ENGENEXT SOLAR ENGINEER

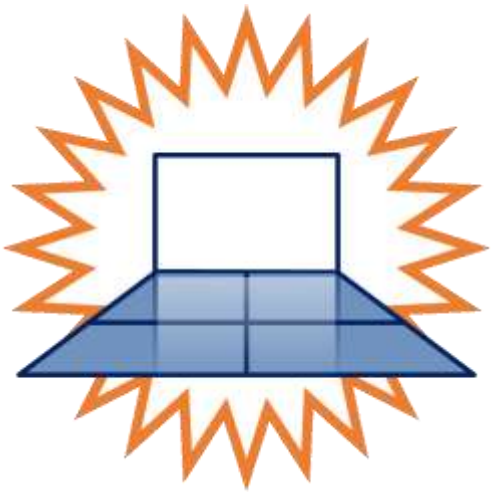
Your tool for roof-top Solar Grid Design

Harnessing solar energy to everyday use is need of the day. Designing roof-top solar grids for a building has never been easier. ENGENEXT SOLAR ENGINEER brings the power of roof-top solar grid design to a click of a button in BricsCAD. Simple workflow, minimum complexity and easy-to-learn user interactions makes it compelling case to design Solar grids on the roof tops of buildings.

1 Solar Energy: The future of Energy needs

Solar energy is an infinitely and freely available, pollution free source of energy. Generating electricity from solar energy is an ever-increasing need and clear direction for future. Whereas generating energy from solar farms is a big business, generating energy for every building using roof top solar grids is a very effective way too. ENGENEXT SOLAR ENGINEER offers one such tool to design roof-top solar energy generation grids.

2 Introduction



ENGENEXT SOLAR ENGINEER is an add-on to BricsCAD, that brings the power of solar grid design at the click of a button within BricsCAD. Targeted for architects, civil engineers, or solar energy consultants, using Solar Engineer makes it easy to include solar grids into the design of a building without any efforts.

It implements a very simple workflow, that does not include too many steps. User interactions are self-explanatory and easy to learn. Complexity is kept to a minimum with the target of laying out the solar panels effectively on the roof top. It can be easily learnt and mastered by an experienced and novice user alike.

ENGENEXT SOLAR ENGINEER further provides functionality for energy analysis which includes radiant solar energy, DC energy generated and AC energy generated based on location parameters, surface conditions and electrical parameters. Energy analysis is important for solar grid design since it provides information about the economics of the system.

It also provides creating custom panel libraries or importing third party panel libraries from various manufacturers, which is an essential input for solar grid design. It is also capable of providing total weight of panels and a Bill of Materials (BOM) for solar panels.

3 Engenext Solar Engineer

ENGENEXT SOLAR ENGINEER is a program to quickly design a solar grid on top of a roof. It can be used both for houses as well as residential and commercial buildings. The power of Solar Engineer lies in **automatically maximizing the coverage** while addressing the key challenges of placing the panels such as:

1. Optimal orientation of a panel with solar direction
2. Maximum coverage of roof area
3. Avoiding self-shadowing of panels
4. Avoiding overspill i.e., a panel protruding out of the roof boundary

3.1 Terminology

Solar Panel	A collection of photo-voltaic cells that forms a fundamental unit of Solar energy generation.
Solar Array	An arrangement of panels on a support surface. This arrangement is treated as single unit of calculating placement of panels.
Solar Design	A process of creating a Solar Grid by placing solar arrays on an existing structure.
Solar Project	A CAD document containing a solar grid and additional information about pricing, BOM and other layout drawings.
Panel library	Collection of panels and panel specifications provided by one manufacturer.

3.2 Salient features

1. Does not disturb existing design.
2. Fully compliant with existing data storage strategies. Model can be shipped to other systems that do not have Solar Engineer installed. Other systems can open the dwg files containing Solar Grid design, but cannot modify or post process Grid design in absence of Solar Engineer.
3. No enforced naming convention for Solar design files. Solar grid designs can be stored in any dwg files. Solar Engineer will automatically detect if the file has solar grid design in it. If yes, it will allow to work with them. Else it will ask to start a solar design project in the dwg file.
4. Multi-session, Multi-document support: Can work with multiple BricsCAD sessions as well as multiple solar documents in a single BricsCAD session. However, it does not detect if single DWG file is opened in multiple BricsCAD sessions.

3.3 What it does not support

1. Electrical wiring layout, Grid control panel placement
2. Tracking and management

4 Installation of ENGENEXT SOLAR ENGINEER

4.1 Prerequisites

Hardware	• Desktop with standard Keyboard, mouse/Monitor Or workstation laptop • Pentium i5 or i7 16GB RAM • 512 GB storage space
Operating System	Windows 10, Windows 11, 64 bit professional

CAD Platform	BricsCAD en_US V24, V25 64-bit Platinum
Office software	Microsoft Office 2010 Professional Edition

4.2 Installation privileges and location

This software is intended to be used and upgraded by any user with or without Administrator privileges. However, first time installation requires Administrative privileges.

By default, the software gets installed at C:\Engenext\EGSolar. With administrator privileges, you can change the installation location. The software also creates a folder under C:\ProgramData\EGSolar\Resources to store icons for CUI menu.

Library displays in library manager, either created or imported will be saved in libraries folder present in EGSolar.

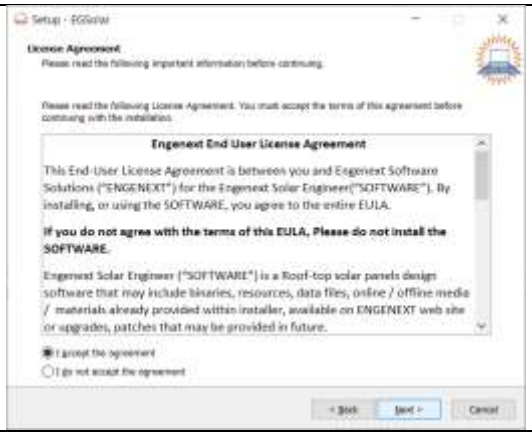
Any additional, user specific information is stored under C:\Users\<username>\AppData\Roaming i.e. (%AppData%) folder for the user.

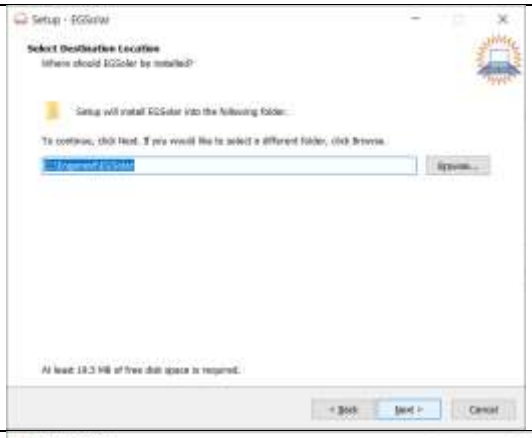
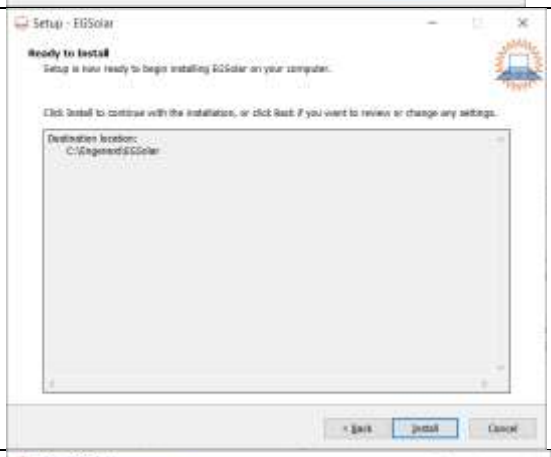
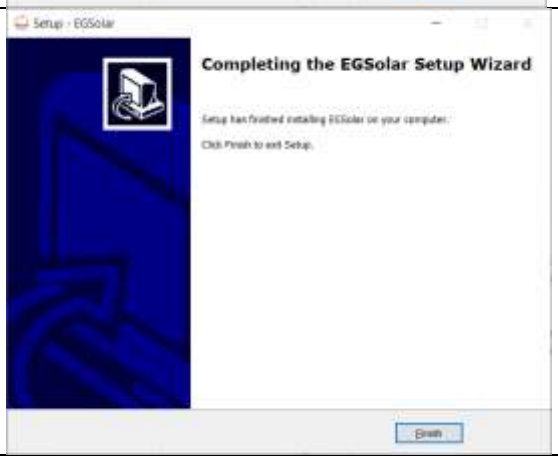
This also adds an entry to on_start.lsp file in 'Support' folder of BricsCAD installation in order to hook it into BricsCAD.

This software does not require any predefined location to store DWG files. It automatically identifies if the opened DWG file has Solar Engineer information in it, and works accordingly.

4.3 Installing Solar Engineer

After you have downloaded the installer, please follow these steps to install the same. The steps are pretty much standard. Additional explanation is given wherever required.

1		Right click on the EGSolar installer and click on Run as administrator.
2		Go through the terms and conditions and click on I accept the agreement. 'Next' button is enabled. If you do not accept the terms and conditions, Solar Engineer will not be installed on your machine. Click on Next button to proceed.

