

Large Solar Thermal Systems

SOLID
solar installation + design



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www.solid.at

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Expertise of SOLID

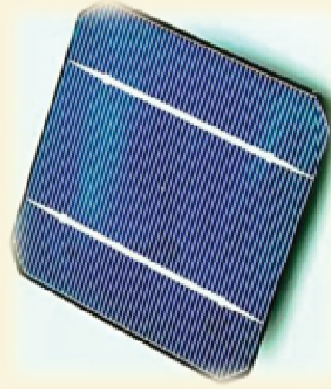


SOLID is specialised in large scale solar plants and is...

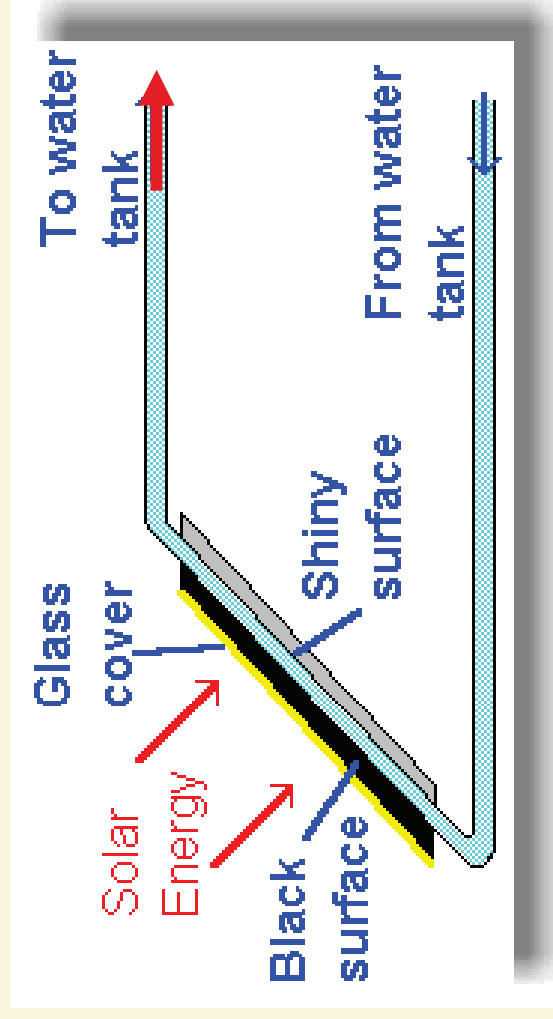
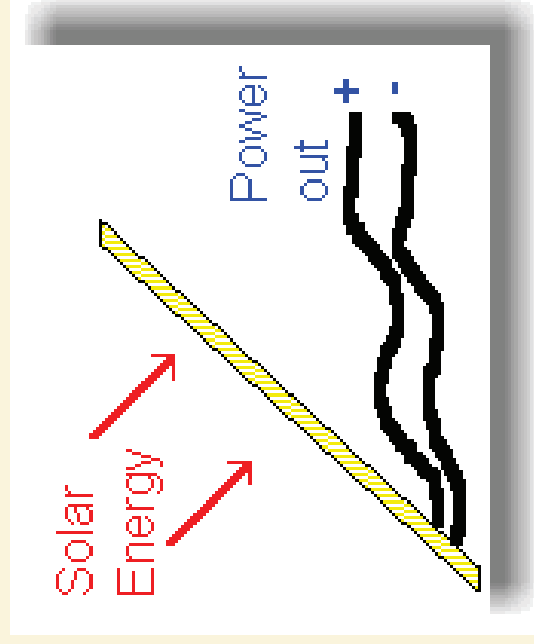
- **providing:**
 - Domestic hot water
 - Solar heating
 - Solar cooling
 - District Heating
 - **Industrial process heat**
- **focusing on:**
 - Hospitals, dorms, residential building...
 - Resorts and hotels
 - Swimming pools & sporting facilities
 - Public Sector & Industries
- **experienced in:**
 - Project development
 - Engineering
 - Construction
 - Supervision
 - Operating & Maintenance

We work on Solar Thermal !

