Cost Drivers and Saving Potentials

INFO Sheet C02

Description:	• *Cost reduction in production phase* • *Cost reduction due to easy installation on site* • *Cost reduction by energetically improved design*
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Introduction

A main challenge of the solar thermal market is the reduction of the production and installation cost finally following by the reduction of the market price of solar thermal systems. Installation costs are a major share of the total costs for solar thermal systems. Good ideas for cost reduction are needed. This sheet will give input for the discussion of this topic.

Cost reduction in production phase

Try to reduce unit cost generally.

- Reduction of the number of different product types, mainly collector types, collector sizes, heat store types, etc. to reach a simplification of the components and products on the shelf and leading to less administrational effort (manuals, certificates, permission, etc.).
- Concentration of component production to OEM producer (as usual done for collectors in a wide range)
- Co-operation of market actors for using the same base components (like it is done by car industry e.g. for motors or chassis even between competitors)
- Limitation of operation conditions (temperature, pressure) with the help of smart system/control design allowing new materials and novel mass production possibilities (e.g.: temperature limited collector which then can be made of polymers as developed in the research projects *SolPol-2* and *SolPol-4/5* [1,2]). .

Cost reduction due to easy to install on site

- Pre-fabrication of hydraulic groups in combination with the tank to reduce on-site work as much as possible.
- Click and fit pipe connections which also make sure that wrong connections are avoided

Geberit Pushfit

Electric connection with different dimensions

Fig 1. Examples for "easy to install" left: pipe connection; middle: electric connection without danger of confusion; right: pump groups mounted on tank

Cost reduction by improved energetic design and increased efficiency

- Reduction of tank heat losses due to improved insulation (no cold bridges, thermosiphon pipe connection, etc.) offers potential for system size reduction (and cost reduction) in combination with increased auxiliary energy saving.
- Reduction of tank heat losses can offer lower system operation temperatures enabling the possibility to use cheaper tank materials (e.g. polymers).
- Potential for smaller system size due to more compact system design and increased efficiency by reduction of pipe length and pipe heat losses [3].

Fig 2. Tank pipe connections: bad example (left) and examples for improvements with pre-cut thermal insulation to be chosen when needed (middle) or insulation plugs for unused pipe connections (right) [4]

Fig 2. Examples of often existing bad hydraulic installations (left) and examples for compact solutions with minimized pipe length within the system (right) [4]

References

[1] Thür, A., Maslikova, K. (2016). Polymer collectors with temperature control – Potentials for system integration, Proceedings of Gleisdorf Solar 2016, 65-78.
[2] Ramschak, T., Hausner, R., Fink, C. (2016). Temperaturbegrenzung für Kunststoffkollektoren durch Durchlüftung, Proceedings of Gleisdorf Solar 2016, 79-84.
[3] Thür, A. (2007). PhD-Thesis "Compact Solar Combisystem – High Efficiency by Minimizing Temperatures", R-160, BYG.DTU, Denmark (http://www.byg.dtu.dk/-/media/Institutter/Byg/publikationer/PhD/byg_r160.ashx?la=da)
[4] CombiSol, Deliverables D2.4, D5.3; **http://www.combisol.eu/**