



EIE-06-085 SOLPOOL

Intelligent Energy  Europe

Solar Energy Use in Outdoor Swimming Pools SOLPOOL

Fact Sheets Slovenia

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1 National Fact sheet Slovenia

The national fact sheets will provide an overview about the situation of the usage of solar thermal heating for outdoor pools. This information will be used to show the state of the art, regarding the special regional conditions and to develop a common approach for the supporting solar thermal systems in this special application. The information was requested by every participating country in the project.

1.1 State of the art of conventional heating systems for outdoor pools

The present common heating systems for outdoor swimming pools and the used fuels are listed.

Used techniques:

- Boilers
- Heat pumps
- Geothermal heat pumps and heat exchangers
- Solar thermal systems

Used fuels:

- Fuel oil
- Gas
- Geothermal energy
- Solar energy

1.2 State of the art of solar thermal applications for outdoor pool heating

A list of present available and used solar thermal technology, especially for pool heating, is provided. This will provide the state of the distribution and the acceptance of solar thermal systems.

Collectortype:

- Flat plate
- Vacuum
- Unglazed

System details:

- Flat plate collectors with heat exchangers
- Vacuum collectors with heat exchangers
- Unglazed collectors with buffer storage, without heat exchangers

1.3 Best available technology and best practice for solar thermal outdoor pool heating

The best technical approaches, regarding the national and regional conditions, are listed here. Every participating country will give the best practice for the installation of solar ther-

mal pool heating systems according to the special national conditions. This information will be used in the national campaigns.

Best available technology:

- Flat plate collectors with heat exchangers

Best practice:

- Hotel Delfin, Izola, 128 m² of flat plate collectors installed, swimming pool water is heated through external heat exchanger.



Figure 1: Flat Plate Collectors in Hotel Delfin (Source: www.solarge.org)

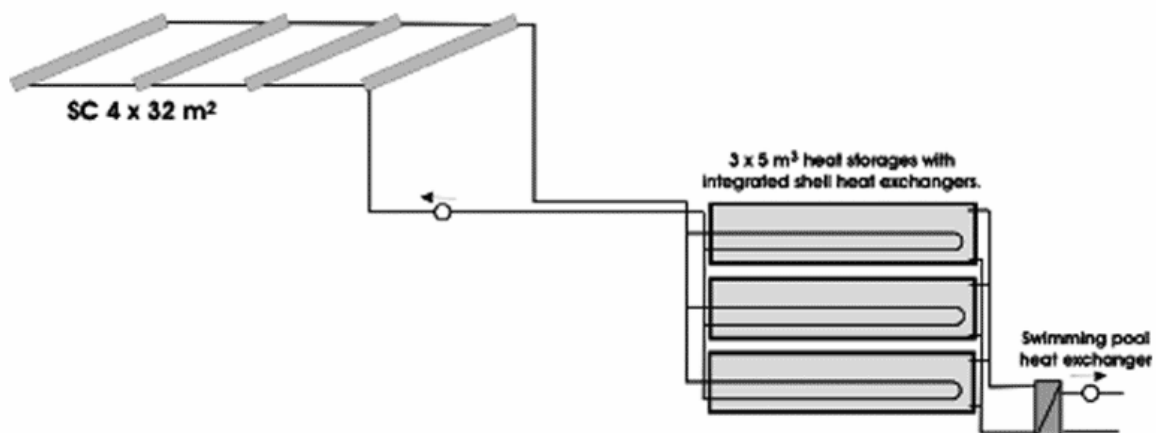


Figure 2: Swimming Pool Heating With Flat Plate Collectors in Hotel Delfin (Source: www.solarge.org)

1.4 Boundary conditions

The list should show the national and regional barriers, which must be overcome to improve the awareness of the end users and the implementation of solar thermal heating systems. This includes technical or climate barriers but also as governmental, financial and societal boundary conditions.

Technical or climatic barriers:

- lack of knowledge in solar thermal design and operation
- relatively disorganized domestic industry
- lack of adequate surfaces due to the fact that solar thermal systems are not planned in the phase of construction
- existent boiler rooms are not suitable for solar thermal equipment

Financial Barriers:

- national granting system supports only small solar systems
- low price of fossil fuels and therefore low competitiveness of RES
- relatively high investment costs in case system operates only in summer
- heat is not used through the whole year

Governmental barriers:

- national granting system supports only small solar systems

Social barriers:

- awareness of consumers and installers
- wrongly informed consumers
- strong oil company lobby

1.5 Existing norms and standards

The existing standards and norms for the installation and use of solar thermal heating devices are stated here. Additional outdoor swimming pool norms and standards concerning solar thermal heating systems are listed. All important standards, which impacts the installation and usage of a solar thermal system are named and will be concerned by the development of the campaign strategies.