- Solar PV (Electricity)



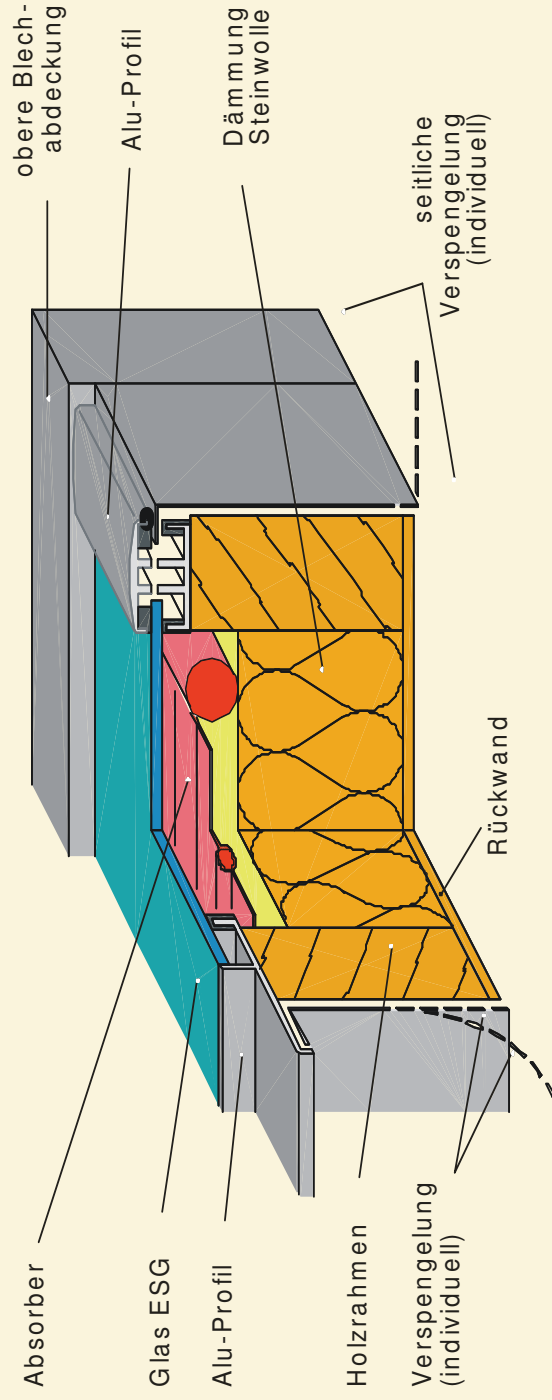
- Solar Heating (Heat)



The Collector

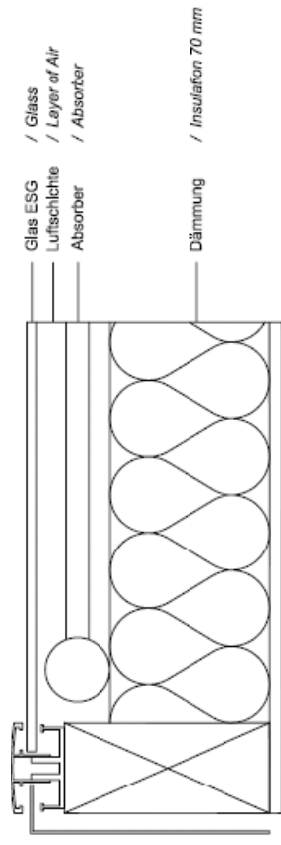
ökoTech Collector Construction

- Aluminium Profiles
- Solar Security Glass 4mm
- Absorber (Sunstrip or Full Plate Copper)
- Rock Wool Insulation 70mm
- Rear Enclosure (OSB or Aluminium)