3		Solar Engineer will be installed in C:\Engenext\EGSolar by default. If you want to change the installation location, click on browse and choose the appropriate location and then click on next. Any updates here onwards, will be installed in the location shown in the text box.
4		This dialog shows the summary of installation for review, before finally installing the software. Click on Install button to install the software. You can use 'Back' button to change any settings done before. Till this stage, user can cancel the installation any time by clicking 'Cancel' button. System will reconfirm the cancellation before actually cancelling the installation. After clicking the 'Install' button, cancellation of installation is not possible.
5		After the installation is successful, System will show appropriate message and a 'Finish' button. Click on Finish button to complete the installation. Installer dialog will close. ENGENEXT SOLAR ENGINEER can now be used through BricsCAD. Please refer subsequent sections to start using ENGENEXT SOLAR ENGINEER.

After the completion of installation, when BricsCAD is opened for regular functioning of ENGENEXT SOLAR ENGINEER, license is required. The details regarding ENGENEXT SOLAR ENGINEER license are as explained in subsequent section.

5 EGSolar License

The latest version of ENGENEXT SOLAR ENGINEER requires license.

5.1 Obtaining license

The license needs to be purchased from Engenext Software Solutions. It will be sent as a license file to your registered email id.

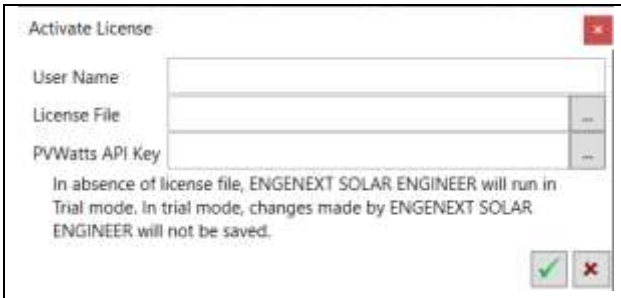
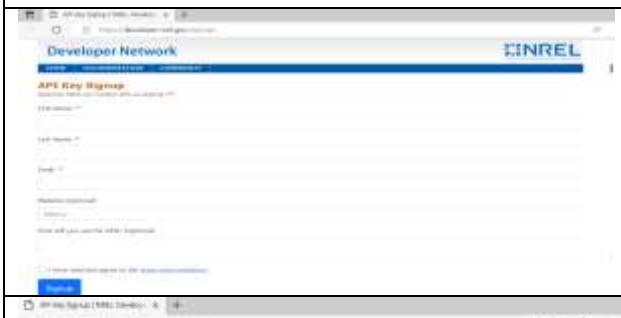
Currently a single license file is associated with single user. License activation and usage does not require internet access. The license activation and usage might be subject to further modifications.

For any other queries related to license activation and usage, contact us on contact@engenext.com.

5.2 Activation

After obtaining the license, the procedure for license activation is as follows:

When BricsCAD is opened after installation of ENGENEXT SOLAR ENGINEER, license activation popup appears. The fields in the license dialog are as explained below.

<table>
<tr><td rowspan="4"> 
</td><td>Parameter</td><td>Description</td></tr>
<tr><td>User Name</td><td>Represents the email id of the user which is registered for getting the EGSolar license.</td></tr>
<tr><td>License file</td><td>Represents the location on the PC where the license file is temporarily stored before activation.</td></tr>
<tr><td>… Button</td><td>Allows user to browse and select the temporarily downloaded license file.</td></tr>
<tr><td rowspan="2"> 
</td><td>PVWatts API Key</td><td>After entering this key user will able to calculate energy analysis</td></tr>
<tr><td>… Button</td><td>It will redirect user to PVwatts site to generate key for energy analysis</td></tr>
<tr><td> 
</td><td></td><td>After entering all details Key will generate</td></tr>
<tr><td> 
</td><td></td><td>Enter PVwatts API key</td></tr>
<tr><td></td><td>✓</td><td>Click this button to activate the license.</td></tr>
<tr><td></td><td>×</td><td>Click this button to cancel license activation.</td></tr>
</table>

If the license activation dialog is closed without activating the license, ENGENEXT SOLAR ENGINEER runs in trial mode. Once the application gets into trial mode, for activation of license, BricsCAD needs to be restarted and after restarting, the above procedure needs to be followed.

5.3 Trial mode

ENGENEXT SOLAR ENGINEER allows users to run the application in trial mode in absence of license. The implications of trial mode are as follows:

1. The user is able to run all the commands, view all the options available in the user interface but not able to save any changes except for adding panels and adding array on window closing.
2. On closing the project, switching tab or on BricsCAD save command the changes made to the solar document or solar CAD will be reverted back to the original state.
3. Export commands will remain deactivated.
4. The background colour is different for all the popups and the popup titles appear with trial mode written in brackets. Also, 'Close' button appears instead of regular 'tick and cross' buttons.
5. User can not add or delete panel libraries in trial mode. User will get example library with installer, with help of it user can work.

5.3.1 New and Existing models in Trial mode

For projects created in EGSolar versions before the introduction of licensing, Panel libraries existing solar document entities and related CAD entities will be visible but user will not be able to add any new changes to solar specific CAD.

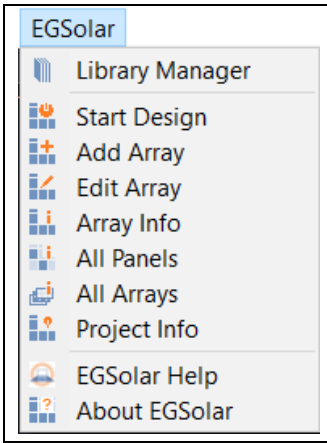
New panels and arrays added to the solar document will be reverted back to the original state on saving the document, BricsCAD tab switch or when closing the drawing.

6 Using ENGENEXT SOLAR ENGINEER

ENGENEXT SOLAR ENGINEER is very easy to use tool with limited number of simple commands. It can work with any DWG file. For this section, it is assumed that EGSolar runs in fully activated mode.

6.1 Command overview

ENGENEXT SOLAR ENGINEER runs with minimal set of commands as shown here. A quick introduction to command is as follows:



Library Manager	Provides functionality to add, import, remove panel libraries
Start Project	Starts new Solar project if not already present
Add Array	Adds a solar array to a project
Edit Array	Edits an existing solar array
Array Info	Provides detailed info on selected array
All Panels	Provides detailed info on all panel specs in the project
All Arrays	Provides detailed info on all arrays in the project
Project Info	Provides detailed info on complete project
EGSolar Help	Opens a Help documentation for Solar Engineer
About EGSolar	Product & Support information, version etc.

6.2 Command: Library Manager

6.2.1 Introduction

This command provides panel library details. It contains information regarding the manufacturers and their panel libraries with panel specifications.

Library Manager has access to Add/ Import/Remove panel library.

6.2.2 Prerequisites

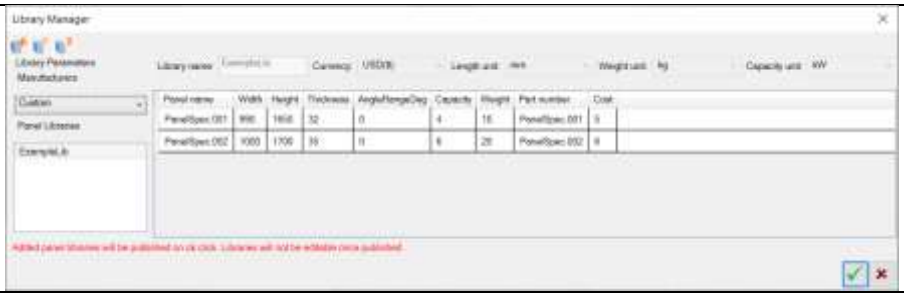
To add library, user should have all panel specification to create library.

To import library, as library gets imported only in CSV format it should be created in CSV file as per given specifications. Without correct format it will not import.

6.2.3 Usage

Start the command by either

1. Type EGLIBRARYMANAGER on the command line and hit Enter or
2. Click on EGSolar ->LIBRARYMANAGER menu.

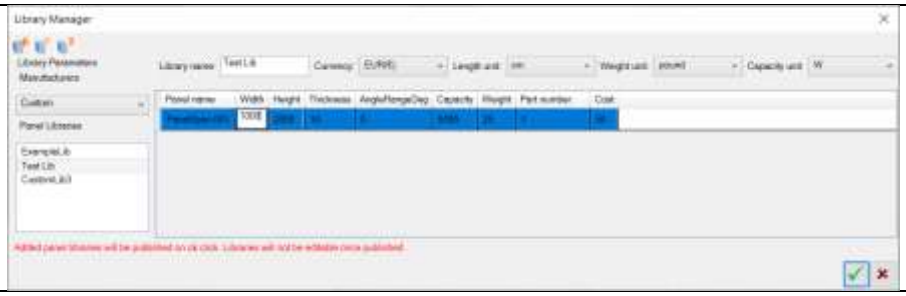


Parameter	Description
	Click on this button and panel library get created just enter your information as per specification provided and your custom library get created. This explained below in sub section.
	To Import Panel library, click on this button and you can browse .CSV file from your folder and click on open to import that file. After Successful import details will display and that CSV get copied in Libraries folder. This explained below in sub section.
	To Remove Panel library, select particular library and click on this button it will ask about confirming the message remove library and after selection of yes it will remove Library as well as delete file from Libraries folder.