Slovenia does not have national standards for solar thermals applications, solar thermal pool heating and outdoor pool operation concerning ST heating.

European standards are available at: <http://www.estif.org/solarkeymark/standards.php>.

1.6 Cost benefit analysis and impact

An important fact for the end user is a cost benefit analysis. Here the common costs for Solar thermal systems, including system and installation costs per m², are stated. An estimation of the size of the national market is done, not including small private pools. And the gain of heating power per m² collector surface and the resulting savings of CO₂ are described.

Market size:

- 161 swimming facilities with 538 swimming pools in Slovenia in 2006, from which 179 are outdoor swimming pools

System costs per m² collector, whole costs with installation:

- 500 – 600 €/m²

Heat gain in kWh per m² collector according to solar radiation and opening duration of the pool:

- 450 kWh/m²/year

Energy and CO₂ savings per m² collector:

Heating system	CO ₂ Emission in g/kWh	Saved CO ₂ in g per m ²
Electric	500	225.000
Oil	309	139.050
Natural gas	212	95.400
LPG	259	116.550
Wood	Neutral	-
Data: ApE d.o.o. Slovenia		

2 Requirement Sheet Slovenia

In this sheet the requirements of a solar thermal system, regarding the needs of the end users

Requirements of the End Users	Very Important	Less Important
Power gain for heating system	X	
Saving of energy costs	X	
Cost benefit from installing ST system	X	
Long time durability of the system	X	
Low effort for installation	X	
Low effort and costs for maintenance	X	
Low required space for collectors	X	
Integration in existent heating systems	X	
No problems with the pool hygiene	X	
Plant safety, no risk for pool users	X	
Easy handling of the system	X	
Availability of grants /subsidies	X	
Independency from increasing energy costs	X	
Environmental protection	X	
Other		

3 Funding Sheet Slovenia

The table shows the information of national and regional available grant programmes. They mainly should list the programmes for solar thermal use for outdoor swimming pool heating, but also schemes, which will support the use of solar thermal systems

Funding sheet		
Contact information	Title	Mag.
	First name	Jani
	Last name	Turk
	Position	Adviser
	Email	jani.turk@gov.si
	Telephone	+386 1 300 69 95
Financing Information	Organisation	Ministry of the environment and spatial planning
	Type of Support	Investment subsidies for households
	Available Money	1,2 mill. € in 2007 (call already closed), 1,8 mill. € in 2008 (for solar thermal collectors, biomass boilers, heat pumps and PV plants)
	Share of total budget	up to 40% of investment, but not more than 125 €/m² per built in solar collector or 2.100 € for the whole system
	Who can apply	Owners and renters of houses or apartments
	Requirements for application	Solar thermal system must be in operation. Applicants have to provide application, pictures, copies of installation invoices
	Targeted areas	Slovenia
	Short description	Ministry provides subsidies for investments in solar thermal systems for households, which are available yearly.
	Documents	www.aure.si
	Source of information	www.aure.si
	Year of beginning	1996
Information website	www.aure.si	

Funding sheet		
Contact information	Title	Mr.
	First name	Darko
	Last name	Koporčič
	Position	Assistant Manager
	Email	darko.koporcic@ekosklad.si
	Telephone	+386 1 241 48 30
Financing Information	Organisation	Environmental fund of the Republic of Slovenia
	Type of Support	Soft loans
	Available Money	Last actual calls: - environmental investments for households 37OB07A, 2.3.2007, 10 mill. €, annual interest rate for credits: 3,9 %, open until 20.12. 2007 - environmental investments for legal entities 38PO07A, 10 mill. €, annual interest rate for credits: EURIBOR+0,3 %, closed
	Share of total budget	37OB07A: 90% of investment, max 20.000 EUR 38PO07A: 90% of investment or 2 mill. €, max 15 years of payback period
	Who can apply	37OB07A: owners and renters of houses or apartments 38PO07A: municipalities, companies, other legal entities and private entrepreneurs
	Requirements for application	37OB07A: Applicants have to provide application, offer and statement of supplier/contractor 38PO07A: Applicants have to provide application
	Targeted areas	Slovenia
	Short description	Fund encourages sustainable development projects with loans and guarantees with environmental investments and other forms of subsidies. Fund encourages investments that are in accordance with national environment protection programme and EU environmental policy.
	Documents	www.ekosklad.si
	Source of information	www.ekosklad.si
	Year of beginning	N.A.
	Information website	www.ekosklad.si

4 References

www.aure.si

www.ekosklad.si

www.estif.org

www.ivz.si

www.solarge.org