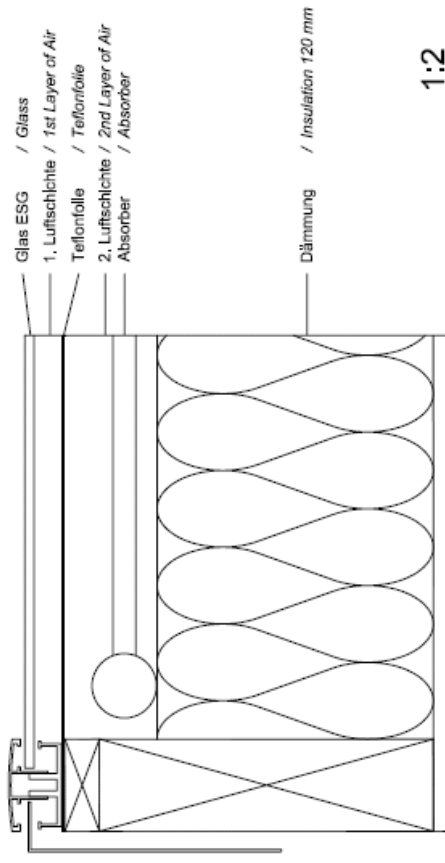


Comparison of *gluatmugl* Solar Collectors

gluatmugl Standard-Kollektor
gluatmugl Standard-Collector

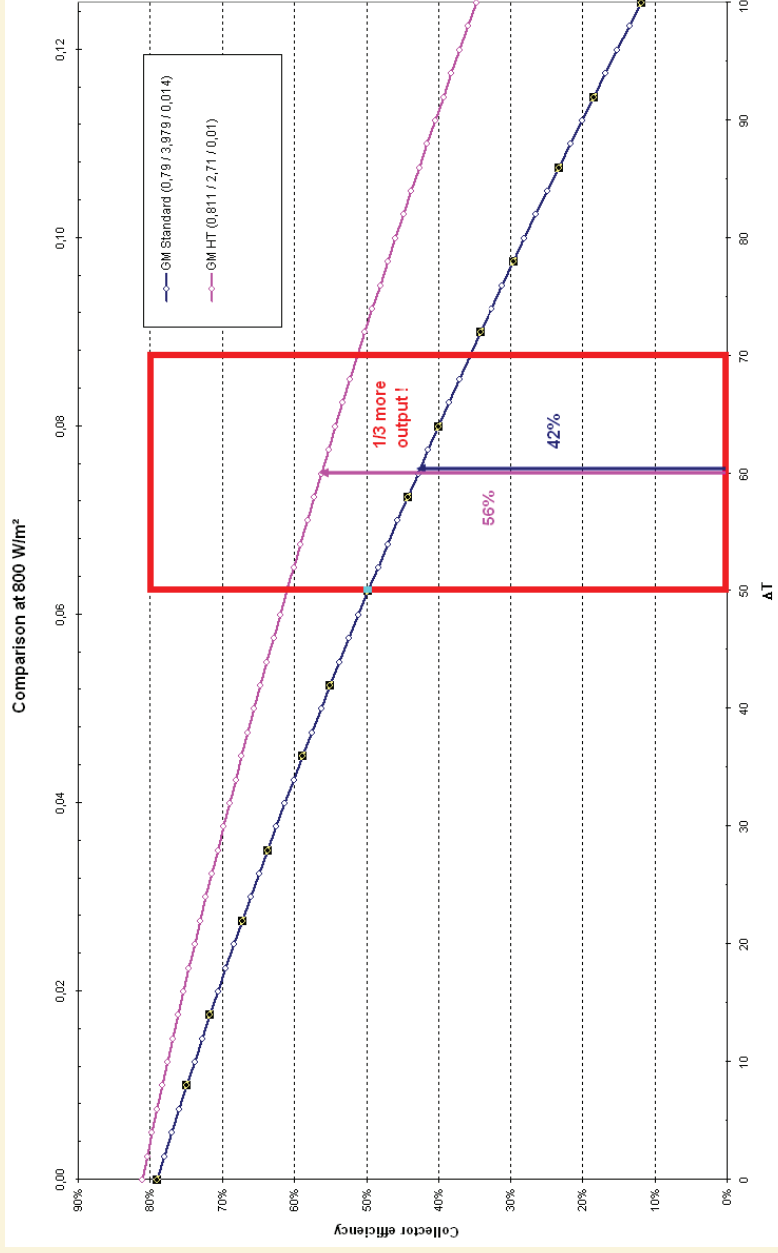


gluatmugl HT-Kollektor
gluatmugl HT-Collector



1:2

Comparison Solar Panels



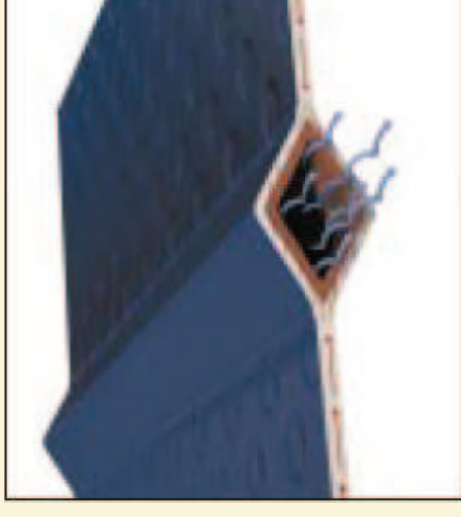
Eta 0 81,1 %
a1 2.710 W/K*m²
a2 0.010 W/K²*m²
 (Arsenal test: 2.04.00667, June 2009)

Advantages:

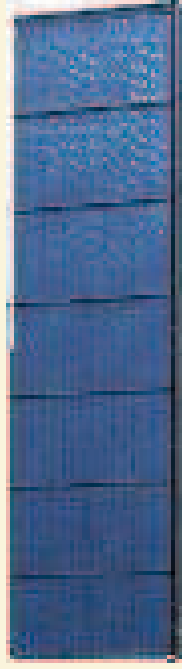
- Better space usage
- Price / output ratio

Sunstrip Absorber Strips

- + highly selective coating
- + fin encloses tube -
better heat transmission
- + rhombic shape of tube -
turbulent flow
- + coating - long term durability