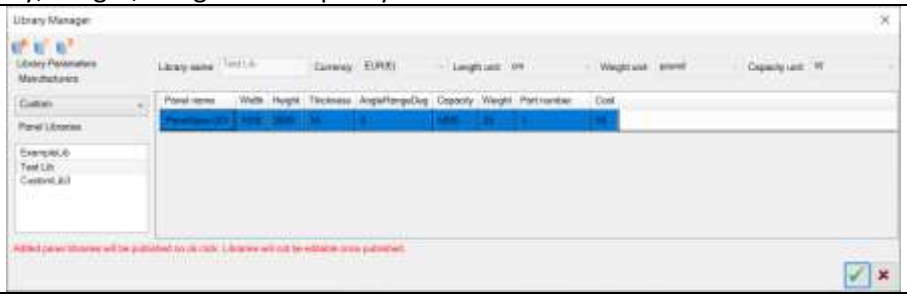
6.2.4  Add Panel Library

Parameter	Description
	Click on this button and panel library gets created.

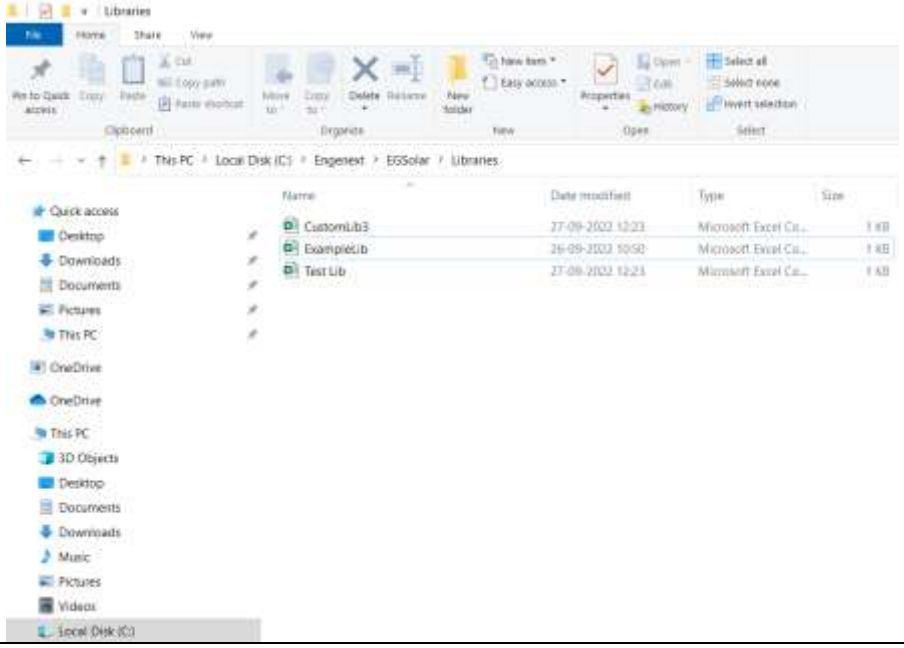
New created library will have manufacturer name as custom and it gets created as per sequence like CustomLib1, CustomLib2 etc.



User Can edit library name and changed name will appear in panel library list. Also, user can select unit for Currency, Length, Weight and Capacity.



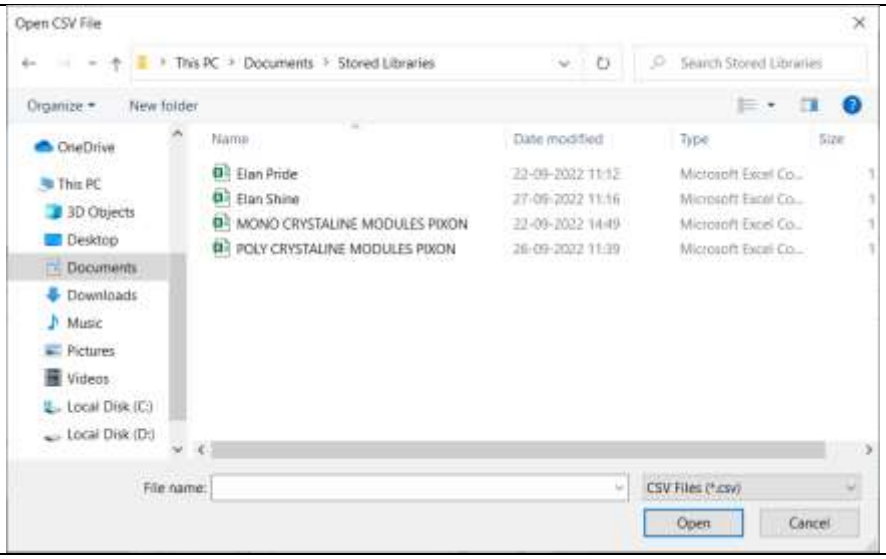
Once user click on ✓ button library gets published and user cannot make changes in it.



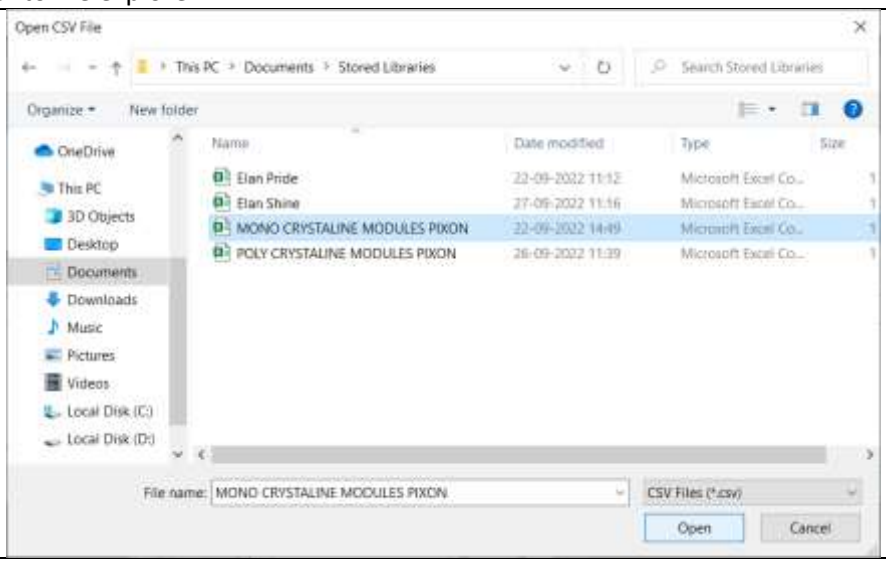
After successfully publishing, CSV gets copied at Libraries folder path e.g. (C:\Engenext\EGSolar\Libraries)

6.2.5 Import Panel Library

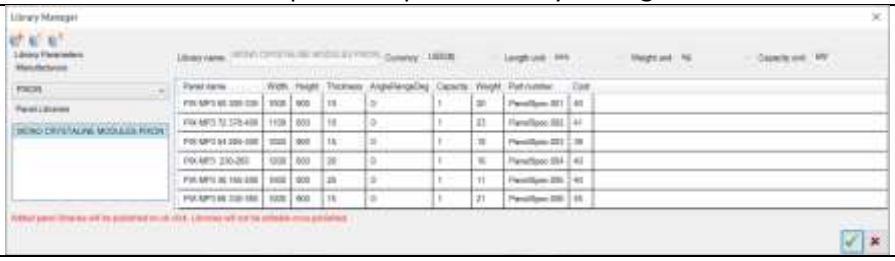
Parameter	Description
	To import panel library, click on this button.



