
Solar Panel Deployment

Simple guide to deploy a Solar Panel.

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Table of Contents

1 . DEPLOYMENT.....	5
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List of Figures

Figure 1 - Example of a Solar Panel deployment.	5
Figure 2 - Direction to pointed Solar Panels for location in Northern/Southern hemisphere.	6
Figure 3 - Solar Panel deployment pointed to South.	6
Figure 4 - Optimum Inclination of Solar Panels by Month and seasons.	7

1 . Deployment

Solar Panels are devices that consist in a set of solar cells capable to convert light into energy and if the amount of light that reach a cell increase, more energy will be produced and will increase the solar panel efficiency.



Figure 1 - Example of a Solar Panel deployment.

In order to have maximum possible efficiency, the panel must be pointed directly at the light source. The panel positioning is the most important because if implemented with wrong direction and slope will affect the solar panel efficiency.

For each location is extremely necessary and is a good policy to set a direction and slope that receive the maximum incident of sunlight to increase the efficiency of the solar panel under ideal conditions. Protecting them from excessive exposure to water/vapors is also necessary because this can oxidize the surface of the solar panel and reduce its performance.

The position of the Sun relative to the Earth has determine the ideal angle. It is recommended that the solar panel be deployed to pointed to “South” if the intended location is in the Northern Hemisphere or to pointed to “North” if the location is in the Southern Hemisphere as shown in the Figure 2.

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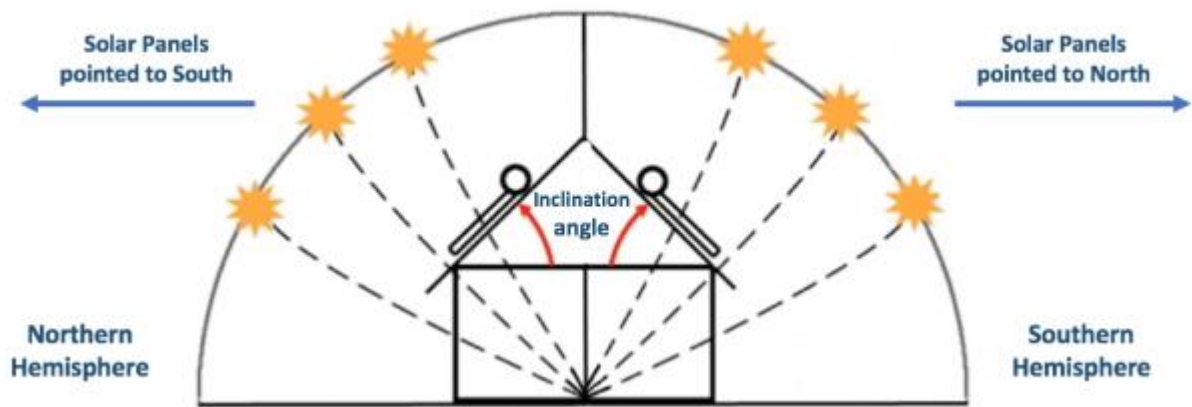


Figure 2 - Direction to pointed Solar Panels for location in Northern/Southern hemisphere.

However, it is necessary to analyze the location because there may be shadows and obstacles that reduce the efficiency of the solar panel. In a careful deployment, is necessary to specify the worst conditions and is recommended to use an external source of information to aid in the implementation. The selected location was Lisbon which is located in the Northern hemisphere. In this case the solar panel needs to be pointed to South as represented in the Figure 3.

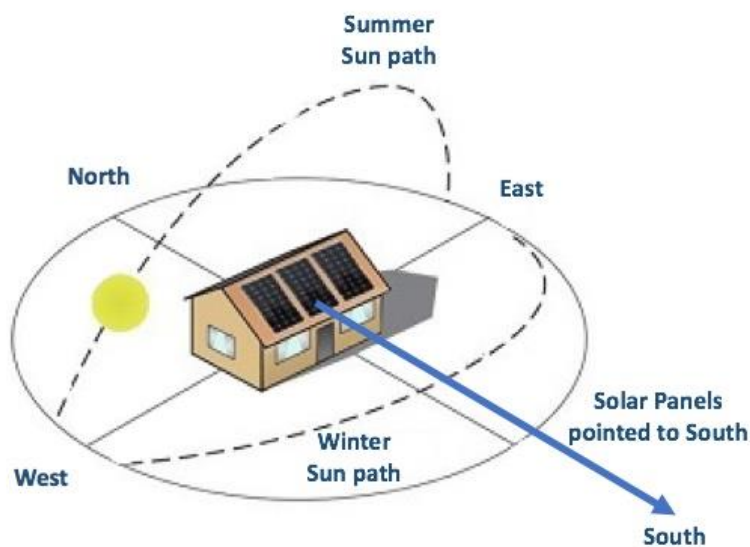


Figure 3 - Solar Panel deployment pointed to South.

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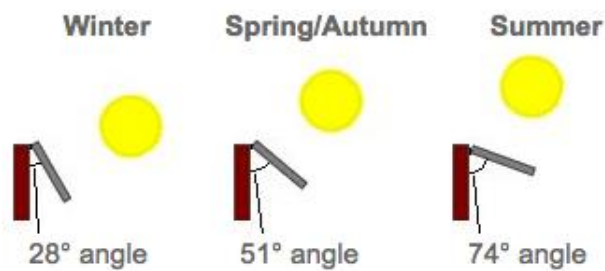
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Using a website¹ to simulate the recommended slopes, was possible to find the ideal angles per month to have maximum efficiency of the solar panel. To optimize the solar panels, is necessary adjust the slope to the values that are recommended for each of the months as shown in the Figure 4.

Jan	Feb	Mar	Apr	May	Jun
35°	43°	51°	59°	67°	74°
Jul	Aug	Sep	Oct	Nov	Dec
67°	59°	51°	43°	35°	28°



Figures shown in degrees from vertical

Figure 4 - Optimum Inclination of Solar Panels by Month and seasons.

It is also possible to adjust for the three recommended seasons of the year. In Lisbon, the recommended values for Winter is a slope of 28°, for Spring and Autumn an inclination of 51° and in the Summer the slope of 71°.

With this platform is possible to get the recommended values but other sources with different types of information can also be used to optimize the solar panels.

¹ <http://www.solarelectricityhandbook.com/solar-angle-calculator.aspx>