

System concepts for collective solar thermal systems across Europe

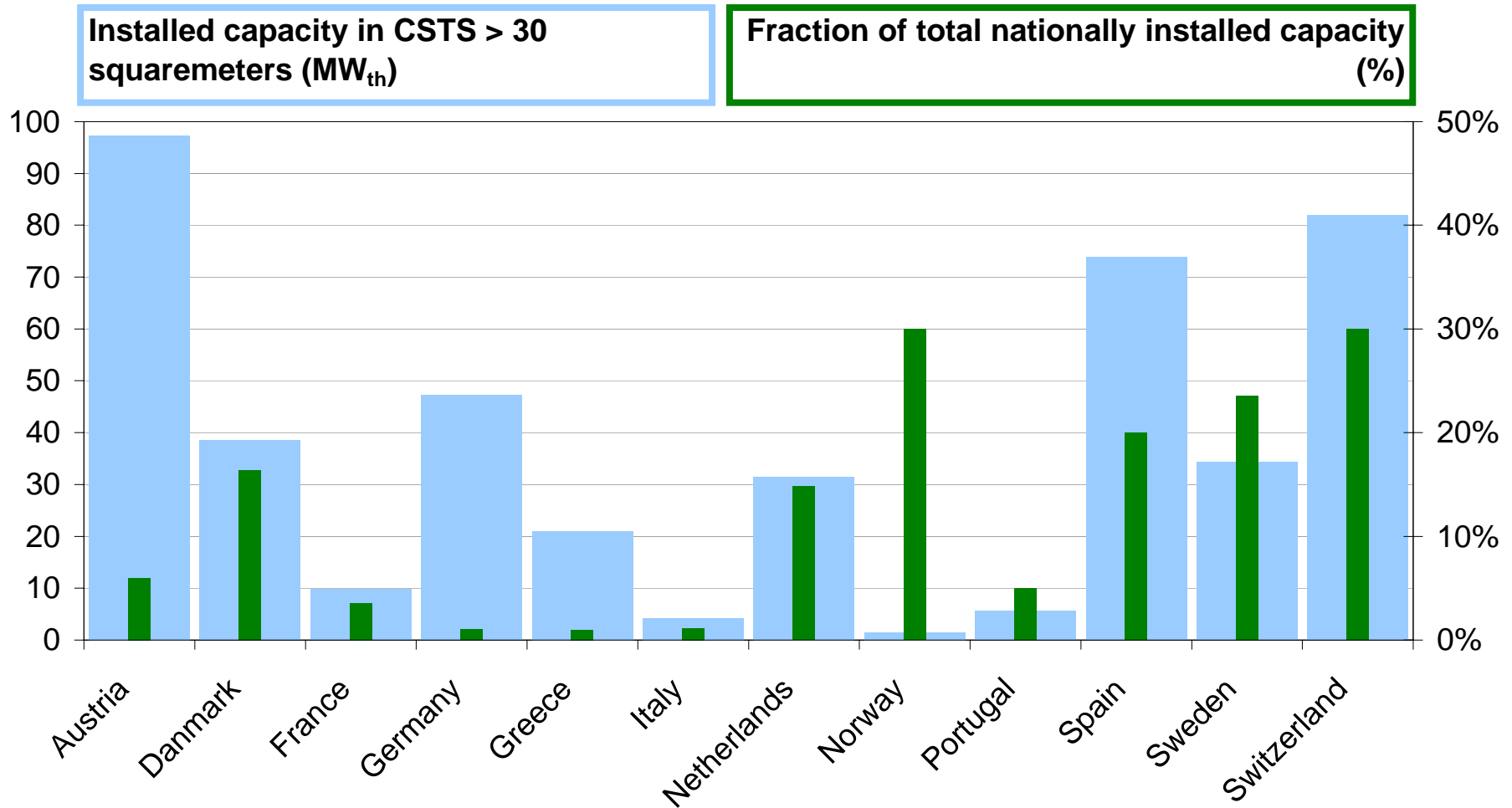
Ing. Jan Schindl
arsenal research, Vienna, Austria

