

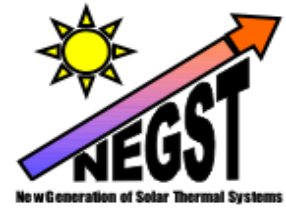
NEGST WP2 QUESTIONNAIRE

for planners, planning installers, manufacturers of solar components and energy service providers

Info: Please send questionnaires back till 30th of April 2005

FAX +43 50550-6390

to: **arsenal research**
Faradaygasse 3
A - 1030 Vienna
Austria
..



Information about your company:

Name of company:

Branch of trade:

Number of employees:

Street:

ZIP-Code / City:

Telephone:..... Fax:

E-Mail: Homepage:

General Information:

1. In which fields of business does your company have experience with larger solar systems?

- | | | |
|---|---|---|
| <input type="checkbox"/> Planning and design | <input type="checkbox"/> Manufacturer of collectors | <input type="checkbox"/> Constructor of heating systems |
| <input type="checkbox"/> Detailed planning | <input type="checkbox"/> Heating system renovation | <input type="checkbox"/> Constructor of solar systems |
| <input type="checkbox"/> Marketing | <input type="checkbox"/> Heating system maintenance | <input type="checkbox"/> Operator (eg. Facility Management) |
| <input type="checkbox"/> Installation | <input type="checkbox"/> Building renovation | <input type="checkbox"/> Energy service provider |
| <input type="checkbox"/> Manufacturer of components:
..... | <input type="checkbox"/> Maintenance of solar systems | Other: |

2. How many systems for solar heat generation have been realised in the projects of your company since the start?

..... < 20 m² Collector area 50-150 m² Collector area > 500 m² Collector area
..... 20-50 m² Collector area 150-500 m² Collector area

3. In how many of your projects large solar systems are used or are requested from your company?

- | | | | |
|---------|--|------------|--|
| In use: | <input type="checkbox"/> 0 % of projects | Requested: | <input type="checkbox"/> 0 % of projects |
| | <input type="checkbox"/> < 5 % of projects | | <input type="checkbox"/> < 5 % of projects |
| | <input type="checkbox"/> 25 % of projects | | <input type="checkbox"/> 25 % of projects |
| | <input type="checkbox"/> 50 % of projects | | <input type="checkbox"/> 50 % of projects |
| | <input type="checkbox"/> 75 % of projects | | <input type="checkbox"/> 75 % of projects |
| | <input type="checkbox"/> 100 % of projects | | <input type="checkbox"/> 100 % of projects |

4. In which of these periods large solar systems have been constructed in your projects?

- | | | | | | |
|---------------------------------------|-------|---------------------------------------|-------|--|-------|
| Amount: | | Amount: | | Amount: | |
| <input type="checkbox"/> before 1980 | | <input type="checkbox"/> 1986 to 1990 | | <input type="checkbox"/> 1996 to 2000 | ..... |
| <input type="checkbox"/> 1981 to 1985 | | <input type="checkbox"/> 1991 to 1995 | | <input type="checkbox"/> 2001 till today | ..... |

Aspects of acceptance:

5. Please tell us from your point of view for your branch the most important reasons for the current low dissemination of large solar systems.

Please mark from 1 to 5. System: 1 stands for important reason and 5 for minor reason:

- | | |
|---|---|
| Marketing not sufficient (image problems) | Conventional heating system not replacable |
| Problems at building integration | Solar ratio too small |
| Planning and organisation too difficult | High investment costs |
| Complex set up of the system | Risk of malfunction or yield losses |
| Initial operation too complex | Planners or key actors have a lack of required skills |
| Trained operator is missing | Decision makers have lack of information |
| Quality of components | Other: |

6. Concerning your branch which are the main important reasons for consideration of solar thermal heat in the energy concept?

- | | |
|--|--|
| <input type="checkbox"/> Image of the involved company (ecological, future-oriented) | <input type="checkbox"/> Reduction of costs due to subsidies |
| <input type="checkbox"/> Reaction to customer request | <input type="checkbox"/> Operating costs |
| <input type="checkbox"/> Condition for favoured dealing of subsidies | <input type="checkbox"/> Others: |

Organisational aspects:

7. Are the most of the prospective end customers informed about the ecological and economic advantages of operating a solar system?