Absorber Types



Sunstrip Absorber

Selective Coating

Best advantages for big solarplants



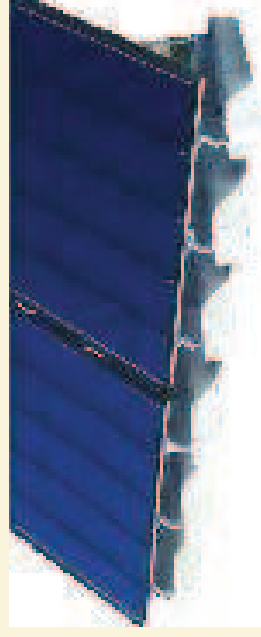
Full Plate Copper Absorber

For small plants/DHW

Integration



Roof Integration



Ground mounting

Collector Size

Modular System

Various measurements in our modular program: **4,2 m² → 21,7 m²**

Each size = one piece



302 cm	3x2	3x3	3x4	3x5	3x6	3x7	3x8
233 cm	4.8	7.2	9.6	12.0	14.3	16.7	19.1
205 cm	4.2	6.3	8.4	10.5	12.6	14.7	16.8
105 cm	1x2	1x3	1x4	1x5	1x6	1x7	1x8
	208 cm	310 cm	411 cm	513 cm	615 cm	717 cm	819 cm

Bauartzulassung	Osterreich	Deutschland	arsenal research Ein Unternehmen der Arsenal Research Center Kollektortest
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Special solutions

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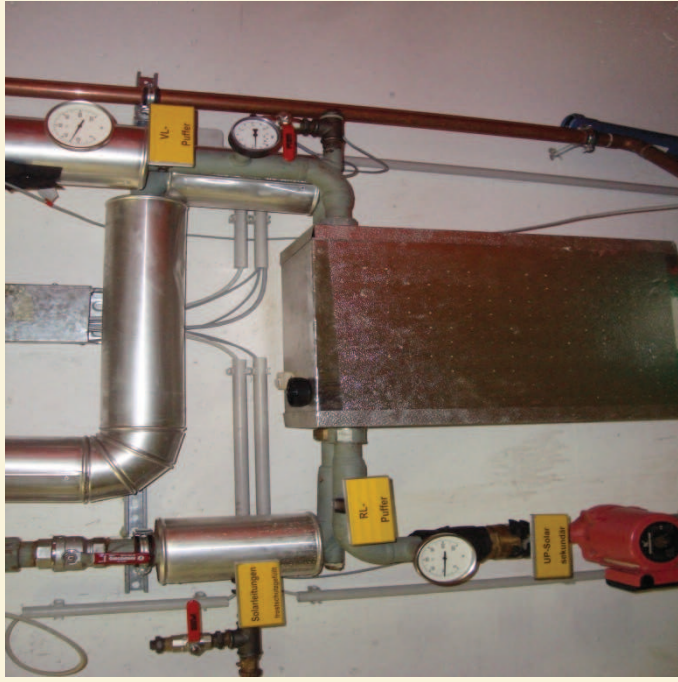
Water-storage ?