Collective / Large solar thermal systems

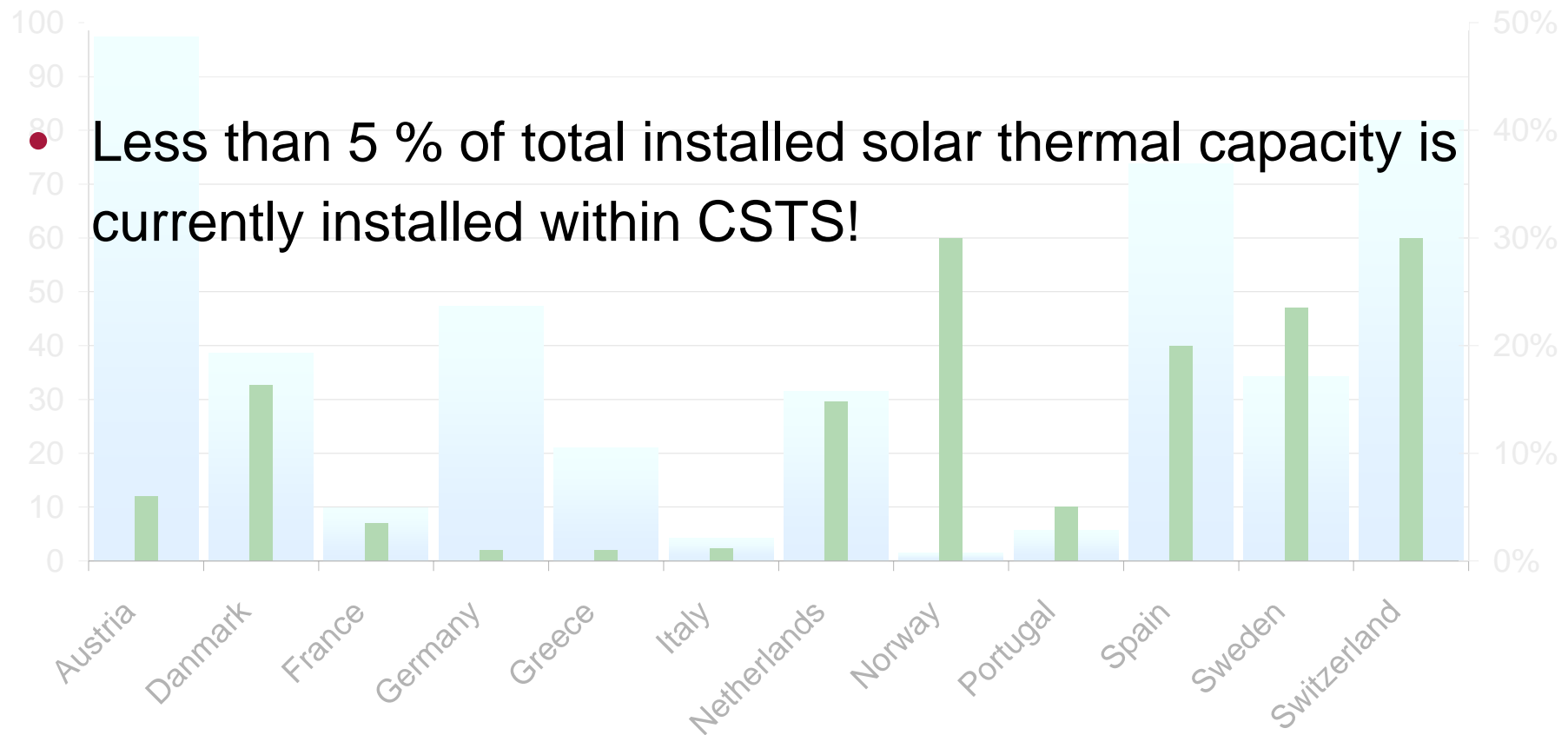
- Collector surfaces starting from a size of 30 m²
- Larger solar thermal systems for collective applications (typically multi-family houses, hotels, nursery homes...)