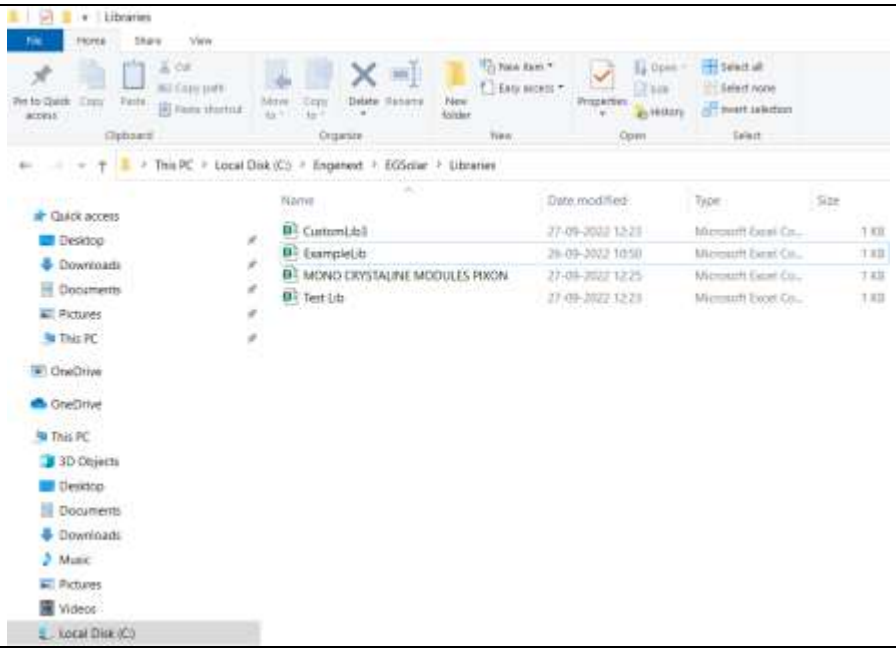
It will take user to file explorer



User can select CSV file and click on Open to import in library manager

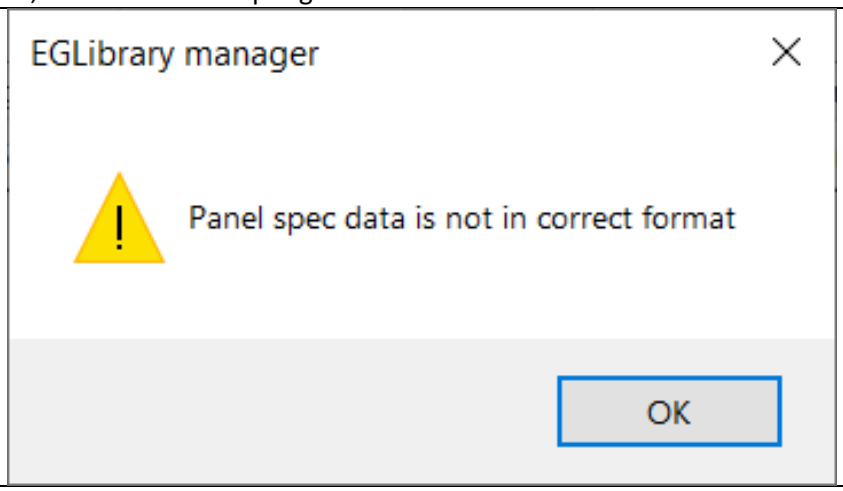


After Successfully imported specification will displayed in Library manager.User cannot make changes in imported library



After successful import, CSV gets copied at Libraries folder path e.g. (C:\Engenext\EGSolar\Libraries)

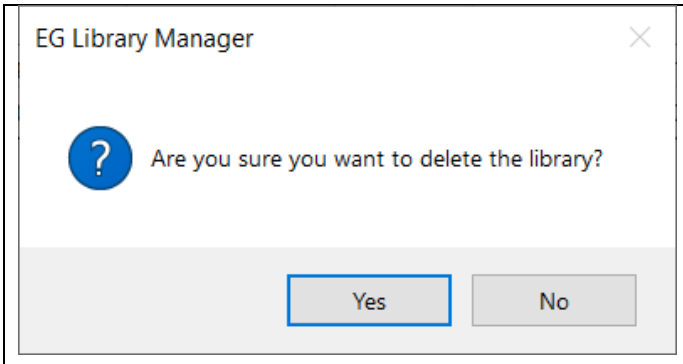
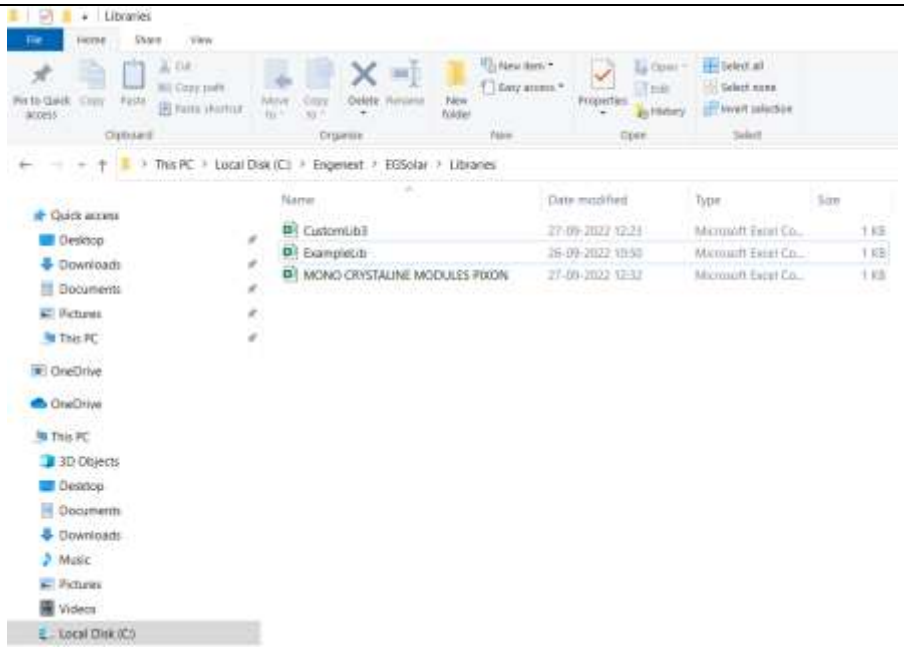
For importing CSV, CSV should be as per given format



If format is not correct then CSV will not be imported and show error message as per error and CSV will not get imported

6.2.6 Delete Panel Library

	Select Panel library want to delete and click on delete button

<table>
<tr><td> 
</td><td>It will ask user to confirm delete</td></tr>
<tr><td colspan="2">After selection of yes it will delete library</td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td colspan="2">After deleting, it will disappear from library manager menu as well as CSV file of that library gets deleted from Library folder path for e.g. (C:\Engenext\EGSolar\Libraries)</td></tr>
</table>

6.3 Command: Start Design

6.3.1 Description

Solar design project can be started in an active DWG file with this command.

6.3.2 Prerequisites

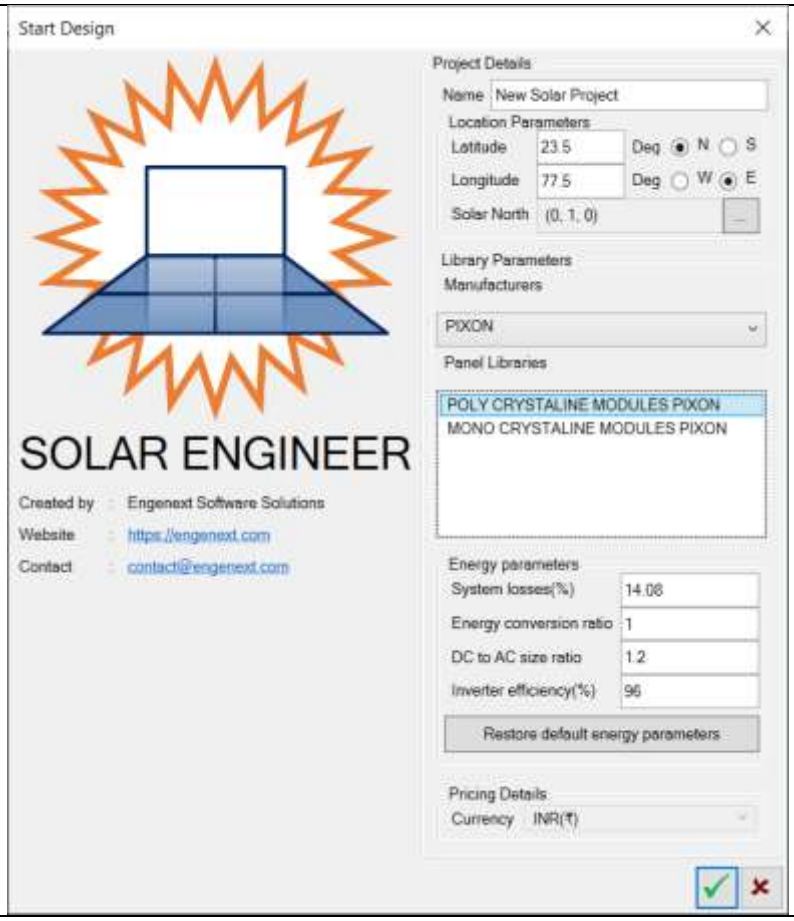
As the solar grid can be created on planar surfaces of a solid body, a solid model that contains a support surface should be available. At least one library should be available to start design. Once selected manufacturer and panel library cannot changed during project.

6.3.3 Usage:

Start the command by either:

1. Type EGSTARTDESIGN on the command line and hit Enter or
2. Click on EGSolar ->Start Design menu.

A window as shown below pops up. The fields in the popup window are as explained below.



Parameter	Description
Name	Represents the name of the solar project. It can be any alphanumeric text.
Latitude	Latitude is a measurement on a globe or map of location north or south of the Equator. It ranges from 0 to 90 degrees either towards north or towards south. Non-editable if an array is placed.
Longitude	Longitude is a measurement of location east or west of the prime meridian at Greenwich, London, England. It ranges from 0 to 180 degrees either towards east or towards west. Non-editable if an array is placed.
Solar North	This is the direction representing an imaginary axis around which the sun appears to revolve. This direction need not be same as geomagnetic north. In UCS set up, this direction will be different from UCS Y direction. Non-editable if an array is placed.
Manufacturers	Shows name of available manufacturers in Libraries.
Panel Libraries	Shows available panel libraries for that particular manufacturer.
… Button	Allows user to select the direction from a straight edge in the model. Non-editable if an array is placed.
System losses (%)	Account for performance losses which occur due to various reasons like soiling, connection losses, losses in wires, losses due to external shadows, etc. System losses are set to a default value of 14.08 considering all the average conditions.
Energy conversion ratio	Represents the ratio of incident energy and energy generated. Its default value is 1. It can be set to any value as per requirements.
DC to AC size ratio	It is the DC to AC size ratio of the array's DC rated size to the inverter's AC rated size. Its default value is 1.2.

Inverter efficiency (%)	The inverter's nominal rated DC-to-AC conversion efficiency, defined as the inverter's rated AC power output divided by its rated DC power output. Its default value is 96.
Restore default settings	Restores all the energy parameters to their default values. The default values are selected based on typical conditions.
Currency	It shows currency selected in panel library.
✓	Click this button to start the project
×	Click this button to cancel the project creation. Once created, a solar project cannot be removed from DWG file

When an array is inserted in drawing file, location parameters inserted in start design are used for the array orientation. Hence, once an array is added location parameters become non editable.

