Frequently Asked Questions

Can Heliene solar modules be recycled?

Generally speaking, solar modules have a nominal life expectancy of 30 years and many of the materials used in solar modules including glass, aluminum frames and silica wafers can be recycled. In Europe, solar module recycling is mandatory. Today there is no specific recycling requirement in the United States or Canada. There are companies in the United States who are engaging in solar module recycling and we strongly encourage you to investigate options for local recycling where available. We are part of a Working Group with the Minnesota Department of Commerce's Pollution Control Agency (MPCA) to collaboratively develop the regulations to allow recycling of solar modules within the State.

If recycling is not available, it may be allowable in your state to send end-of-life solar modules to landfill. Upon request, we can provide the toxicity characteristics report for Heliene solar modules according to the requirements of the States of Minnesota, California, Florida, South Carolina and the Province of Ontario (regulation 558/00).

What is the wind load rating of your solar panels?

Solar modules themselves do not bear a "wind load rating" per se. Wind speed ratings of a solar installation are a function of the racking design, roof fixing system (if applicable) as well as the solar panel mounting configuration and should be performed by a certified professional structural engineer who will take into account all of the system design variables. Many racking companies include this design service as part of the scope of supply of the racking system and can provide stamped, certified drawings for your jurisdiction. The tables in our installation manuals provide the pressure (in lbs/ft2 and Pascals) under which our modules have been tested and the mounting span and overhang requirements for module clamps in order to ensure the modules will meet these design pressures. Refer to the Installation Manual specific for the solar module you are using for more details.

Can Heliene solar modules be mounted in Landscape orientation with the clamps on the short sides of the modules?

Yes, it is possible to mount Heliene modules with clamps on the short sides. However, this may impact the overall pressure withstand rating of your installation. Refer to the tables in the Installation Manual specific to your module for more details.

What is PID and is it covered under warranty?

PID is an undesirable effect on of some solar modules especially when used in "floating" arrays with transformerless inverters. The factors for inducing PID include array voltage to ground, high ambient temperature and humidity and most solar modules are exposed to the combination of these factors during their working life. Potential Induced Degradation, as the name implies, can occur when the module's voltage potential and leakage current drive ion mobility within the module between the semiconductor material and other elements of the module (e.g. glass, mount and frame), thus causing the module's power output capacity to degrade, in some cases significantly.

The easiest way to avoid PID damage to the panel is to choose a solar panel that has PID resistance. The choice of glass, encapsulation, and diffusion barriers have all been shown to have an impact on PID. Heliene has done extensive testing with a third party to get to a PID datapoint following the IEC 62804 test method (harmonized with CSA C450). We can also report that this brought us to best-in-class category, which is confirmed in the sixth edition "2020 PV Module Reliability Scorecard" from PV EL. That does not imply that there is zero PID risk and in extreme conditions with high humidity and large potential difference (>500Vneg compared to ground) PID could occur. The PID phenomenon is something that only occurs without galvanic isolation (transformerless inverter) and where there is a high potential difference between the DC string and the frame (ground). For this reason, many inverter manufacturers provide some function to either prevent or mitigate by applying an inverse voltage to the array at night for some variable period of time. We recommend you consult with your inverter manufacturer to find out if this feature is available and for a recommendation of how to set it.

PID is not currently covered under the terms of Heliene's warranty, because it is highly dependent on the design and environmental conditions and not just the modules themselves.

How much increase in power output will I gain will I get from using Bifacial solar modules?

Bifacial modules became very popular in part due to import duty exemptions but also because they may provide some incremental energy yield depending on a number of factors. These factors include Abedo of the reflecting surface under the solar modules, module elevation, racking type (fixed or tracking), ground coverage ratio, and back-side shading from the racking structure. These factors are discussed in depth in our Installation Manual for Bifacial modules and depending on the environment where the modules are installed the gain could be lower or higher. It is highly recommended that you utilize a simulation program that has the ability to adjust for these factors such as PVsyst 7.0 or later. However, even with these programs, keep in mind that this is only a simulation and real-world conditions may yield lower energy yield than modeled in a software simulation. NREL published a preliminary study in 2019 that showed incremental yield from bifacial modules under various conditions. You can find the study here:

https://www.nrel.gov/docs/fy19osti/74090.pdf

What are PERC solar cells and does Heliene use them?