CSTS on European solar thermal markets

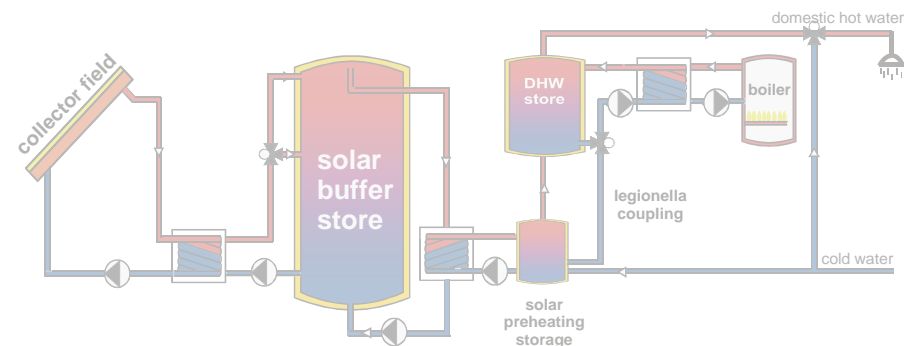


CSTS on European solar thermal markets



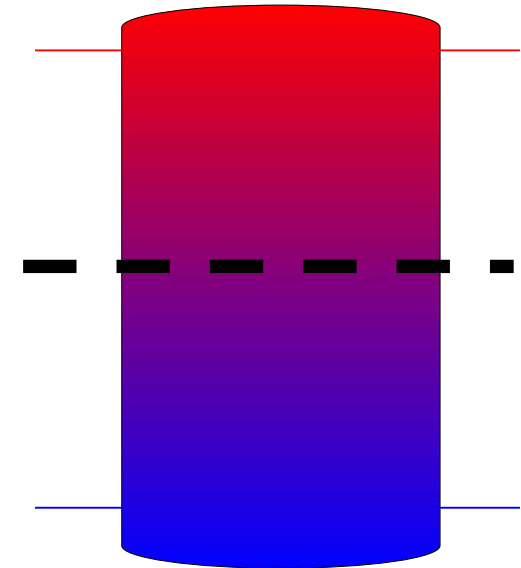
Criteria for „standardised“ concepts

- Repeated application on the national / international market
- Outgrew demonstration character
- Performance evaluation (research programs, publications)
- Availability of design guidelines