6.4 Command: Add Array

6.4.1 Description

Add Array command adds a solar panel array to the project. Solar array is created using various inputs such as

1. Coplanar polyline
2. Region
3. Planar Surface
4. Planar face of 3D Solid (By pressing CTRL button for selection of face)

ENGENEXT SOLAR ENGINEER automatically calculates best fitment of instances of a selected solar panel on a given surface within given boundary. Panels are placed within an array with following constraints.

Mandatory constraints:

1. A solar panel should not shadow other panel in a solar direction.
2. A solar panel should never go outside the outer boundary of the selected planar surface while viewing from the solar direction.

Other constraints are more of user choices about panel layout (arrayed/ staggered), alignment with solar north/ roof longitudinal direction or panel placement flat on roof/ perpendicular to solar direction. An array uses only one panel specification to lay them on a surface. This ensures uniformity in design. Another array with another panel specification and settings can be designed.

6.4.2 Prerequisites

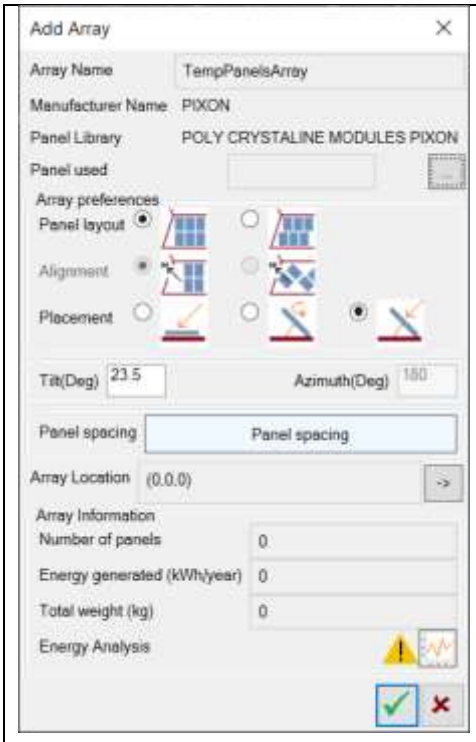
1. Solar Project should be created in the DWG file to be able to add an array.
2. Planar surface of a solid body should be available to place an array.
3. Region, surface and closed coplanar polyline should be available to place an array.
4. A surface should not already be having an array placed on it.
5. Manufacturer and Panel Library should be selected in start design.

6.4.3 Usage

Start the command by either

1. Type EGADDARRAY on the command line and hit Enter or
2. Click on EGSolar ->Add Array menu

A window as shown below pops up.

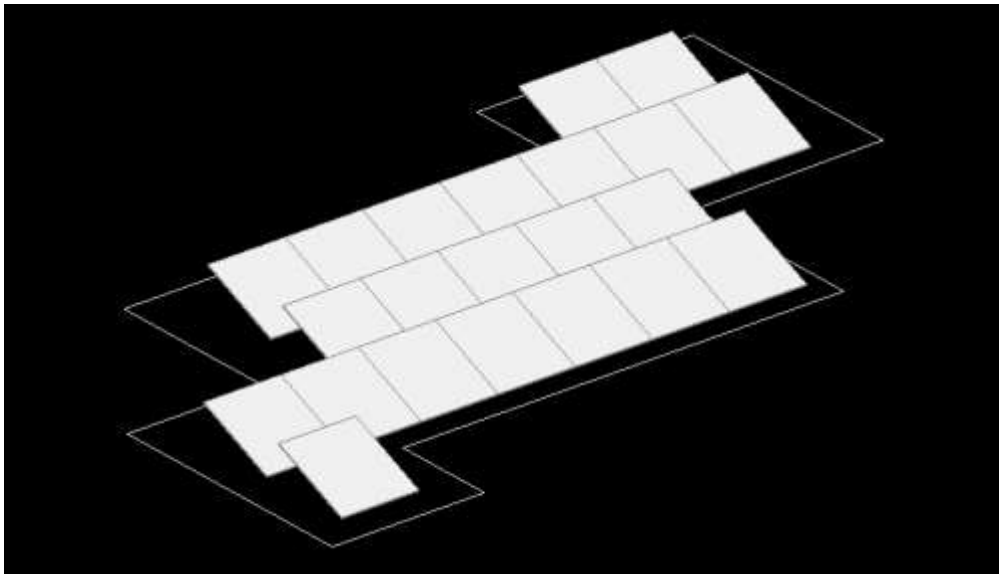


Parameter	Description
Array Name	The array name is TempPanelsArray by default and is not editable. The name gets changed on insertion of array in cad model.
Manufacturer Name	Selected manufacturer in start design will display here.
Panel Library	Selected Panel library for manufacturer in start design will display here.
Panel Used	Name of the selected panel to be placed in an array. Button … will pop up a separate dialog to enable selection of a panel. Details of the dialog in subsequent section.
Panel Layout	Choose either inline or staggered.
Alignment	Choose to align panels with roof longitudinal or solar north.
Placement	Choose to place flat on roof, perpendicular to solar direction aligned with the face or perpendicular to solar direction with given tilt and azimuth.
Tilt (Deg)	Represents the required angle between solar panels and the surface on which the array is inserted. It varies from 0 to 90.
Azimuth (Deg)	Represents the angle between the solar north and array north. It varies from 0 to 359.99.
Panel spacing	When user clicks on panel spacing button, application popups up a window in which user can add spaces between adjacent panels or between adjacent panel rows.
Array Location	When user clicks on the arrow mark in front of the array location, the window closes and in CAD user can select the required surface on which panels are to be placed.
Number of panels	This value gets generated automatically depending on the area of the surface selected.
Energy generated(kWh/year)	This value gets generated automatically depending on the area of the surface selected and the location of the site.
Total weight(kg)	This value gets generated automatically depending on the area of the surface selected.
Energy Analysis	When user clicks on the energy analysis button, a popup dialog appears which shows the energy analysis for the array. The

		contents of the dialog will be discussed in subsequent sections.
	✓	Click this button to save created array.
	✗	Click this button to cancel the array.

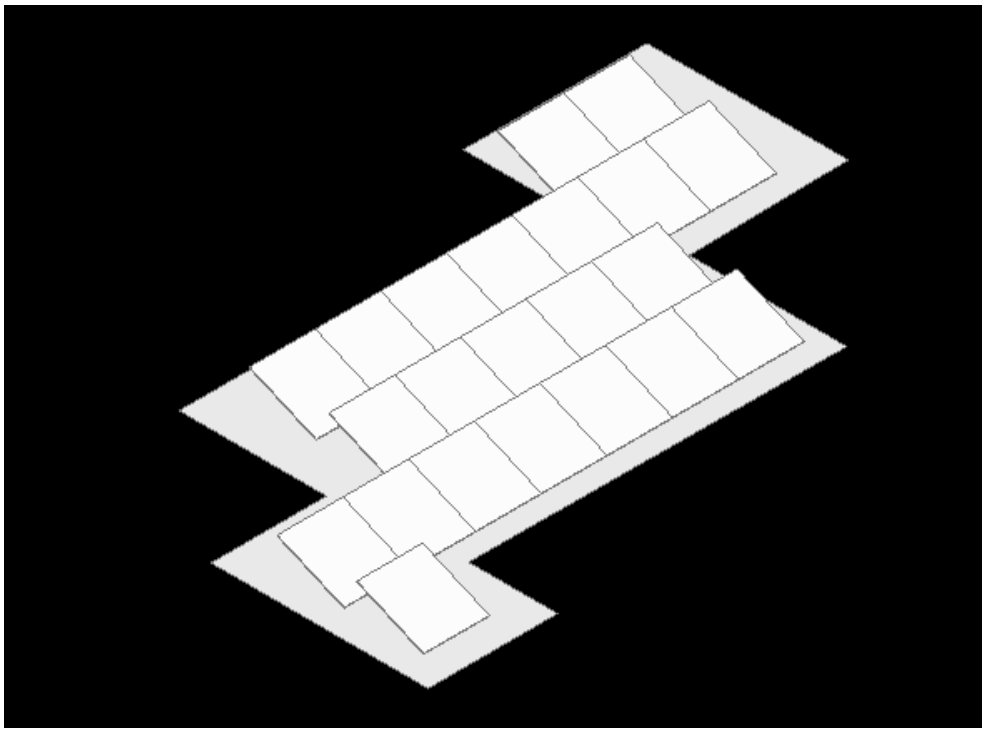
6.4.3.1 *Surfaces supported for panel placement-*

