ESCO financing options for solar cooling

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Solid

Content

- ESCo - ?
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- ESCo - Practise Examples
Portfolio S.O.L.I.D.

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

Day 2 – Solar Cooling Conference - 12/04/2013
Venue: CSIRO, North Ryde, Sydney
ESC0 - WHY

- High investments
- Hesitations on user’s side
  - How long will the system work?
  - What about Operation & Maintenance
  - What about performance
- Lack of confidence and operational experience

ESC0 - Model

Energy User

Financial Institution/Investor

ESCO

Return Deposit upon maturity date

Deposit

Monthly Consumption Charge + Fixed Charge

Energy delivery

Provide Financial Assistance

Repayment
**ESCQ - Model**

<table>
<thead>
<tr>
<th>Paybacks:</th>
<th>Process heat</th>
<th>Solar cooling</th>
<th>DHW, SC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5-10 a</td>
<td>8-13 a</td>
<td>7-15 a</td>
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<tr>
<td>Economy of scale &gt; 500 m², for cooling even larger</td>
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**Often used business models @ S.O.L.I.D.:**

1. Customer pays only energy price, no ownership, energy serving for 12-15 years – no investment costs for the customer
2. Customer pays most of investment and gets a better energy price (contracts 3-5 years possible)
3. Possibility for customer to own solar plant after energy serving time
4. Theoretical possibility for a mobile solar plant

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**ESCQ Service Criteria**

- Energy analysis / management
- Financing by experienced partners
- Project design and implementation
- Monitoring procedure
- Maintenance and operation
  
  >> special training programs for local partners

From one hand >> long lifetime >30a
ESCo Barriers

- Size limitation of solar thermal plants vs. minimum investment amounts of banks and equity investors
- Low energy price of conventional energy source (e.g. gas for CHPC)
- Long term investments
- Availability of qualified staff for O & M
  - → local infrastructure & competence
- Late detected malfunctions of solar plants in the past → currently many failure detection systems under development, overview in IEA SHC Task 48

ESCo challenges solar cooling

- less good practice examples, standards available then for solar thermal heat plants → main objective of Task 48
- performance of SC plant difficult to predict exactly, e.g. heat rejection
- many interfaces to be defined:
  - electricity supply, price
  - cold supply and return, temperatures
ESCo Practise Examples

**AEVG GRAZ**

5,000 m² / 3.5 MW

SDH

Solar Panels additionally planned:

2,000 m² / 1.4 MW

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**ESCo Practise Examples**

**United World College (UWC)**

2600 students

Finish: Oct. 2011

3870m² Solar Panels

420 ton/1.480kW cooling, DHW

Payback: 10a

Funding: 11%

*World’s largest Solar Cooling*
ESC0 Practise Examples

DMHS, Arizona
(Desert Mountain High School)
5,000 m²
530 Ton/1,800 kW Chiller
Payback: 11 years
Currently under construction

Thank you!

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