



EIE-06-085 SOLPOOL

Intelligent Energy  Europe

Solar Energy Use in Outdoor Swimming Pools SOLPOOL

Fact Sheets Czech Republic

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1 National Fact sheet Czech Republic

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:

- Heat pumps
- Furnace heating
- Central Heating

Used fuels

- Natural gas
- Oil
- Wood

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 collector
- Absorber mat collectors
- Vacuum tube collector

System details:

- Solar collectors combined with heat pumps

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:

- Flat plate collectors with heat medium, especially for all year pool heating and heat exchange

Best practice:

- Artificial rubber collectors, direct heating of 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:

- Wrong defined and dimensioned systems
- Problems with the optimal combination with heat pumps
- No certification and a few existing certificated test rooms (getting better recently)
- Often installation of cheap and low quality components

Financial Barriers:

- Many pool operators are municipalities need funding for the installation of ST systems
- A lack of awareness of the existing funding schemes
- High price of ST combined with other heat systems

Governmental barriers:

- Permission needed, but only a technical expertise and a simply building control
- More information is needed for the application of funding

Social barriers:

- Lack of knowledge about solar thermal systems and funding schemes
- No concept for a better administration of information

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.

Solar Thermal pool heating:

- N/A

Solar thermals applications:

- CSN 06 0830:1996
- CSN EN 12975-1:2002
- CSN EN 12975-2:2003
- CSN EN 12976-1
- CSN EN 12976-2

Outdoor pool operation concerning ST heating:

- N/A
- N/A

For certification of solar collectors needed:

- CSN 06 0009N/A
- CSN 06 0830
- CSN 06 0212 (in conjunction with CSN EN 306)
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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:

- 540 swimming pools (ca. 255 outdoor) in the Czech republic
- 89 of outdoor pools participated on the survey, 15 of them heated with ST system (83% with no heating or heated up by fossil fuels)
- Estimated market: 74 ST heat systems are possible for sure, there is no information about heating system of another 166 outdoor pools

System costs per m² collector, whole costs with installation:

- Flat plate collector
- 7000 - 7500 CZK (250 - 265 €)

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 (934 kWh/m², horizontal surface radiation, weighted average)
- Heat gain ST System per m²: 198,5kW/h p.a.

Energy and CO₂ savings per m² collector and per year:

Heating system	CO ₂ Emission in g/kWh	Saved CO ₂ in kg/m ² per year
Electric	953	177
Oil	375	62
Natural gas	356	58
Heat pump Air	187	25
Heat pump Soil	167	21
Heat pump Water	146	16
Solar Thermal	30	
Data: Umweltbundesamt Germany		

2 Requirement Sheet Czech Republic

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 Czech Republic

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 Czech Republic	
Title	Mgr.
First name	Martin
Last name	Kubica
Position	Controller
Email	martin.kubica@sfzp.cz
Telephone	+420 267 994 515
Organisation	State Environmental Fund of Czech Republic (on behalf of Ministry of Environment)
Type of Support	Financial subsidy
Available Money	5,2 billion Euro (2007-2013)
Share of total budget	N/A
Who can apply	Not entrepreneur subjects (municipalities, regions, allowance organizations, not-for-profit org., Church etc.)
Requirements for application	Technical, economical and ecological terms stated in Document for Implementation
Targeted areas	Renewable energy sources including solar thermal thermal applications
Short description	Operational programme Environment – one of the 7 main programme pillars is targeted to greater use of RES
Documents	Document for Implementation (http://www.opzp.cz/sekce/20/implementacni-dokument/)
Source of information	State Environmental Fund of Czech Republic
Year of beginning	2007
Information website	http://www.sfpz.cz , http://www.opzp.cz/ ,

Funding sheet Czech Republic		
Contact information	Title	Mgr.
	First name	Lenka
	Last name	Melounová
	Position	Methodist
	Email	lmelounova@sfzp.cz
	Telephone	+420 267 994 525
Financing Information	Organisation	State Environmental Fund of Czech Republic (on behalf of Ministry of Environment)
	Type of Support	Investment subsidy, soft loan
	Available Money	N/A
	Share of total budget	N/A
	Who can apply	Sport facilities, Public pools, hotels
	Requirements for application	Application form (part G – renewable energy sources), compliance with energy audit conditions (Supplement č. II. 8)
	Targeted areas	Solar thermal applications used for heating water in functional buildings
	Short description	The National Programme for the Energy Effective Management and the Utilisation of Renewable and Secondary Sources of Energy is elaborated by the Ministry of Industry and Trade and the Ministry of the Environment
	Documents	available at: http://www.sfzp.cz/cs/narodni-programy/dokumenty/ http://www.ceacr.cz/?page=sprg_zneni_cz
	Source of information	State Environmental Fund of Czech Republic
	Year of beginning	2007 (announced on a yearly basis)
Information website	http://www.sfzp.cz	
Other	Part B of the Programme (administrated by Czech Energy Agency) – financial subsidy for smaller ST systems for entrepreneurs (Efekt Programme, www.ceacr.cz), up to 40 % of installation costs (max cca 7000 EUR)	

Funding sheet Czech Republic		
Contact information	Title	
	First name	
	Last name	
	Position	
	Email	cea@ceacr.cz , programy@czechinvest.org ,
	Telephone	+420 800 800 777 (free call)
Financing Information	Organisation	Czechinvest, Czech Energy Agency (on behalf of Ministry of Industry and Trade)
	Type of Support	Financial subsidy
	Available Money	Operational Programme Enterprise and Innovation (2007-2013), cca 3,04 billion Euro - cca 4 % from the budget is targeted to energy programmes
	Share of total budget	Eko-energy programme (2007-2013), cca 3 mil Euro for the 1.st Call
	Who can apply	Entrepreneurs (SME)
	Requirements for application	Technical, economical and ecological terms stated in the Document for Implementation
	Targeted areas	Energy savings, renewable energy sources including solar thermal applications
	Short description	Eko-energy programme – support of business activities in the field of RES and Energy savings
	Documents	EKO-ENERGIE (http://www.mpo.cz/dokument29993.html)
	Source of information	Czechinvest, Czech Energy Agency, Ministry of Industry and Trade
	Year of beginning	2007
Information website	http://www.mpo.cz , http://www.ceacr.cz/ , http://www.czechinvest.org/ ,	