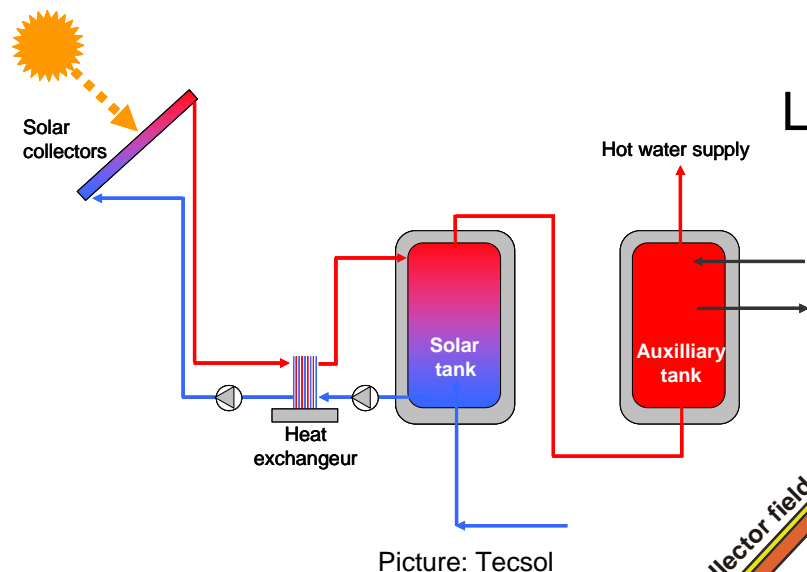


Technical factors of good system design

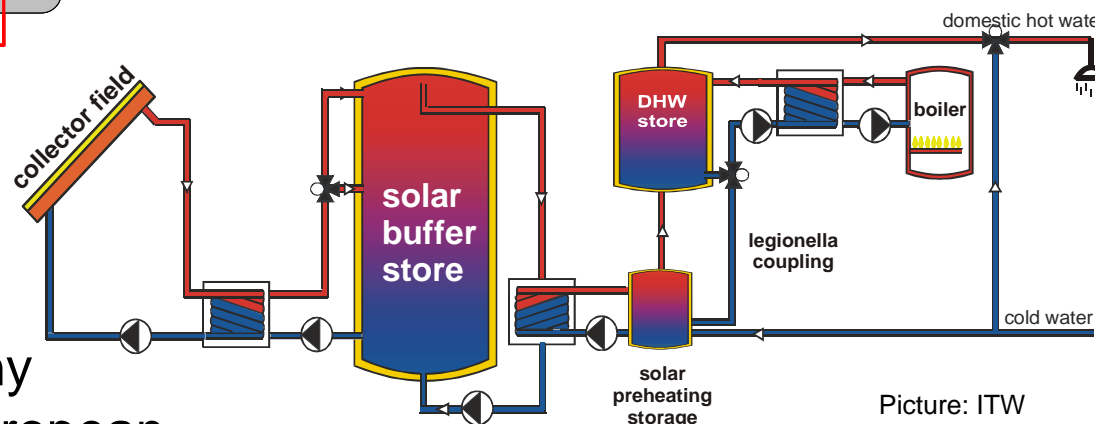
- Enlarging solar fractions
 - Stratification
- Enlarging solar system efficiency / economy
 - Low average collector temperatures
- Hydraulic solutions for legionella prevention
- Prevention of calcification
- **Reliability**



