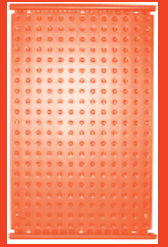


# solar heating for swimming pool



the solar heating for  
your swimming pool



# oku - solar heating of swimming pools

The problem is familiar. An outdoor swimming pool that is not heated is only really comfortably warm for three or four weeks at the height of summer - very little when you think of all the investment and maintenance you put into it. An indoor swimming pool has to be heated all the year round, even in the middle of summer.

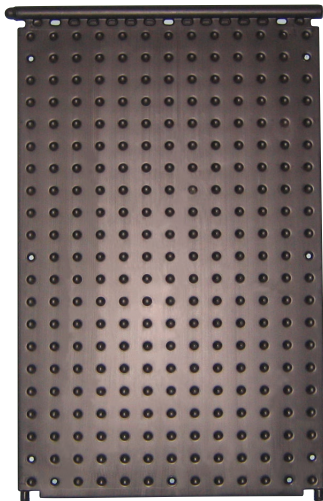
Heating a swimming pool using conventional means of energy can be a costly business, and is also a load on the environment.

But the heating of swimming pools is an ideal application for solar energy. No very high temperatures are needed, but large quantities of water have to be heated, so it makes sense to operate such an installation with a large flow rate at a relatively low temperature level.

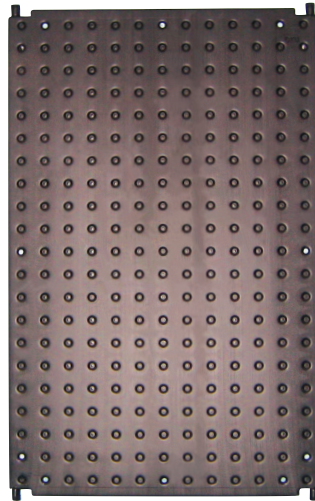
In that way your oku swimming-pool solar heating produces optimum efficiency.



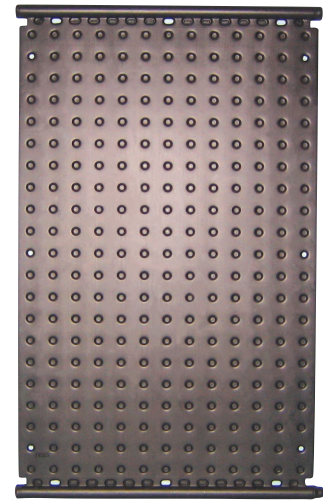
**Enjoy a well-tempered swimming pool with oku solar heating**  
**Attractive investment for an inexhaustible source of free energy**  
**Advanced technology - your contribution to protection of the environment**



Item no. 1000  
with integrated collecting pipe dia.  
40 mm and two couplings dia. 25  
mm  
length 1320 mm - width 820 mm -  
1.08 m<sup>2</sup>



Item no. 1001  
with four couplings dia. 25 mm  
length 1280 mm - width 820 mm -  
1.05 m<sup>2</sup>



Item no. 1002  
with 2 integrated collecting pipe  
dia. 40 mm  
length 1360 mm - width 820 mm -  
1.12 m<sup>2</sup>

Low pressure drop - approx. 0.003 bar at 200 l/h/m<sup>2</sup>  
Flow rate 150 to 250 l/m<sup>2</sup>/h  
Molded in one piece - homogeneous black  
Weight approx. 6 kg/m<sup>2</sup> - water content 6 l/m<sup>2</sup>  
Testing pressure 4.5 bar at NT  
Working pressure up to 1.2 bar - 40°  
Efficiency up to approx. 80% - power up to 0.8 kWh/m<sup>2</sup>  
Average value 0.5 to 0.6 kWh/m<sup>2</sup>  
Operation often possible with existing filter pump  
Non-corroding - resistant to swimming-pool water  
Pool water pumped direct through absorber  
Idling-proof  
Temperature-resistant from -50 to + 115°C  
Full - area through - flow - frost - resistant - supports human weight