1. Coplanar polyline



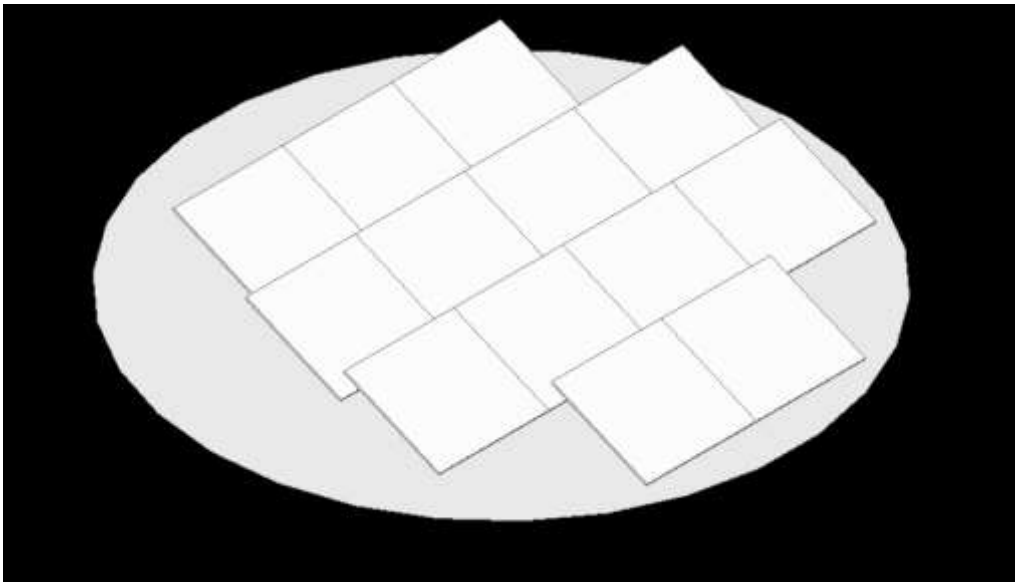
In Array location after switching window in CAD workplace user needs to select a closed coplanar polyline, after selection of polyline panels will be placed. The polyline should not be self-intersecting.

2. Region



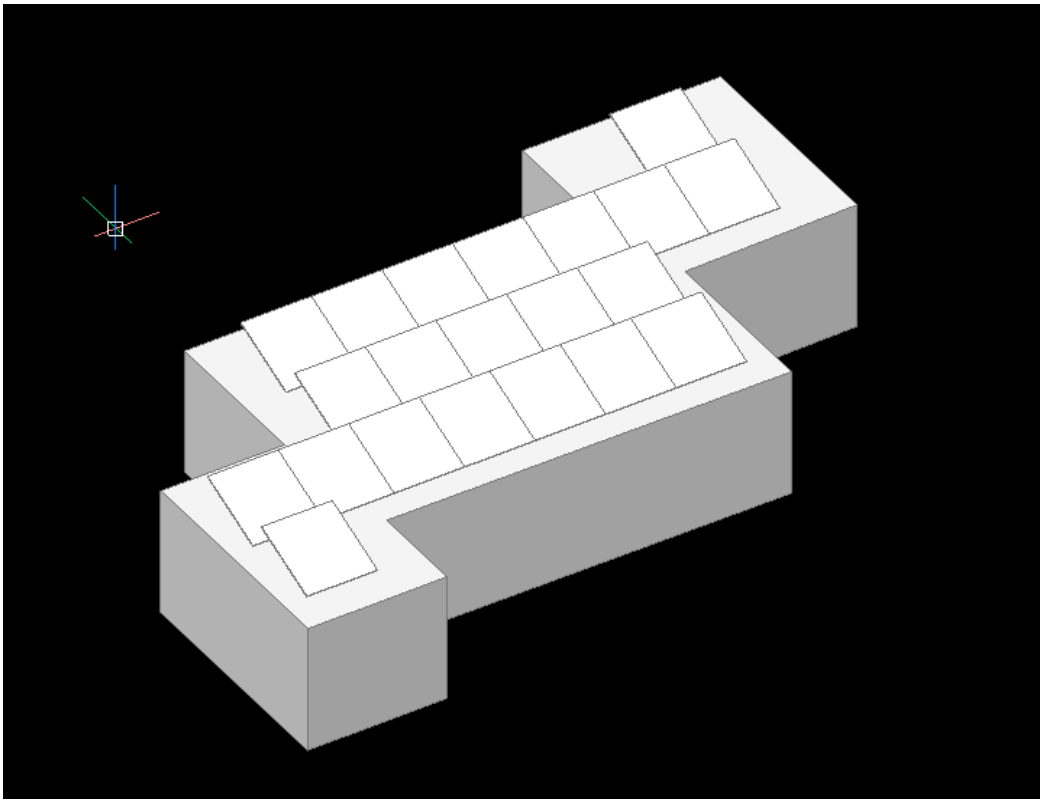
After creating a surface, user can add panels on it, as per selected surface.

3. Planar Surface



User can generate a region as per their need and add panels to the selected region

4. Planar face of 3D Solid



EGSolar helps you add panels as per your choice on a 3D Solid too. Just select the face where you want to add these panels, and with a button click all the panels get added successfully. (A face can be selected by pressing CTRL button for selection of sub-entities)

After insertion of array in CAD model, information such as panel specifications, array preferences, tilt, azimuth and panel spacing, are displayed for user convenience and become read only. It can be edited only using ‘Edit Array’ command.

6.5 Functionality: Solar Panel Specification

6.5.1 Introduction

This interaction is not provided as an independent command. It can be accessed as a separate interaction while creating a solar array. This interaction enables defining various panel specifications to be used in a solar project. In addition to physical dimensions, it also stores information about energy generation capacity and weight of a panel. Currently, only a ‘fixed’ type of panel is supported.

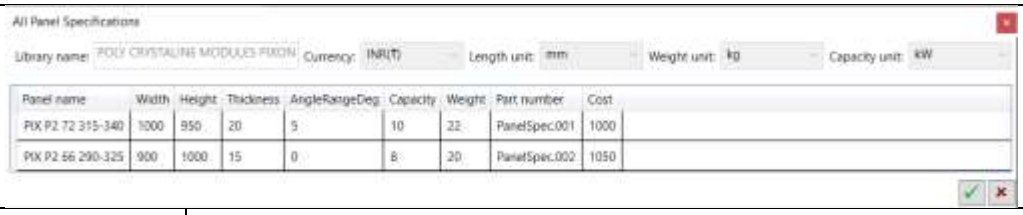
6.5.2 Prerequisites

1. Solar project should be created in the DWG file.
2. However, as this interaction is started through Array design commands, all prerequisites required for Array design are applicable.

6.5.3 Usage

Start the command by clicking … button in Add/Edit Array dialog.

A window as shown below pops up.



Parameter	Description
Library Name	Name of selected library display here.
Currency	Represents cost of panels in that panel library. Cost can select while creating library.
Length Unit	It shows unit of width, height and thickness.
Weight	It shows unit of weight. Which is total weight of a panel. Does not consider weight of supports/fasteners.
Capacity	It shows unit of capacity.
Panel Name	Lists all the available panels, used or unused.
Width	Width of a panel in east-west direction in selected unit and it is not editable.
Height	Height of a panel in north-south direction in selected unit and it is not editable.
Thickness	Panel overall thickness in selected unit and it is not editable.
Angle range	Incident angle range within which a panel will be generate energy effectively in selected unit and it is not editable.
Capacity	Energy generation capacity in selected unit and it is not editable.
Part Number	It is the display name of the panel specification in the BOM and it is not editable.
Cost	Represents cost of a single panel in selected unit and it is not editable.
✓	Click this button to save created panels
✖	Click this button to cancel the panel editing interaction.

6.6 Functionality: Energy Analysis for array

6.6.1 Introduction

This interaction is not provided as an independent command, it is given as a part of array interaction commands like Add Array, Edit Array, Array Info, etc. It is available after the array is placed, since the energy analysis depends on factors like the panel specifications, number of panels, direction of solar energy and the panels and location parameters.

Energy analysis is possible only if internet connection is available. In absence of internet connection warning symbol ⚠ is shown indicating that energy analysis is not done. After internet connection is restored, it is possible to perform energy analysis for all the arrays created in absence of internet connection.

The energy analysis data for ENGENEXT SOLAR ENGINEER is obtained from PVWatts https://pvwatts.nrel.gov/pvwatts.php. PVWatts is an internet site powered by NREL (National Renewable Energy Laboratory). It calculates solar radiation based on latest NSRDB (National solar radiation database) and calculated DC and AC energy generated based on electrical parameters provided by the user.

6.6.2 Prerequisites

1. Solar project should be created in the DWG file.
2. Live internet access should be available.
3. ENGENEXT SOLAR ENGINEER should be a licensed copy.
4. As this interaction is started through Array design commands, all prerequisites required for Array design are applicable.
5. Array should be placed, since energy analysis depends on array parameters like panels specifications, number of panels, etc.

6.6.3 Usage

The window pops up when user click on energy analysis button in Add array/Edit array/Array info dialogue.

The popup window is as shown below

Parameter	Description
Energy parameters	Represents the energy parameters considered for energy calculations. The parameters in this box are for reference only, they are same as the ones entered in start design dialog.
Array parameters	Represents the array parameters required for energy calculations. The parameters in this box are for reference only, they are same as the ones entered in add array dialog.
Name	Represents the name of the project.
Location parameters	Represents the location parameters considered for energy calculations. The parameters in this box are for reference only, they are same as the ones entered in start design dialog.
Solar Radiation (kWh/m^2/day)	The values in this table represent the incident solar radiation in kWh/m^2/day for each month.
AC Energy (kWh/month)	The values in this table represent the AC energy generated in kWh for each month.
DC Energy (kWh/month)	The values in this table represent the DC energy generated in kWh for each month.

6.7 Functionality: Panel spacing

6.7.1 Introduction

This interaction is not provided as an independent command. It stores information regarding the spacings between adjacent panels both along the rows and columns. Since spacings are array specific, they form a part of the array design commands.