DHW classics

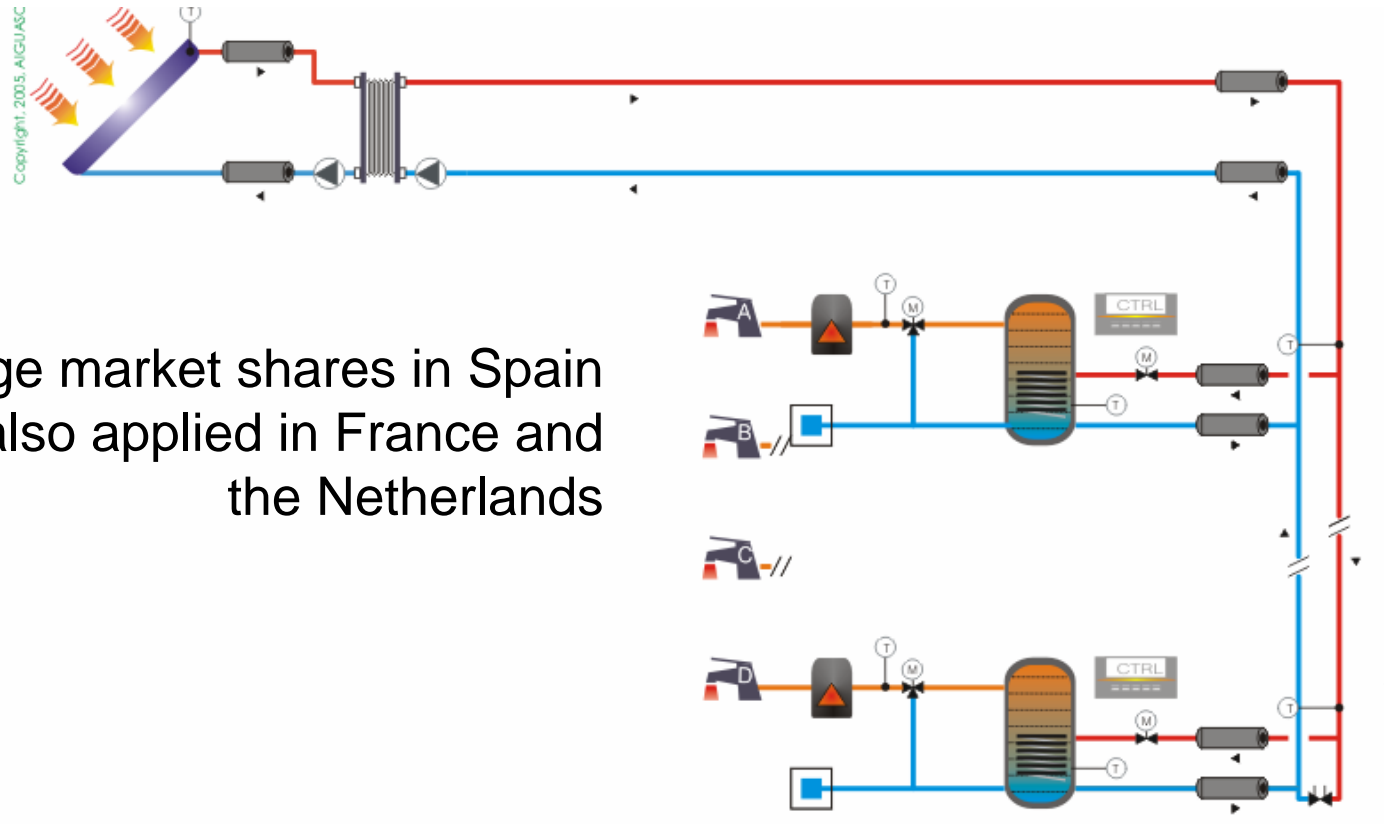


Long-term standard design in France
 numerous systems installed within
 GSR contracts



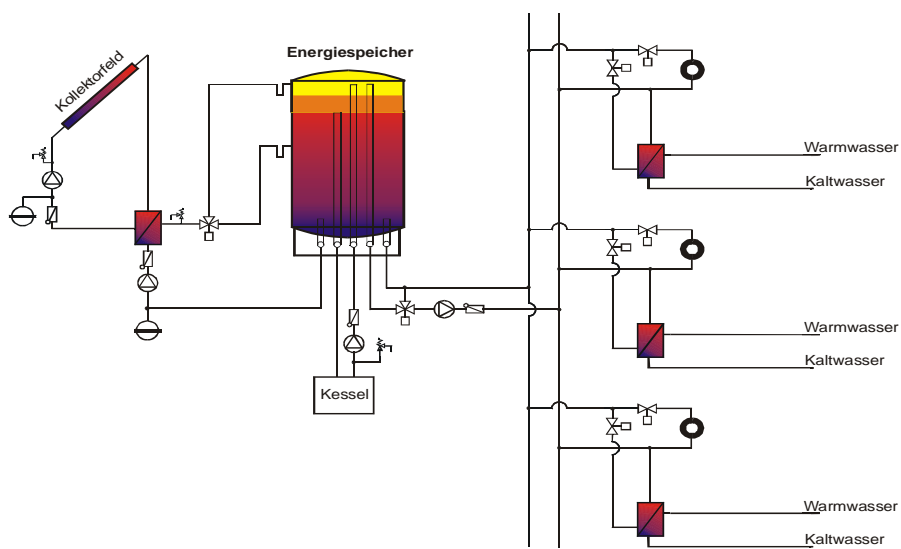
Standard design in many
 central and northern European
 countries (GER, NL)