**oku solar absorbers of high  
molecular polyethylene offer  
the right foundation for  
operating such installations**



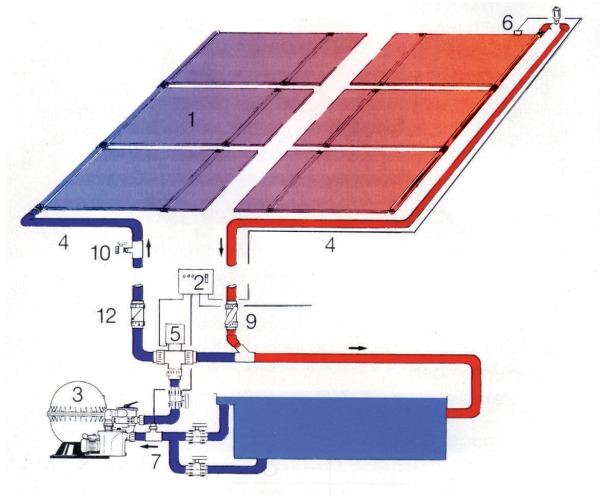
**TÜV-checked**



# Different configurations of oku swimming-pool solar heating

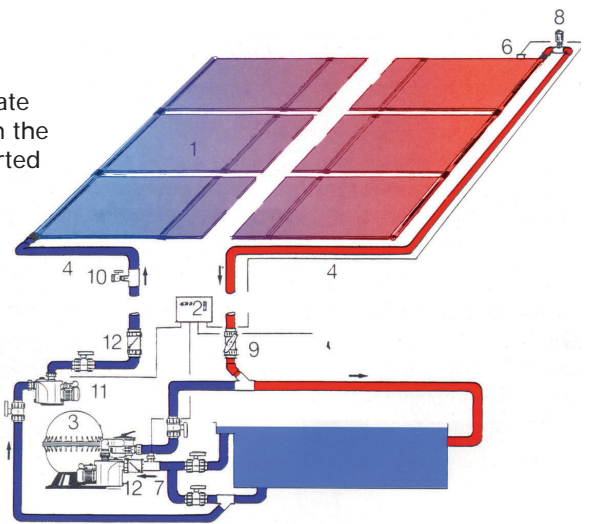
## 1. Operation with filter pump via three-way motor ball valve with difference-temperature regulation

This configuration can usually be selected if the absorbers are not to be set up higher than 6 m above the surface of the water. The three-way motor ball valve is integrated into the pressure line of the filter installation. Because of the difference-temperature regulation the ball valve is changed over when the absorber temperature is higher than the temperature of the water of the swimming pool. The filter stream is then pumped through the absorbers. The warmed water flows back into the filter circuit by way of a Tee.



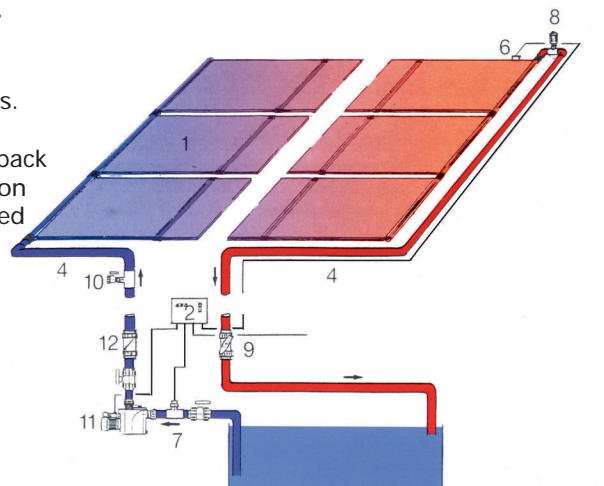
## 2. Operation with own pump and difference temperature regulation integrated into filter circuit

In many cases it may be sensible or even necessary to install a separate pump for the solar heating. For example when the delivery head from the water level to the absorber panel is more than 6 m. The water is diverted from the filter installation by way of a Tee and pumped through the absorbers by the auxiliary pump. This pump is switched by the difference-temperature regulation to ensure that it only runs to actually win energy. The filter and solar pump are separately regulated. It is usually advisable to integrate non-return valves in both the solar and the filter circuit.



## 3. Operation with own pump and difference-temperature regulation - piping independent of filter circuit

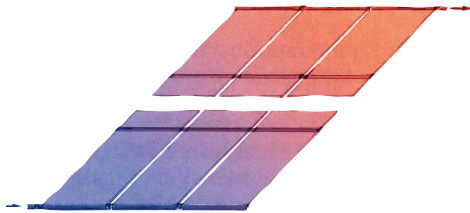
This configuration is chosen when the filter piping is difficult of access. The water is sucked out of the swimming pool by an immersion pipe, pumped through the absorbers, and the warmed water is conducted back into the swimming pool. Here too the difference temperature regulation ensures that the pump only runs to win energy. If the pump is mounted above the water level and the delivery head is more than 5 m, a non-return valve should be incorporated.



### The components:

- 1 oku absorber
- 2 Difference-temperature regulator OE 1
- 3 Filter installation
- 4 Solar circuit forward and return
- 5 Three-way motor ball valve
- 6 Temperature sensor, absorbers

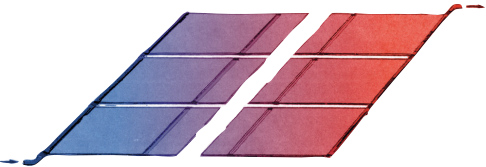
- 7 Temperature sensor, swimming pool
- 8 Vent valve
- 9 Stop cock (downdraft brake)
- 10 Drain cock
- 11 Pump for solar circuit
- 12 Non-return valve



The water of the swimming pool can flow through the oku absorbers in either direction, so they can be mounted both lengthwise and side by side. The individual rows of absorbers are connected on a Tichelmann principle (same routes for each row). It is not advisable to connect more than seven absorbers in series.

#### DESIGN

Recommended absorber area in % of pool surface for open-air pools with cover or indoor swimming pools (early May through end of September)  
Temperature increase 4-7 °C compared to unheated swimming pools



Angle of inclination	Direction of inclination					Absorber area in % of pool surface
	E	SE	S	SW	W	
90°	90	80	70	75	85	
60°	80	65	55	60	70	
45°	70	60	50	55	65	
30°	60	55	45	50	55	
15°	55	50	50	50	55	
0°	50	50	50	50	50	

The absorber area should be chosen 50% larger if there is no cover. The regionally different number of sunshine hours can be allowed for by adding or deducting up to 20% absorber area.

#### Pump performance

The flow rate should be 150 to 250 l/m<sup>2</sup> absorber area per hour. The required type of pump is easy to determine. The delivery rate is calculated from the absorber area x 200 l. The delivery head is the difference in height between the water level and the absorber panel plus approx. 5 m.



Difference-temperature regulator



Three-way motor ball valve



Pump