



EIE-06-085 SOLPOOL

Intelligent Energy  Europe

Solar Energy Use in Outdoor Swimming Pools SOLPOOL

Fact Sheets Hungary

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1 National Fact sheet Hungary

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:

- Furnace heating
- District heating with heat exchange

Used fuels

- Natural gas
- Liquid gas
- Oil

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 collector
- Vacuum collector
- Rubber mat sun radiation absorbers

System details:

- Flat collectors working with heat exchange
- Vacuum collectors are used for hot water in private buildings, with a heat exchange small pools are heated

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

Best available technology:

- Tube collectors and heat exchange optimal use of gained heat

Best practice:

- Direct heating of pool water in a solar absorber
- Absorber material must be resistant against chlorine in the pool water

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:

- No technical barriers
- All technical equipment available on the market
- A stock of qualified installers and engineers is existing in the country

Financial Barriers:

- Financial barriers existing
- Most pools are operated by low income local authorities
- Installation of solar thermal systems must be supported with grant

Governmental barriers:

- No governmental barriers
- Permission for the use of solar systems is usually easy to obtain

Social barriers:

- Lack of knowledge about solar thermal systems

1.5 Existing norms and standards

No information available

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:

- About 200 large outdoor swimming pools

System costs per m² collector, whole costs with installation:

- Collector type

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

- Average Opening time per year
- Average Solar radiation

- Heat gain ST System per m²

Energy and CO2 savings per m² collector:

Heating system	CO2 Emission in g/kWh	Saved CO2 in g/kWh per m ² and year
Electric	953	
Oil	375	
Natural gas	356	
Heat pump Air	187	
Heat pump Soil	167	
Heat pump Water	146	
Solar Thermal	30	
Data: Umweltbundesamt Germany		

2 Requirement Sheet Hungary

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 Hungary

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 Hungary		
Contact information	Title	Customer Service of the "Energy Centre Hungary"
	First name	
	Last name	
	Position	
	Email	ugyfelszolgalat@energiakozpont.hu
	Telephone	(+36-1) 456-43-02, (+36-1) 456-43-88
Financing Information	Organisation	Energy Centre Hungary
	Type of Support	Non-returnable financial support + low interest credit
	Available Money	2400 million HUF for financial support 16000 million HUF as credit limit
	Share of total budget	15% for support, 0-85% for credit
	Who can apply	house/flat owners+ alliances of house/flat owners
	Requirements for application	Completed forms, short description of the planned works, detailed budgeted, justification of house/flat ownership
	Targeted areas	Renewable energies and energy savings
	Short description	
	Documents	
	Source of information	Information Web site
	Year of beginning	2007
	Information website	http://www.energiakozpont.hu/ekkhthu/palyazatokh/palyh_nep07.htm