DHW - decentralized auxiliary heating



Large market shares in Spain
but also applied in France and
the Netherlands

DHW & SH - new standards for planners



Picture: AEE INTEC

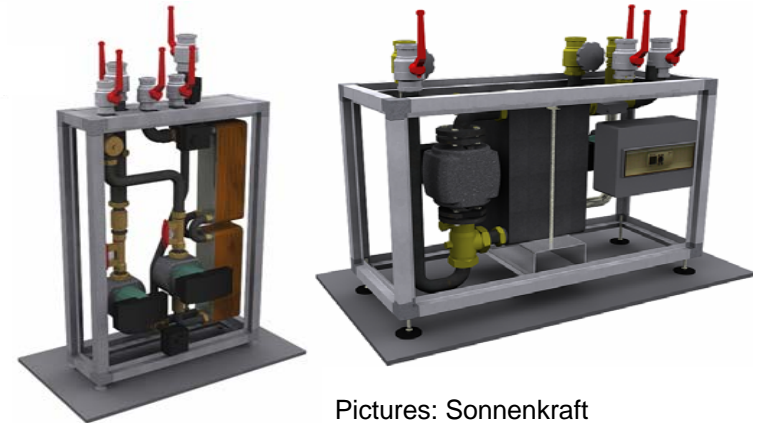
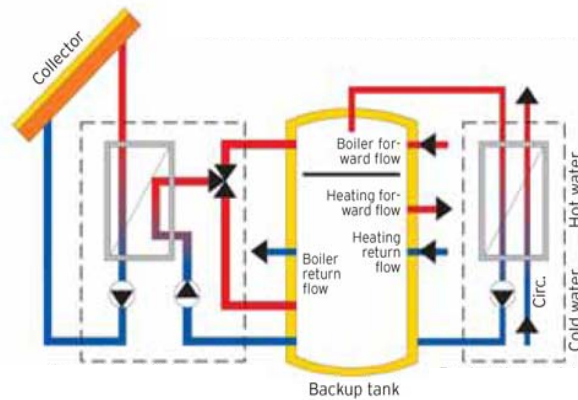
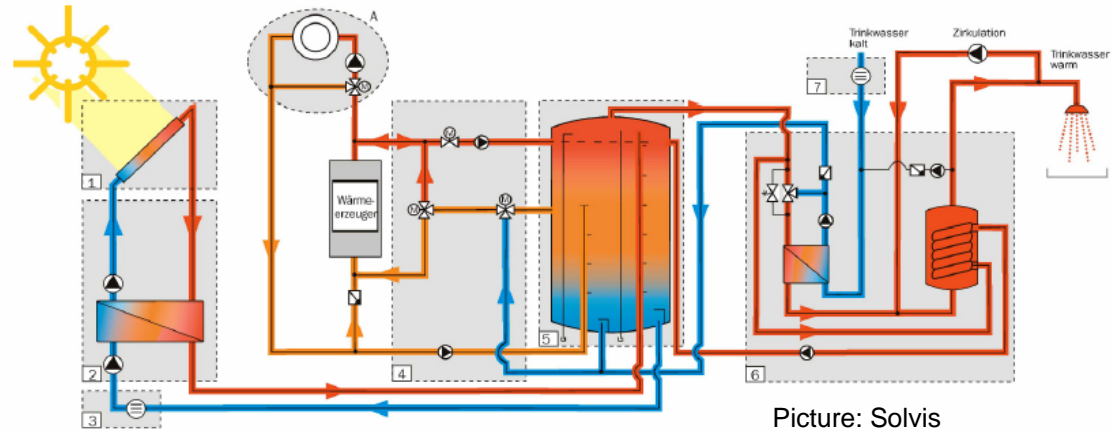


Picture: Danfoss

District heating technology for solar applications. Very successful for new multi-family houses in Austria

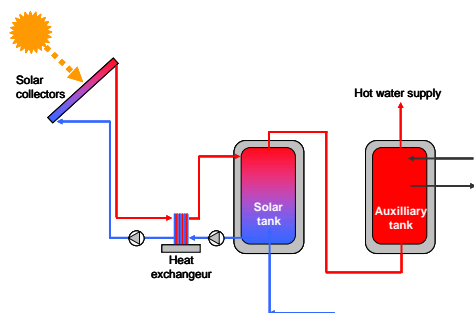
DHW & SH - company system concepts

Sophisticated hydraulic solutions by specialized companies, prefabricated hydraulic modules