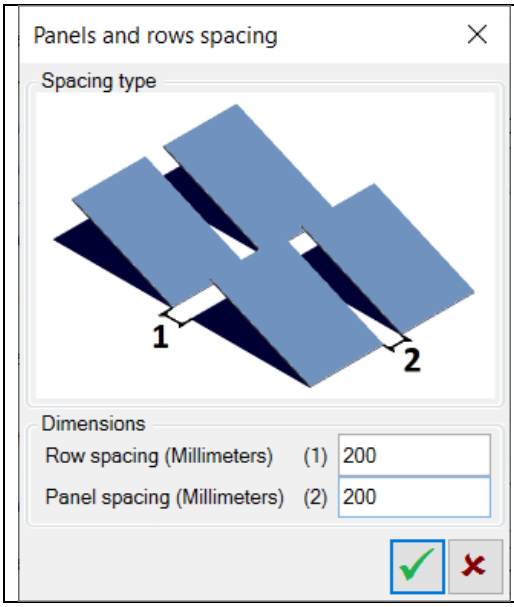
6.7.2 Prerequisites

1. Solar project should be created in the DWG file.
2. As this interaction is started through Array design commands, all prerequisites required for Array design are applicable.

6.7.3 Usage

The window pops up when user click on panel spacing button in Add/Edit array dialogue.

The popup window is as shown below



Parameter	Description
Row Spacing (1)	It represents the distance measured on the ground which is not covered by the shadows cast by solar panels. (Even in case of inclined surfaces, row spacing represents the width of the area not covered by the shadow) Represented by dimension 1 in image.
Panel Spacing (2)	It represents the space between adjacent panels Represented by dimension 2 in image.

6.8 Command: Edit Array

6.8.1 Introduction

An array can be edited to change either panels used or any of the panel placement selections. User can even change the support surface. Array is calculated again and project information gets updated automatically.

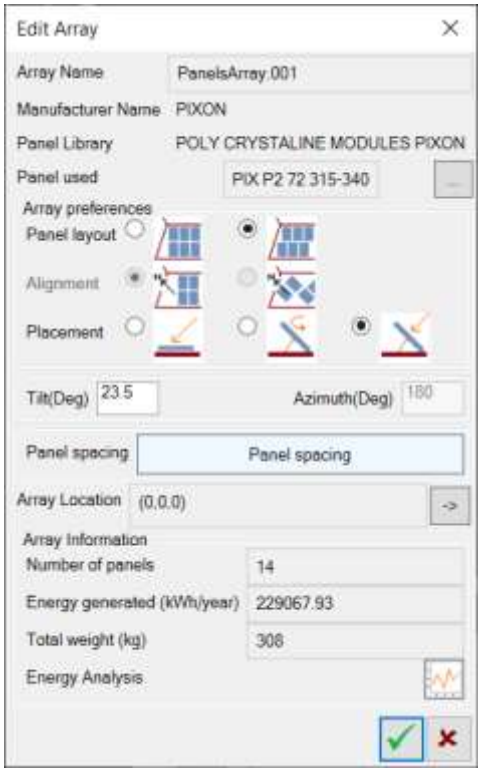
6.8.2 Prerequisites

A solar array should be present in the model. All other prerequisites of having an array in first place, also apply.

6.8.3 Usage

Start the command by either

1. Type EGEDITARRAY on the command line and hit Enter or
2. Click on EGSolar ->Edit Array menu.



System asks user to select an existing array. Upon selecting an array, a window pops up. This window is exactly same as that of an 'Add Array' command except that it starts with a selected array. Pl refer to Add Array command to understand various UI controls and their behaviour.

Upon clicking ✓ button, Existing array is edited instead of creating a new one.

6.9 Command: Array Info

6.9.1 Introduction

Array Info command provide information about a selected array. None of the details are editable.

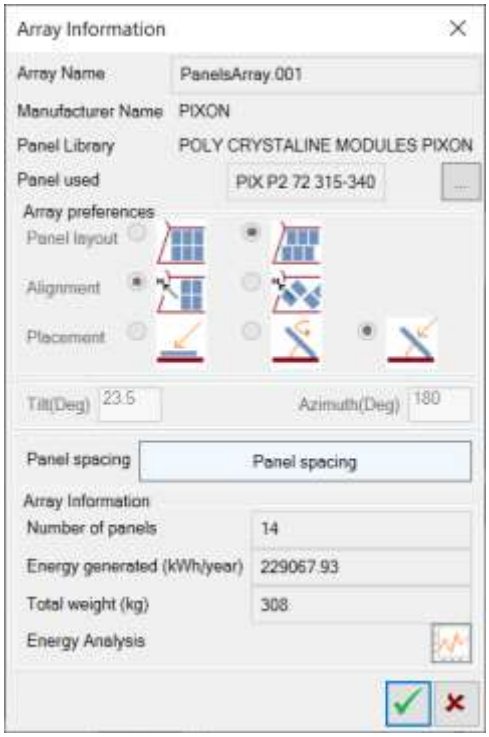
6.9.2 Prerequisites

A Solar array should be present in the DWG file.

6.9.3 Usage

Start the command by either

1. Type EGARRAYINFO on the command line and hit Enter or
2. Click on EGSolar ->Array Info menu.



System asks use to select an existing array. Upon selecting an array, a window pops up. This window is exactly same as that of an 'Add Array' command except that it starts with a selected array. Pl refer to Add Array command to understand various UI controls and their behaviour.

Upon clicking ✓ button, Information window is closed.

6.10 Command: All Panels

6.10.1 Introduction

This command provides information about all panel specifications created in the solar project. User can select a panel from the list to view its information. User can also create new panel specification from this command.

6.10.2 Prerequisites

Solar project should be present in the DWG file.

6.10.3 Usage

Start the command by either

1. Type EGALLPANELS on the command line and hit Enter or
2. Click on EGSolar ->All Panels menu.

This window is exactly same as that of an 'Solar Panel Specification' interaction. Pl refer to 'Solar Panel Specification' interaction to understand various UI controls and their behaviour.

Upon clicking ✓ button, Information window is closed.

6.11 Command: All Arrays

6.11.1 Introduction

This command provides information about all arrays present in the Solar project. User can select an array from the list to view its information. User cannot create new array from this command.

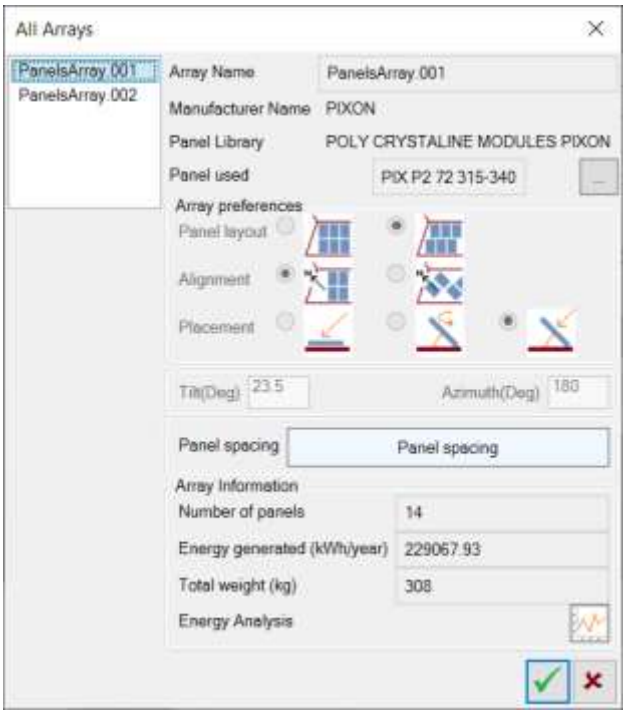
6.11.2 Prerequisites

Solar project should be present in the DWG file.

6.11.3 Usage

Start the command by either

1. Type EGALLARRAYS on the command line and hit Enter or
2. Click on EGSolar ->All Arrays menu.



The window that pops up is similar to 'Add Array' command. List on the left indicated all arrays present in the project. User can click one array at a time to see its information.

Upon clicking ✓ button, Information window is closed.

6.12 Command: Project Info

6.12.1 Introduction

This command provides a complete overview of the project. It contains information regarding the panels and arrays, bill of materials and energy calculations. All this information is for the entire project.

In info tab it gives information regarding location parameters, all the arrays inserted, all the panels used and their quantities and overall project summary.

In BOM tab it gives information regarding all the part items and their quantities and the discount parameters.

In Energy Analysis tab it gives information regarding the entire project energy calculations. The display format is similar to the one displayed for individual arrays.