m³

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Heatexchanger



Absorptionchiller



Experiences in Solar Cooling

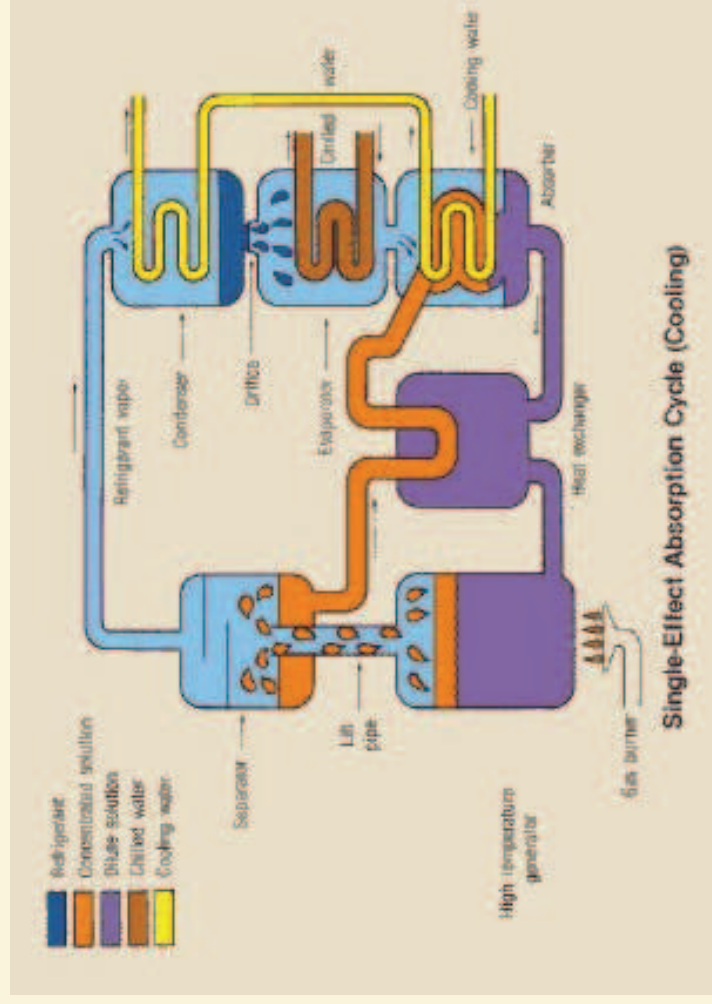


Long lifetime of absorption chillers.
This one is > 70 years old !

Absorbtion Technology



- Absorbtion Chiller
- Available 15-5000 kW

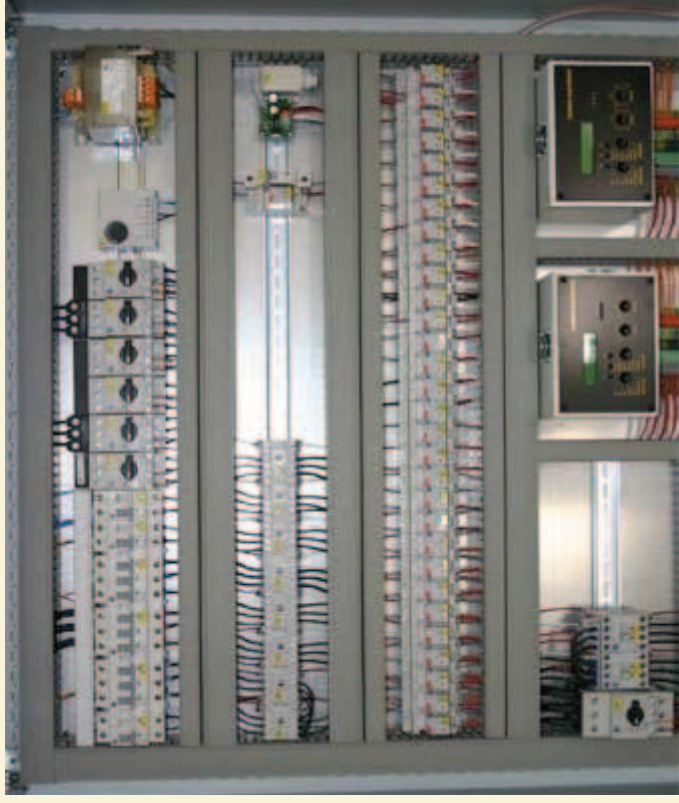


Remote Control

Control-Center with PC and Screen (outside)