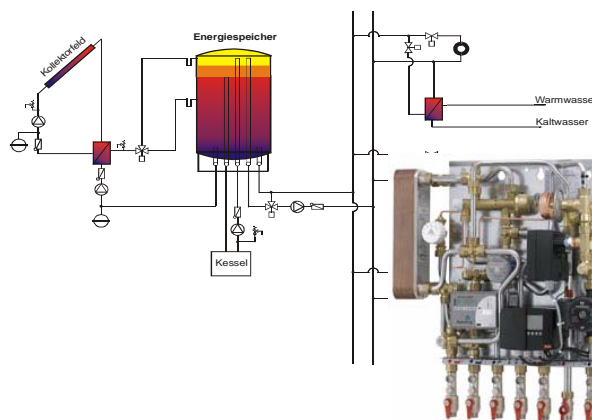


Categories of standardised CSTS design

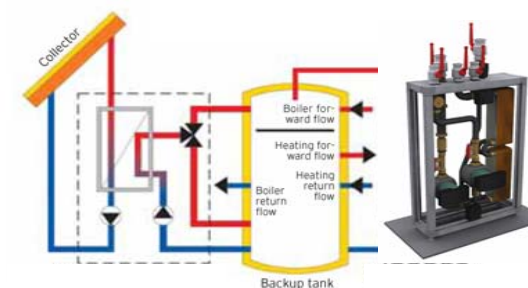
individually planned
classic components
independent standards



individually planned
special components
independent standards



company supported
special components
company guidelines



complexity

historic development



General conclusions

- Dynamic technological development within the CSTS sector
- Trend towards prefabrication of components including control strategies for essential system parts
- Few monitoring data available, but general potential for solar savings is clear
- Quality assurance is the top priority in CSTS
- Standards and guidelines for planners are need to be provided and communicated by companies and independent institutes

NEGST Publications for CSTS

- NEGST Work Package 2
 - Analysis of CSTS system design
 - Collection of technical guidelines
 - Report on monitoring methods
 - ...
- NEGST Work Package 1-5
 - Building integration
 - Solar cooling



http://www.swt-technologie.de/html/publicdeliverables2.html

 **SIXTH FRAMEWORK PROGRAMME**
Sustainable energy systems
NEGST
New Generation of Solar Thermal Systems

PUBLIC DELIVERABLES (Status: March 2006)

WP 2 - Standardised system concepts
[WP2_D1](#): Survey on barriers and chances of large solar thermal systems (485 kB)
[WP2_D3](#): Report concerning investigation and evaluation of existing financing models (101 kB)
[WP2_D4](#): Material for marketing SDHW systems to investors in the building industry (484 kB)

WP 3 - Integration in buildings
[WP3_D1_D2](#): Inventory of guidelines, Overview of existing requirements in EU countries and directives (538 kB)
[WP3_D3](#): Recommendations for Uniform European Requirements for Building Integration of Solar Thermal Collectors (400 kB)
[WP3_D4](#): Workshop on integration of thermal solar functions into building components (400 kB)
[WP3_D6](#): Recommendation of concepts for easy installation and integration in conventional heating appliances (1.2 MB)

WP 4 - Next generation of standards
[WP4_D1](#): Meeting minutes and status reports of subtask meeting (200 kB)

WP 5 - Advanced applications
[WP5_D1](#): Technical status report on solar desalination and solar cooling (6.7 MB)
[WP5_D2](#): Report concerning suitability of different collector technologies for solar cooling and solar desalination (735 kB)

By July 2007 available @
www.swt-technologie.de/html/negst.html



Thank you for your attention.

Ing. Jan Schindl
arsenal research
Renewable Energy Technologies
Vienna, Austria
jan.schindl@arsenal.ac.at
+43 664 8251175