6.12.2 Prerequisites

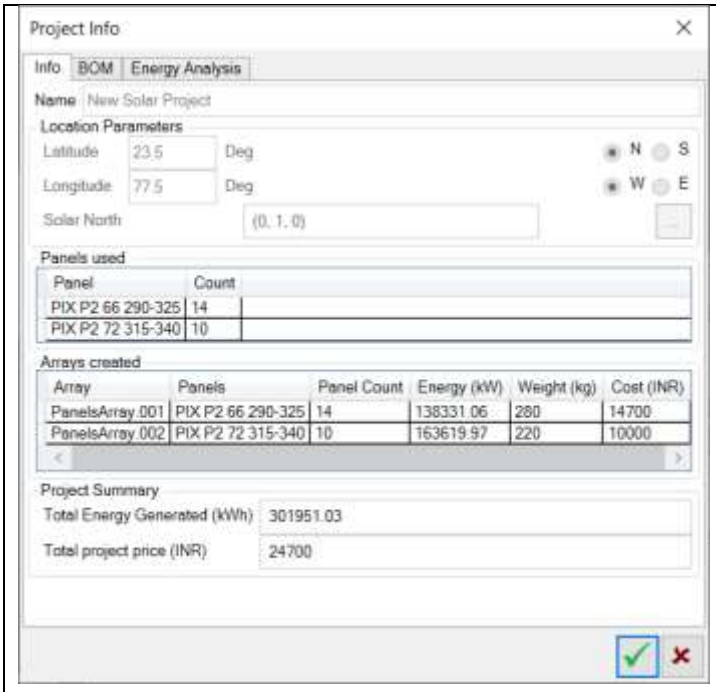
Solar project should be present in the DWG file.

6.12.3 Usage

Start the command by either

1. Type EGPROJECTINFO on the command line and hit Enter or
2. Click on EGSolar ->Project Info menu.
3. A window as shown below in individual tab sections pops up.
4. Each tab item is as explained below.

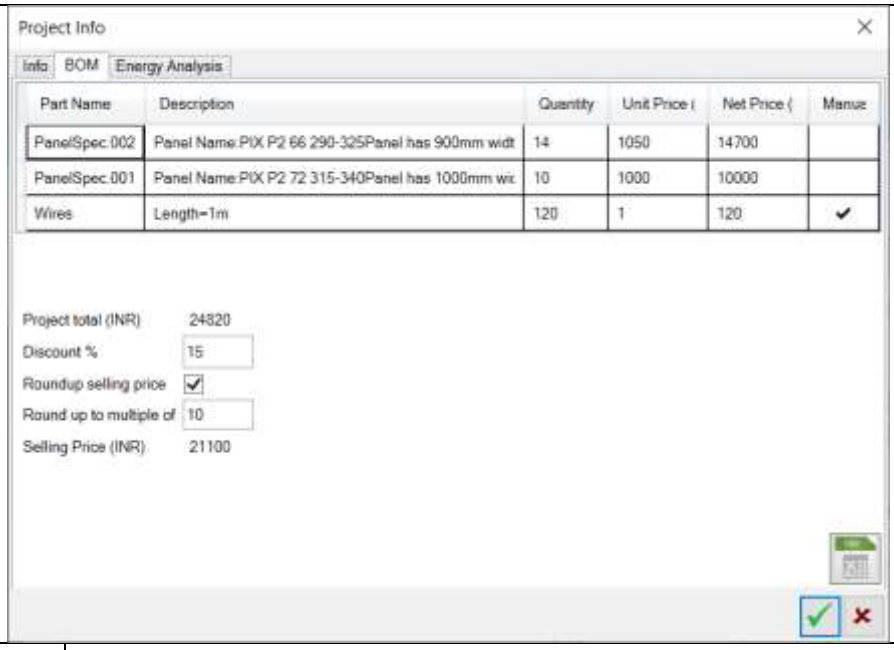
6.12.3.1 Info tab



Parameter	Description
Name	Name of the project as entered while starting the project
Location parameters	Same as entered while starting the project
Panels used	Lists all panels defined in the project
Panel	Name of the panel
Count	Total count of panels in the whole project
Arrays created	Lists all arrays created in the project
Array	Name of an array
Panels	Number of panels used
Panel Count	Represents the number of panels in given array
Energy	Energy (Watts) generated by an array
Weight	Total weight of an array
Cost	Total cost of an array
Project Summary	Shows a quick summary of project
Total Energy Generated(kWh)	Total energy generated by all arrays

	Total project price	Total price of project

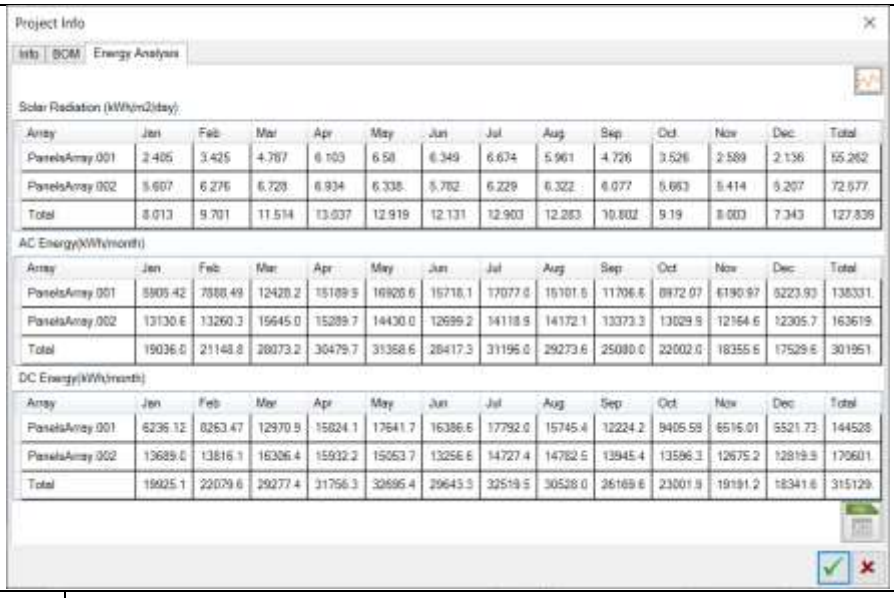
6.12.3.2 BOM tab



Parameter	Description
Part Number	Represents the part number of the panel used.
Description	Represents the dimensions of the panel representing the given part number.
Quantity	Represents the quantity of the given part number.
Unit Price	Represents the unit price for the given part number.
Net Price	Represents the total price for the given part number.
Total Price	Represents the total price of the project.
Project total	It is the total price of the project before applying discount.
Discount %	Represents the percentage discount.
Roundup	Represents whether the selling price value has to be rounded up after applying the discount.
Rounding up factor	Represents the factor by which the value is to be round up.
Selling price	Represents the actual selling price after applying discount and rounding up.
Export to csv	Exports the information from the window to a csv file.
Close	Closes the popup window.

Additional BOM line items can also be added using insert key or by right clicking on the BOM and clicking on add part. User can also delete BOM manually added BOM line items. Project total includes the price of the automatically generated parts as well as manually added parts.

6.12.3.3 Energy Analysis tab



Parameter	Description
	Recalculate energy analysis- If energy analysis is not calculated for a particular array due to absence of internet connection, by clicking on this button, energy analysis gets calculated (if internet connection is available) for applicable arrays and gets displayed.
Solar Radiation	This table displays the solar radiation for all the arrays present in the project and their total month wise, array wise and grand total.
AC Energy	Similar to the explanation in solar radiation, this table displays information regarding the AC energy generated.
DC Energy	Similar to the explanation in solar radiation, this table displays information regarding the DC energy generated.
Export to csv	Exports the information from the window to a csv file.

7 Command: EGSolar Help

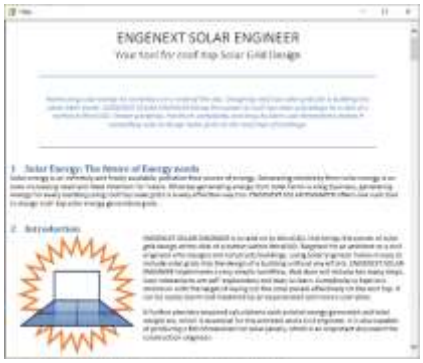
7.1.1 Introduction

This command provides help about Engenext Solar Designer. Opens current .chm file.

7.1.2 Usage

Start the command by either

3. Type EGSHELP on the command line and hit Enter or
4. Click on EGSolar ->EGSolar Help menu.
5. Help file is opened in a separate process.



8 Command: About EGSolar

8.1.1 Introduction

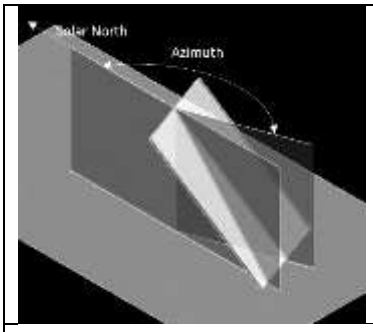
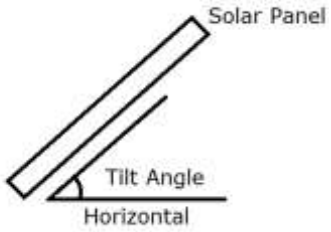
This command provides version information, creator company and contact information about Engenext Solar Designer. It also has a provision to view EULA (End user license agreement).

8.1.2 Usage

1. Type EGABOUT on the command line and hit Enter or
2. Click on EGSolar ->About EGSolar menu.
3. A window as shown below pops up.

9 Appendix

9.1 Solar concepts and terminology

	Azimuth- Please refer to https://www.pveducation.org/pvcdrom/properties-of-sunlight/azimuth-angle
	Tilt- It represents the angle between solar panel and horizontal plane.

For more information related to geometrical and electrical parameters required for energy calculations refer https://pvwatts.nrel.gov/

10 List of Releases

Release Date	Release number
August 2020	0.1.7532
November 2020	0.1.7636
January 2021	0.1.7698
October 2021	1.0.7962
September 2022	1.0.8304
February 2025	1.0.9166