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Large Solar Thermal Systems

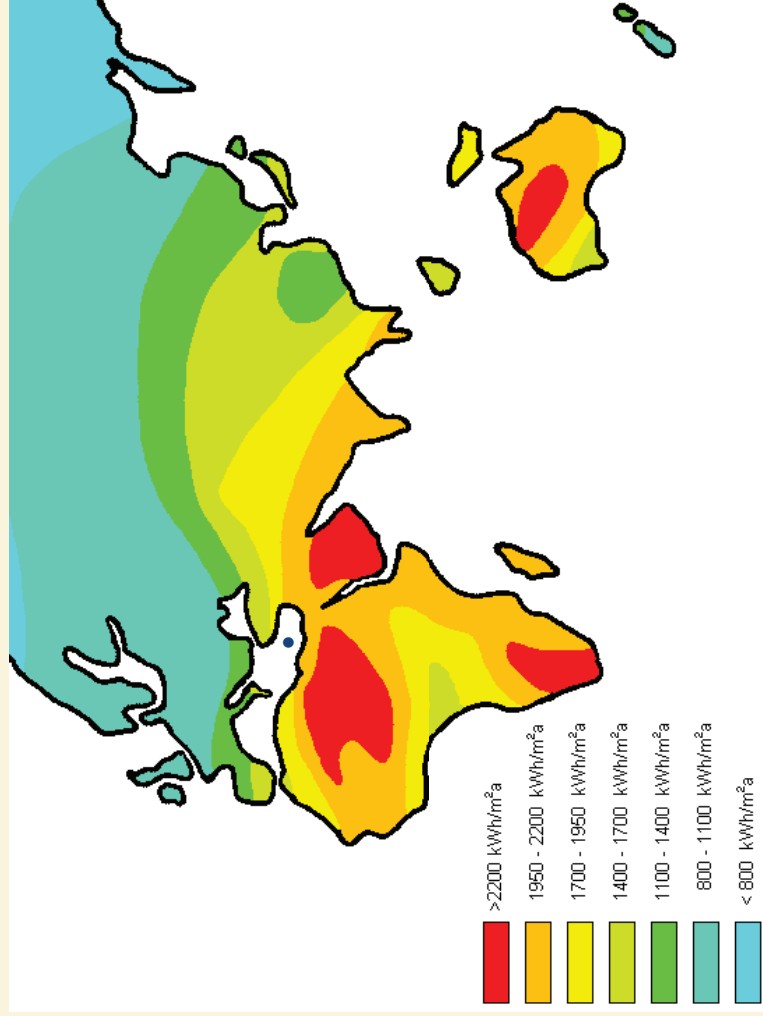
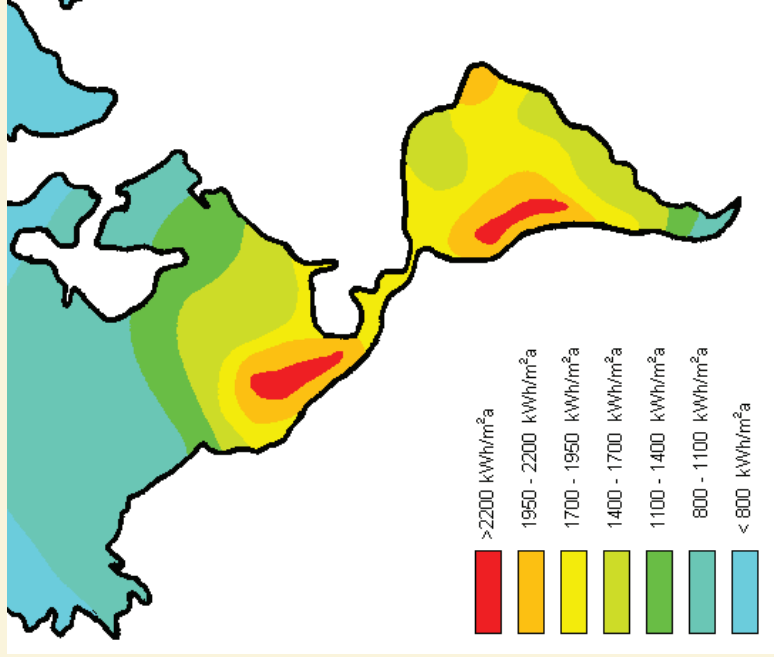
TODAY Standard for Administration/Service

PLC-----PC+Router-----Internet-----Router-PC
(Software: PcAnywhere, Teamviewer)



SOLAR THERMAL WORLDWIDE

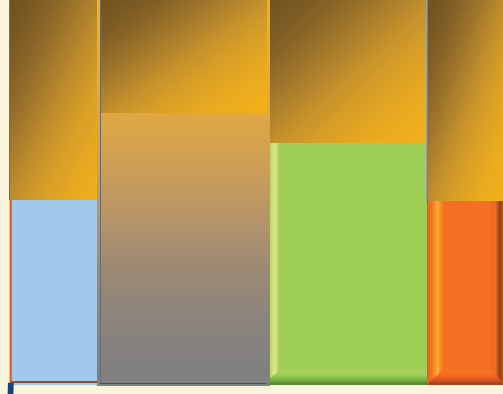
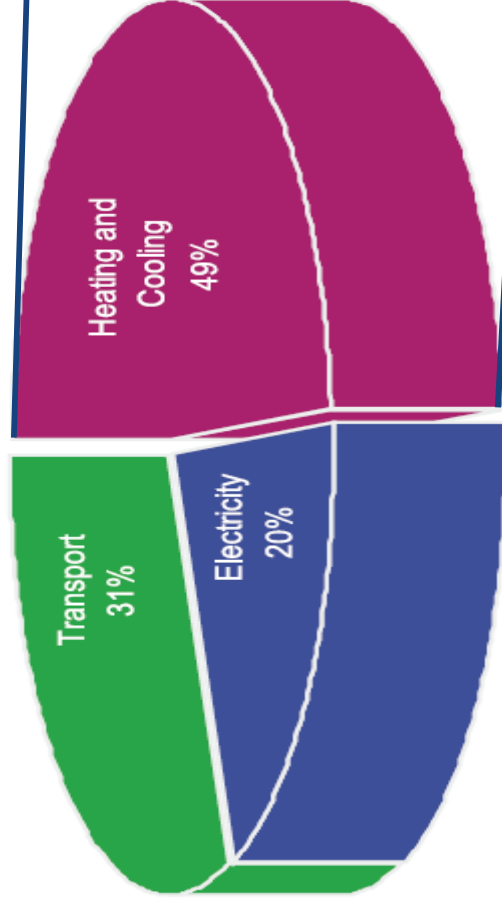
Solar resources



Future Potential

- Solar Thermal is well known for:
 - Solar Heating like: Domestic hot water, heating, ...
- Solar Thermal is barely known for:
 - Heating of process fluids, washing detergents, heating processes, drying processes, ...
 - Solar Cooling like air conditioning, cold storage, cooling of technical processes, ...
 - Solar assisted District Heating

Energy Consumption



50% Cooling-, 25% Industrial Heat
30% Heating and 50% Hot water
demand can be covered by existing
Solar Thermal Technologies !

