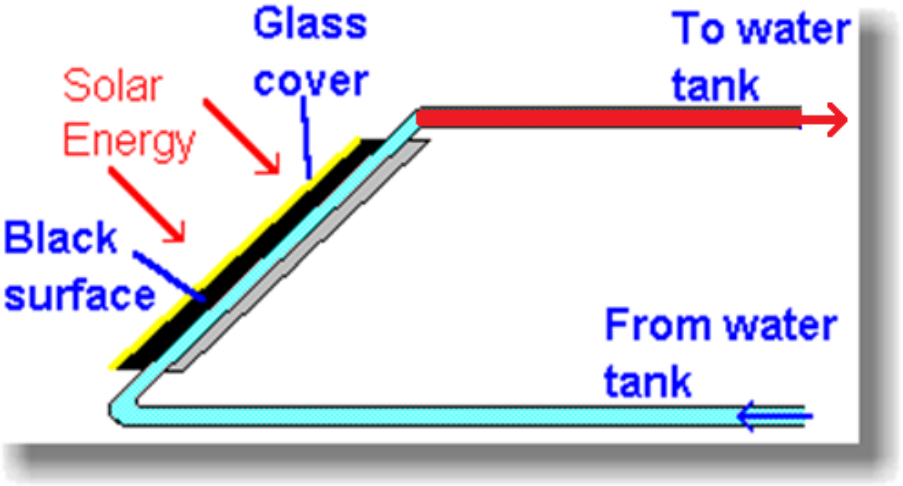
- Engineering and plant construction
- Energy service company (ESCO)
- Research & Development
- Consulting services

We work on solar thermal!

- Solar PV (Electricity)



- Solar Heating (Heat)



Main target groups for solar thermal

- Utilities: district heating and cooling networks
- Infrastructure: airports, schools, campuses, residential buildings, military housing, hospitals, museums, libraries
- Tourism: hotels, resorts
- Commercial: office buildings, ware houses, shopping malls
- Industry: food processing, beverage, mining, ..

Starting point for solar heating & cooling in developing countries

Low Heat Demand → lack of knowledge → often inefficient systems (industry, tourism)

Process Heat and Cooling demand are increasing

- Grids and power plants go to or above their limits
- Big part of energy demand covered by imported fossil fuels

Reasons for Solar Heating and Cooling in Emerging Countries

- Increase of population means a growing energy demand
- Cooling demand is increasing with development level
- AC starts dominating electric demand
- Grids and Power plants go to or above their limits
- Mostly big part of (imported) fossil fuels in electricity and heat production

Hurdles

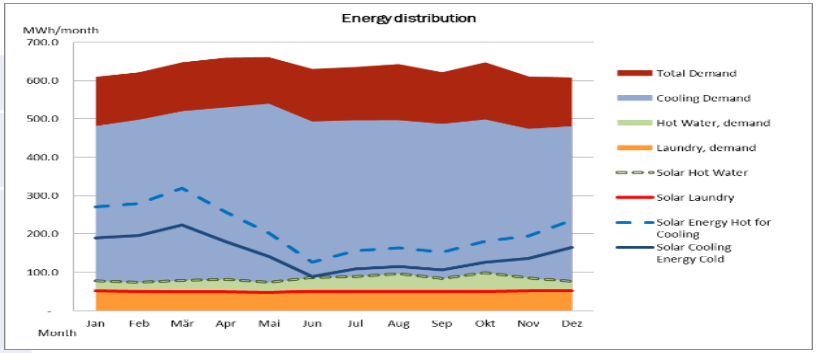
- Lack of available data at customer
- Lack of awareness for Solar Thermal Energy
- Low/substituted Energy prices
- Financing, high investment costs

Air conditioned and hot water production with Thermal Solar System

Hospital Militar Dr. Alejandro Dávila Bolaños

Key facts

Collector area	**4,450 m²**
Peak heat power	2600 kW th
Coverage of demand for *hot water and laundry*	100% 100%
Coverage of demand for *air conditioning*	30%
Yearly energy savings	**140 tons of gas, 435 MWh electricity, 500 kW of connected load**
Annual cost savings	**USD 372,400**
Overall investment (excl. subsidies)	**USD 4.19 mio**
Accumulated savings (20 years)	**USD 14.63 mio**
Payback time	**6**



Financed with soft loan

- Financing instrument for developing countries in Austria
  - 0 % interest rate
  - 5 years grace period
  - Loan period: 21 years
- Oesterreichische Kontrollbank (OeKB) was granting the soft loan
- Raiffeisenbank International was handling the financing

Further financing instruments for developing countries

- Economic partnerships co-funded by the Austrian Development Agency (ADA)

SOLID success story with ADA:

- ADA economic partnership with Jamaica/ Caribbean region 2008-2011
  - Feasibilities
  - Education
  - Knowledge of Markets
  - Understanding the Partner countries

Solar cooling - Digicel, Kingston, Jamaica

Office space: 13,685 m²

Solar Panels:
982 m² / 680 kW

Single stage LiBr chiller: 600 kW

Hot storage: 2 x 5.5 m³

492 MWh cooling energy per year

In operation since 2012

Realised in partnership with RED, Jamaica

From first call to start up in 16 months!

Energy Globe Award 2014

Solar Hot Water – Hyatt Regency, Aruba

357 rooms, 6 restaurants, 4 bars, pools, spa, golf, congress rooms

Domestic Hot Water

Panel area: 500 m² GS
Storage: 4x6.5 m³

Commissioning 2012