calculate your heat exchanger

Guide for Optimal Heat Exchanger Calculation

This guide provides information on how to use our heat exchanger calculator.

The goal, when calculating a heat exchanger, should be to achieve the desired pool temperature and compensate for the daily temperature loss. For example, a pool may need to be heated by 2°C in 5 hours, or in another case by 5°C in 5 hours.

For the **"desired heat up time"** input field, we recommend 5 hours. This usually leaves enough leeway to reach or maintain the pool water temperature even if the surrounding temperature drops.

Important for a successful calculation is the correct assessment of the on-site situation in order to determine the correct ratio between daily temperature loss and desired heating time. These two points are crucial for a calculation that is as accurate as possible.

The determination of the value **"daily temperature loss"** depends on the circumstances, the different requirements of the builder or the respective system, such as indoor or outdoor pool, climatic conditions, size and location of the pool, season of heating and much more. All these evaluations must be clarified by the installer on site and are the installer's responsibility. Good insulation of the pool and a modern cover for outdoor pools, which usually keeps about 80% of the existing heat in the pool, are recommended. On average, the daily temperature loss ranges between 2°C and 5°C, but can be higher for small pools or high water temperatures.
The calculation must also take into account the heat losses that occur especially with long piping.
For the correct selection of the heat exchanger, further questions need to be clarified:

1. Can the existing heat source provide the desired output?
2. Does the system achieve the necessary flow rates? If not, the performance of the heat exchanger will decrease.

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Calculation Example Using our Calculator

Explanation:

In the field "daily temperature loss", we entered the number of °C by which the temperature would drop per day if the heating were switched off. In the example below, it would be 3°C per day.

In the field "desired heat up time", we entered the time in which the pool should be heated by 3°C. In this case, we chose 5 h.

Important:

In order to not only maintain the desired pool temperature, but also to increase it if necessary, it is important to take into account the corresponding heat losses:

1. Cooling during the heating time (e.g. at cold outside temperatures)
2. Loss in the piping: approx. 5%

Calculation example:

Pool volume: 40 m³

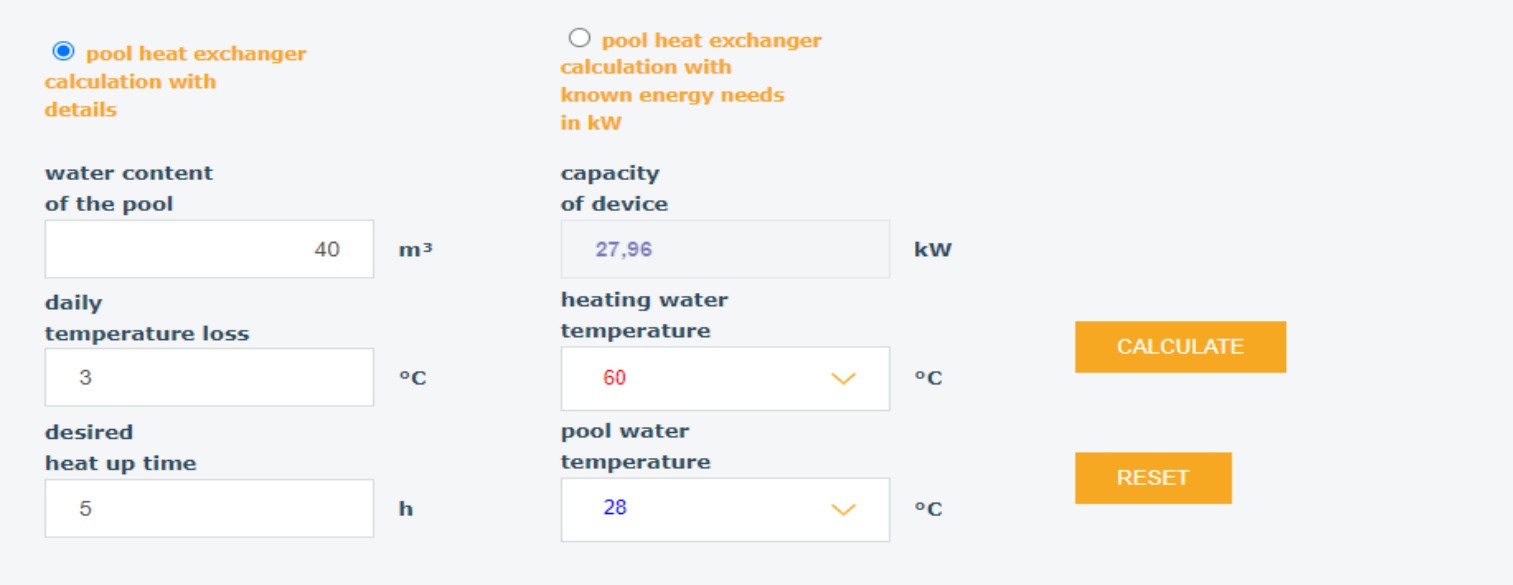
Daily temperature loss: 3°C

Desired heating time: 5h

Heating water temperature: 60°C

Pool water temperature: 28°C

The data is transferred as follows:



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Result:

The program calculates a power of 28 kW for these specifications and provides product recommendations from our range with outputs that are related to the entered values:

item no.	type	capacity of heat exchanger	heating water in/out	pool water in/out
10 01 21	D-HWT 54 (AISI)	28,8 kW	60/51,6°C	28/30,08°C
10 01 11	D-TWT 65 (Ti)	38,4 kW	60/48,8°C	28/30,2°C
10 08 03	D-KWT-AISI 85	41,6 kW	60/41,8°C	28/31°C
10 08 07	D-KWT-Ti 85	41,6 kW	60/41,8°C	28/31°C
10 14 02	X-PWT 409 AISI	35,2 kW	60/43,8°C	28/44,9°C
10 14 26	X-PWT 409 Ti	35,2 kW	60/43,8°C	28/44,9°C
10 14 20	G-PWT 30 AISI	32 kW	60/42,5°C	28/45,3°C
10 14 44	G-PWT 30 Ti	32 kW	60/42,5°C	28/45,3°C

> Attention! The program can not take into consideration project-related losses.
> Please note flow rates and pressure drops (see data sheet)
> 1 kW corresponds to 860 kcal/h
> 1 liter heating oil or 1 m³ natural gas has an energy content of 10 kWh
> kWh corresponds to kW x heat up time (h)
> Calculated heating capacity can also be reached with an electric heat exchanger

The models recommended here have a higher output according to the data sheet, but in this specific case they only reach the kW values specified in the table above.

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