

IEA TASK 38 FU

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Paris

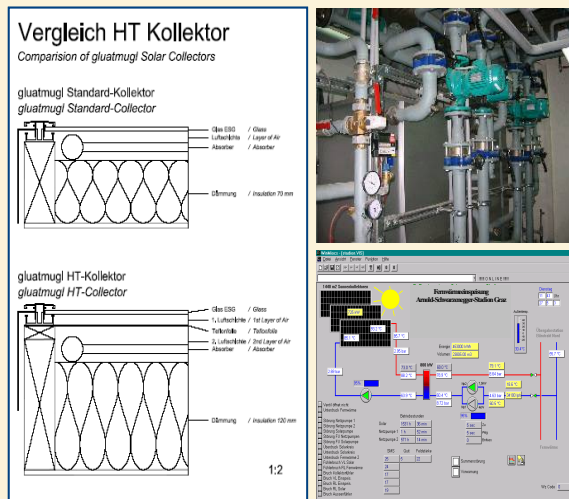
Sabine Putz
s.putz@solid.at

Large Scale Solar Thermal Plants:

- Project Development
- Engineering
- Turnkey Solutions for several 1000m²
Solar Cooling, Solar Process Heat and Cold, SDH, DHW
- Operation & Maintenance
- Finance (ESCo)
- Research & Development



- Exchange and extend know-how in cooperation with universities (theory) and business (practice)
- Improvements to existing products and steady development new products
- Partner and co-ordinator in national and international funded R&D projects



Current R&D Project Topics:

- Automated solar system control
- Solar cooling applications
- SC & SH for industrial processes
- Solar District Heating
- Solar thermal in tropical climates
- Solar Energy Contracting

Flat Plate Collectors



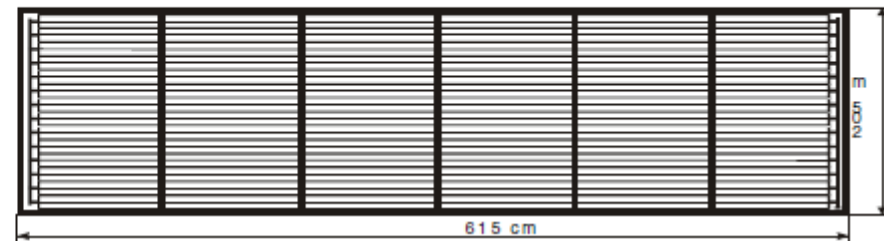
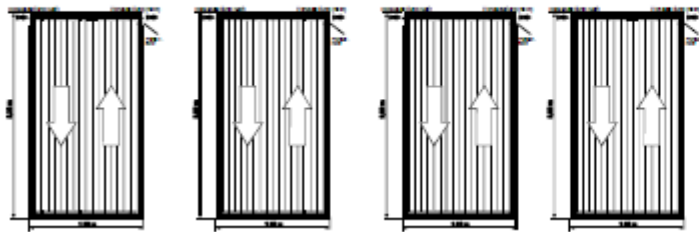
- **ökoTech**
 - Manufacturing Department of S.O.L.I.D.
 - Collectors are built to order
 - Specializes in large scale thermal collectors manufacturing – up to 18m²



- **Advantages**
 - Higher energy output
 - Easier and faster installation
 - Less connections and pipings

Why Large Flat Plates?

SMALL Collectors vs. Large Collectors



Type:	2 m ² - 3 m ²	14 m ²
Absorber Area:	80%	92 % ≈ 10 % more Energy Output
k-Value:	5-8 W/m ² K	3 W/m ² K = high T = less heat losses
Media Flow:	discontinuous Flow Rate	constant Flow Rate

→ up to 50% less Efficiency

References 2011



- **Sheik Zayed Desert Learning Center (UAE/AI Ain)**
- **Solar Cooling**
- **Commissioning 2011**
- **Cooling power 350 kW**
- **Collector area 1100 m²**
- **Expected Solar yield: 825 kWh/m²/year**

References 2011



- **UWCSEA (Singapore)**
- **Solar Cooling and DHW**
- **Operating August 2011**
- **Cooling power 1.5 MW**
- **Collector area 4000 m²**
- **Expected Solar yield:
580 kWh/m²/year**



Main Interests Task 38 FU

- Exchange of experience with other SC constructors
- Quality and performance improvement of own installations (especially regarding climates with damp heat)
- Certification, labelling SC
- Finance (ESCo) for SC
- District Cooling – feed in tariffs
- Solutions for building integration of large collectors
- Active stakeholder training & dissemination (authorities, financiers, political agencies, funding agencies etc.)

Relevant R&D Projects



- Subtask Leader **IEA Task 45, Subtask C “Systems”**
- **SC Monitor and SolarCoolingOpt**
- **IP-Solar** www.ip-solar.com
Automated failure detection and monitoring
- **High Combi** – Optimization efficiency SC; DEMO
- **BioSolEsco**
- **SDH-TakeOff**

Work Plan Inputs



- Large scale solar cooling turnkey solutions experience – best practise and system design
- ESCo – contracting experience
- Market experience especially in Asia, USA, Middle East
- Monitoring of SC, automated failure detection
- Possibility to monitor a plant for TASK 38 FU at TASK 38 monitoring specifications (level a, b, c)
- Active work in all tasks, but essentially in subtask b and c

Thank you!



- **SUBTASK A** “**Solar collectors for large systems:**”
 - Improve cost / performance ratio
 - Secure long life time
- **SUBTASK B** “**Seasonal storages**”
 - Reduce cost of the “expensive concepts
 - Increase durability / maintenance cost / performance of the “cheap concepts”
- **SUBTASK C** “**Systems**” (> 0.5MW; > 700m² collector)
 - Optimize performance of systems → analysing control strategies and the right combination of solar thermal, heat pump, seasonal storage for **SDH and SDC**
 - Operation strategies, minimize maintenance and operation cost
 - Financing issues and contracting

TASK 38 Affected Objectives / Deliverables of TASK 45:

- Provide a good basis for decision makers to decide on investment in large solar systems
- Provide state of the art of simulation tools
- Give models for ESCo services (contracting)
- Give procedures for performance guarantee - and check
- Give recommendations for monitoring and checking system output
- Give recommendations for operating strategies