- | | In which way: | ecologic advantages | | | economic advantages | | |
|---------------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | well-informed | moderate | not at all | well-informed | moderate | not at all |
| <input type="checkbox"/> Yes | Handout | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Orally | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Poster / Info board | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | other way of information: | ..... |  |  |  |  |  |
| <input type="checkbox"/> Not informed | | | | | | | |
| <input type="checkbox"/> Do not know | | | | | | | |

8. Concerning the following organisational aspects which of them are known by you and how was your experience with them?

Please mark from 1 to 5. System: 1 stands for very good experience made and 5 for bad experience made:

- No experience: Experience made:
- "Integral planning" - consideration of solar system since start of planning the building
additional comment:.....
 - Consideration of solar system already in the contract award
additional comment:.....
 - Guaranteed solar-yield by a company
additional comment:.....
 - Quality management system installed at involved parties
additional comment:.....

- Third party financing (Saving- or Systemcontracting)
additional comment:.....
- Monitoring of yield by an independent institution
additional comment:.....
- Certification of system by an independent expert
additional comment:.....

Other:

Aspects of technology and quality:

9. Please give us an estimation of how many large solar systems have yields in operation resulting lower than the expected yields:

..... % total number of lower yield

Reason: % Installation mistakes % Automatized function control is missing
 % Planning mistakes % Trained personel for operation missing
 % Maintenance missing Other:

10. Which technical problems occur from your point of view in the field of large solar systems?

.....

11. How you would evaluate the reliability of the following components of large solar systems?

Please mark from 1 to 5. System: 1 stands for very reliable and 5 for bad reliability:

..... Mounting of collector	..... Temperature sensor and other sensors	..... Security devices
..... Solar thermal collector	..... Controller	..... Non-return valve
..... Piping of solar circuit	..... Heat exchanger	..... Valves
..... Storage tank	..... Heat transfer medium for solar loop	..... Pumps
..... Insulation	..... Expansion vessel	Remarks:.....

12. Please estimate how often a large solar system has a break-down during its lifetime?

..... x times in years

13. How high is the percentage of solar systems realised by your company where systems for function- and yieldcontrol are in use?

..... % at systems up to 150 m² % at systems up to 500 m² % at systems > 500 m²

14. Which tools are used by your company to assure faultless installation and an efficient operation of the solar system?

- Approximate estimation of system yield
- Simulation in phase of planning
- Measurement instrumentation to control the function of the system

Other:

15. Please state which hydraulic concepts have been well established at the projects of your company

Please mark from 1 to 5. System: 1 stands for very good experiences and 5 for bad experiences:

Please mark 0 for no experience:

- | | |
|---|--|
| Solar- and heating system charge one single storage tank | Solar space heating systems: separation of heat storages for space heating and heating of drinking water |
| Separate solar- and heating system | Solar space heating systems: increase of return flow of heating system by the solar system |
| Low-Flow solar system with thermal layering | Solar space heating systems: thermal separation of solar- and conventional heating |
| High-Flow | Solar space heating systems: measures for limitation of return flow temperature |
| Matched Flow | Solar space heating systems: mainly use of solar thermal for heating of drinking water (thermal cascade) |
| One single central heat storage | Heat distribution: four conductor system |
| Parallel coupled storages | Heat distribution: three conductor system |
| Serial connection of storages | Heat distribution: two conductor system with decentralized drinking water storages |
| Energy storage in drinking water system | Heat distribution: two conductor system with decentralized heat transfer units |
| Heating of drinking water: solar pre-heating by energy supply from energy storage before heating system | |
| Heating of drinking water: solar and conventional heating together in one storage tank | |
| Heating of drinking water: on demand by rate of flow | |
| Solar space heating systems: direct connection to the heat storage | |

16. From your point of view which are the most important facts for a positive development of solar energy usage for the field of large solar thermal systems?

Please mark from 1 to 5. System: 1 stands for important facts and 5 for minor facts:

- Aspects of design and building integration (Design of collector, colour of absorbers,..)
 - Compact system technology in central heating room (combination with backup heating system)
 - Flexibility and reliability of technique in central heating room
 - Easy-to-install systems
 - Combined systems provided by one party
 - Automatized functionality control and yield control
 - Qualification of involved parties
 - Further integration of involved parties at time of planning and construction
 - Quality of contract award
 - Certification and yield supervision by independant third party
 - Testing and yield simulation for large solar systems
- Other:.....

17. If there is any exemplary large solar system realised by your company please tell us where we can get further informaton about it:

.....
.....
.....
.....

16. Additional Remarks

.....
.....
.....
.....

17. Please mark here if you would like to have a copy of the summary of this survey.

Thank you for your cooperation!