SOLAR HOT WATER

Examples

Solar hot Water, Tschechien



Sylabova
Senior citizens home

2004 Ostrava

Muglinov
Therapeutic-Center



International projects



Olympic Sailing Village China (2008)

Solar Hot Water for
Sports Center and
Olympic Village

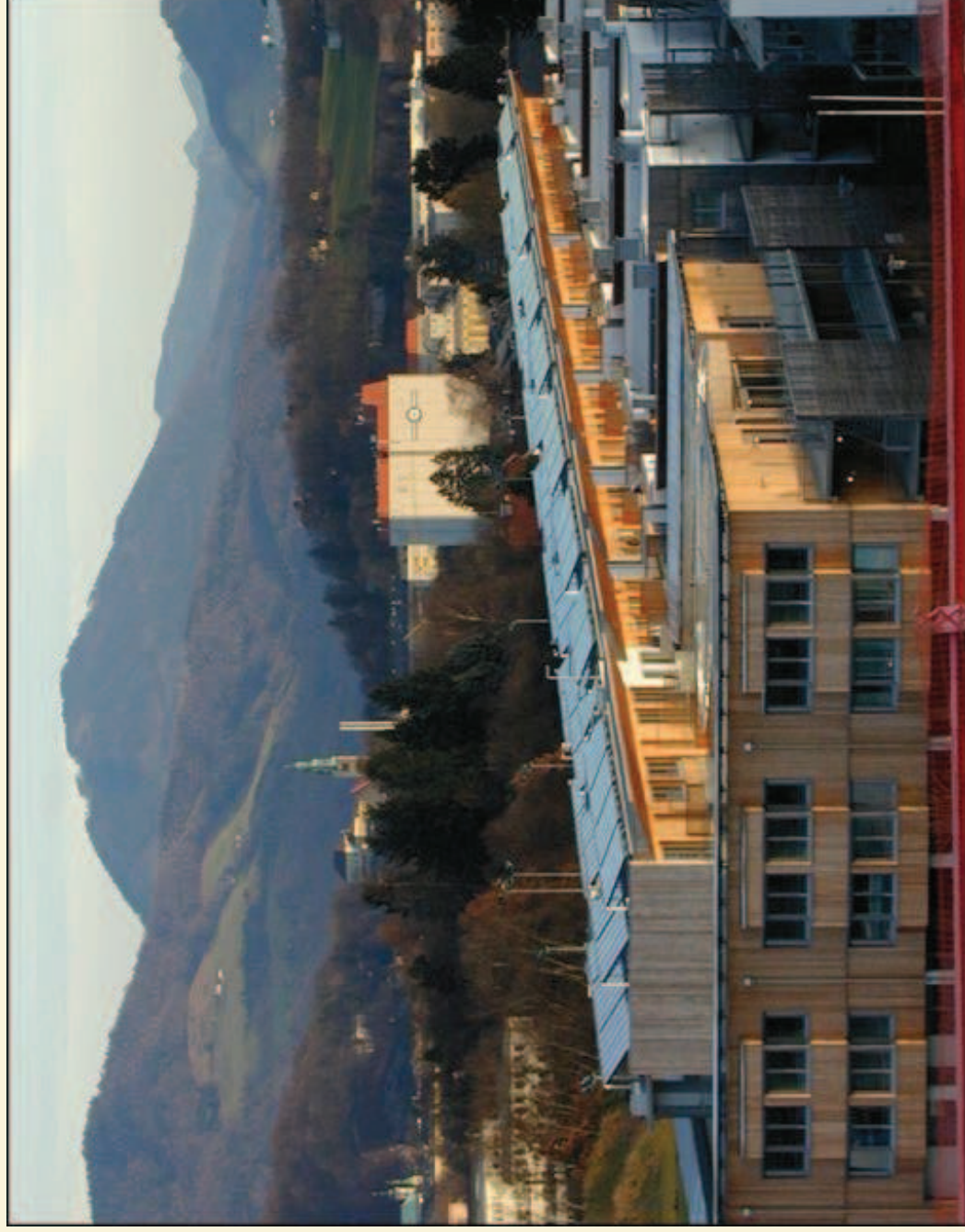
Solar Panels:
666 m²/462 kW

Backup Energy Source:
District heat

In operation

Asian Power award:
Best renewable plant of Asia 2006

Social Housing



Bolarring, Austria, 1085 m²/760 kW, GRS Type

Social Housing

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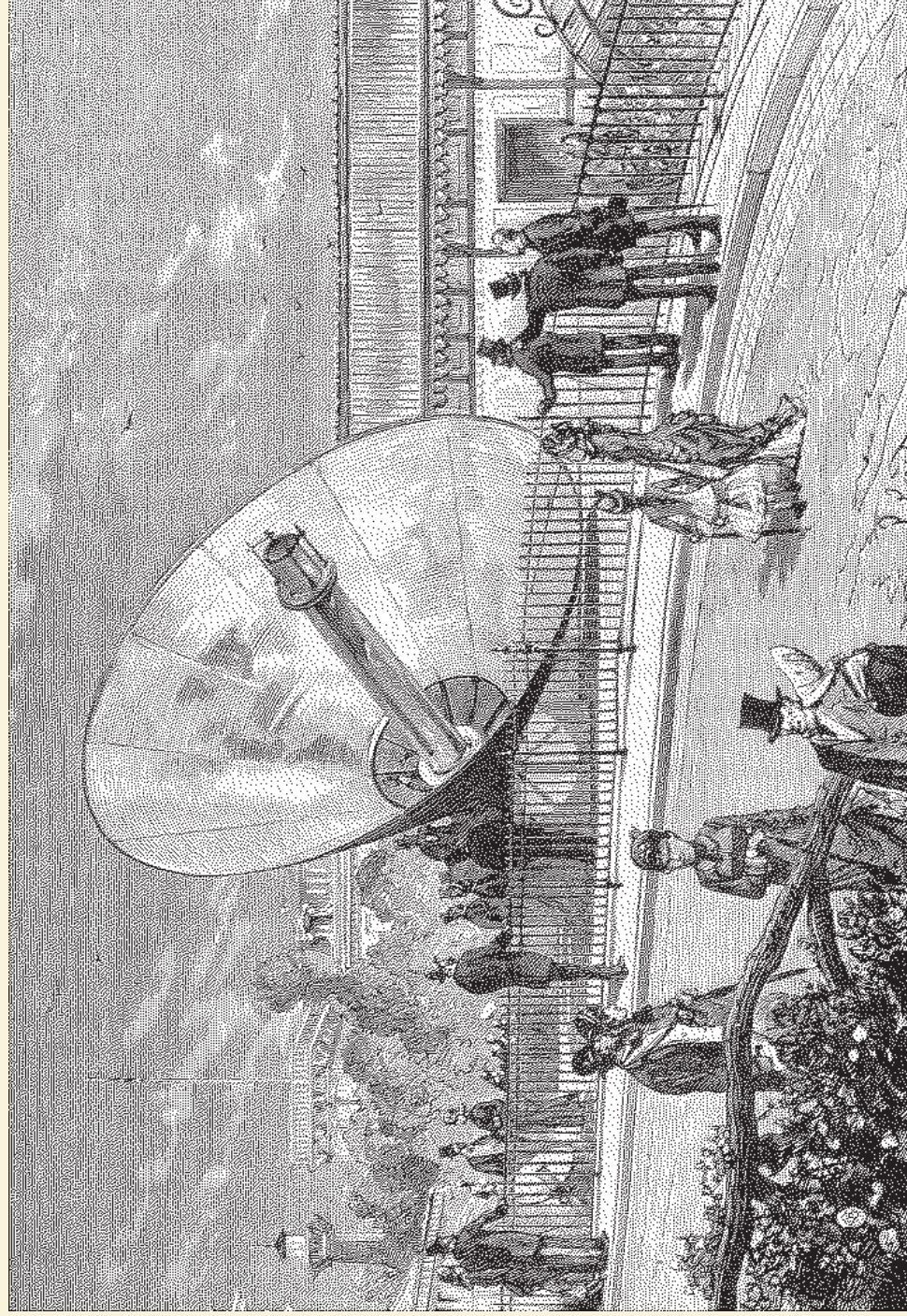
Solar
replaces Oil



Hans-Riehl-Gasse, Graz, Austria, 321 m², 225 kW, GRS/ESCo

SOLAR COOLING

A brand new technology ?



Expo 1878 in Paris, A. Mouchot produces ice with solar energy

Solar Cooling- The advantage



The peak of solar radiation and the peak demand of cooling match perfectly

We can use the same radiation that creates the demand to
cover the cooling demand,
cut off electricity peaks and
avoid extreme operations on the distribution grid.

Solar Air conditioning saves the most expensive electricity !