Sun Path Indicator

Function

This device allows examining whether trees, buildings etc, will cast shadows on planned module or collector surfaces. Shadowing can result in reduced effectiveness of a solar energy system.
The transparent sun path sheet displays the relevant annual irradiation curves with respect to the daily sunshine hours.
If you look through the device after aligning it South using the compass, you will be able to identify Objects which will obstruct the path of the sun at a given time and therefore cast a shadow.
The installation location for solar collectors or solar modules is optimally chosen when no shadowing occurs or shadowing only occurs very early or late during the day.
Especially during the transition periods in Autumn and Spring a solar system with combined hot water and space heating support should not be subject to shadowing. A system mounted on a roof with Western orientation naturally must not be shadowed during the afternoon.

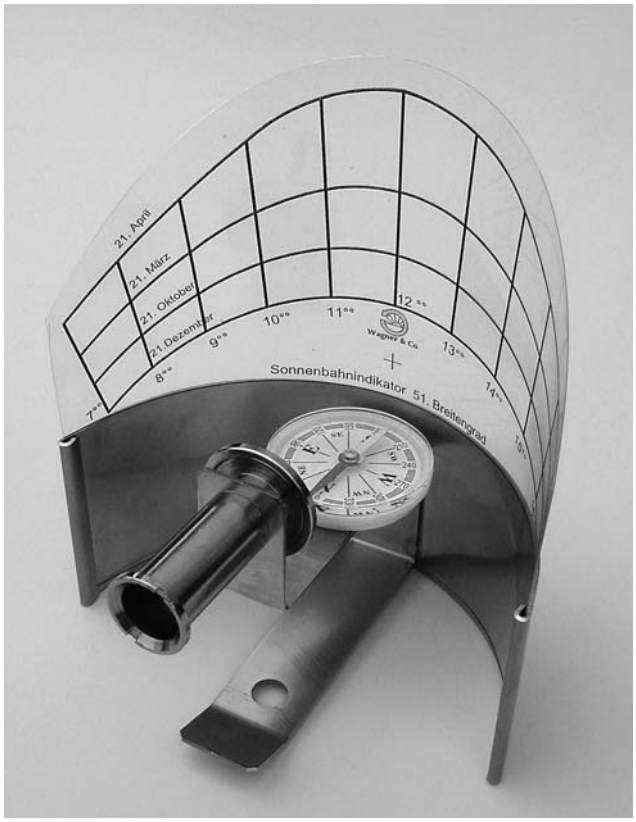

Image 1: The sun path indicator is a clever device for determining possible shadowing at the collector site.

Astronomical Remarks

In Northern latitudes December 21 is the shortest day or the day with the least sunshine time, and the sun follows its lowest path. Depending on the latitude different sun paths can be determined. For Central and Western Europe the sun path diagram of the 51st latitude in most cases is sufficiently precise.

You get the precise time of the sun's highest position by simply adding the official sun-rising and sun-setting times and then dividing them by 2. Of for example the sun-rising time is 07:08 and the sun sets at 17:10, the sun will reach its highest position exactly at 12:09. The sun-rising and setting times can be obtained from many daily newspapers.

Various computer-simulations such as PVsol or SunPlot3D allow for entering the shadowing and hence a precise calculation of the solar fraction.

Negligible Deviations:
In mid latitudes the magnetic North-South direction measured with a Compass deviates from the geographical north-South direction by up to 2° (technical expression: magnetic declination). Deviations from the solar South result from the elliptic orbit of the Earth around the Sun (max. +/- 10') and the deviation from the 15th geographic longitude: (15° -x°) x 4'.
Please keep in mind the one hour Summer-time / daylight saving time adjustment during your measurements.
The foils for the 51st and 53rd latitude are included.

Never look through the eyepiece into the sun!

Please observe the safety guidelines when using the sun path indicator on roofs!

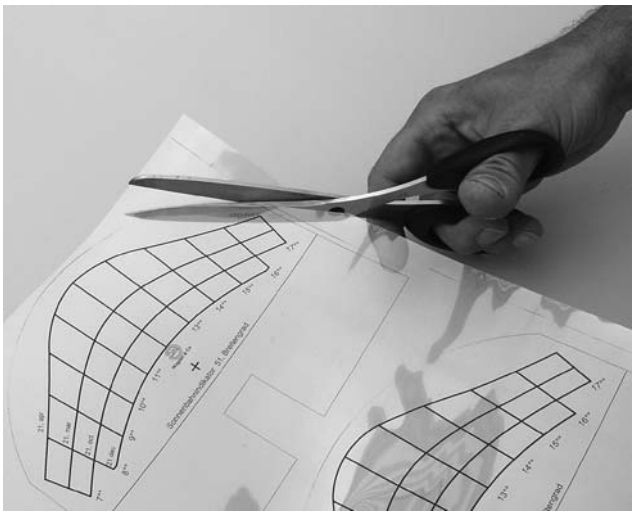

Image 2: Select the correct Sun path foil (e.g. 51° lat. = D, NL, B, Southern UK; 48° lat. = AU, CH etc., 53° lat. = IE, Northern UK), cut out the correct foil for your region along the thin markings and insert it into the stainless steel holder

Image 3: Go to the future location of the solar energy system

Image 4: Use the compass to align the sun path indicator South, levelling it horizontally

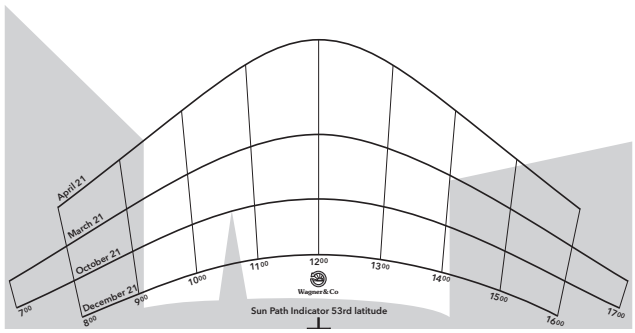

Image 5: You can trace the outlines of trees and buildings onto the sun path indicator sheet or a second overlaying transparent sheet using a non-permanent OH pen.

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