PERC can stand for either Passivated Emitter and Rear Cell or Passivated Emitter and Rear Contact. At its core, a PERC solar cell is simply a more efficient solar cell, meaning that solar panels built with PERC cells can convert sunlight into usable electricity more easily. Solar panels made from PERC solar cells typically perform better than traditional panels in both low-light conditions and high temperatures. PERC technology boosts efficiency through the addition of a layer to the back of a traditional solar cell, which provides several benefits to the cell's production.

A PERC solar cell is not much different in construction from a typical photovoltaic solar cell. Both types of solar technology use silicon wafers to generate a flow of electrons using incoming solar radiation, and the overall construction of the cell types is very similar. The main difference between PERC cells and typical monocrystalline photovoltaic cells is the integration of a back surface passivation layer, which is a layer of material on the back of the cells that provides three main benefits that boost cell efficiency: reflection of light back through the cell, reduced electron recombination and reduced heat absorption.

Solar panels built with PERC technology allow for more energy-dense solar installations. This means that you can generate the same amount of energy using fewer PERC solar panels than they would with more standard solar panels. Consequently, by needing fewer solar panels for your installation, your costs can be reduced. Additionally, the fewer panels you need, the more flexibility you have on your roof to position your panels. If suitable roof space is limited, using PERC solar panels or any high-efficiency panel product can make a solar installation capable of the power you need a reality.

Reducing the number of solar panels you need has the added benefit of bringing down the balance-of-system (BOS) costs for your solar panel installation. BOS costs are generally any costs involved in solar installation components that are not the solar modules themselves. Land, racking and wiring all factor into your BOS costs, and the fewer panels you need, the fewer complementary components you'll need as well.

Heliene uses PERC cells in all of our solar modules which drives our high efficiencies and power ratings.

Does the color of the backsheet make a difference in module power output?

Monofacial modules can be manufactured using white or black backsheet materials. White backsheet yields the best power output possible. Black backsheet is used primarily in modules with black aluminum frames for aesthetic reasons and mostly in residential applications. However, black backsheet has approximately 2% higher energy losses meaning that we cannot always get the same maximum module power ratings when using this material.

Where can I find the PAN File for the Heliene module I am interested in using on my project?

PAN files are available as downloadable ZIP files on the download center of the Heliene website at:

https://heliene.com/download-center/

Note that the files are provided in ZIP format to allow people who do not have software that can read PAN files to be able to do a direct download. ZIP Files may also be grouped together into product families with multiple PAN files in each ZIP file.

Are all PV connectors interchangeable? Can I connect different brands of connector together? What brand of connector comes on Heliene solar modules?

While they may seem to fit together, it is not recommended practice to mix and match different manufacturers brands of "MC4" or "MC4 Compatible" connector. There may be dissimilar metals used in different brands that could cause corrosion over time leading to a hot connection or even a fire risk. Heliene uses several different types of MC4 Compatible connectors as standard. Please contact us regarding your order to determine the type we will supply on your modules. Alternately, you can request a specific OEM of connector (eg. genuine Staubli MC4) and this can be provided but it may impact both cost and delivery of your order.

Heliene recommends customer to order some additional connectors at the time of purchasing the modules as they will be needed at the time of installation and connecting with other equiments.

Are Heliene Modules CEC (California Energy Commission) listed?

At time of writing this FAQ, 113 different models of Heliene solar modules are listed on the CEC database. We are constantly bringing out new modules and going through the CEC testing and approval process. Please check the CEC database at the following link:

https://www.energy.ca.gov/media/2368

If you don't see the module you are looking for, please contact us at: sales@heliene.com

We will be able to advise you if the module in question is in the process of securing a CEC listing and when that might be completed.

Can you explain fire ratings? What is the fire rating of Heliene solar modules? Type 1 or 2? Class A or B?

All PV systems permitted after January 1, 2015 in California are required to be tested, listed, and identified with a fire classification per UL 1703. Until recently, fire ratings of rooftop PV systems were determined by the rating of the PV modules as stand alone components. UL 1703 revised the fire classification requirements and now evaluates flammability characteristics of the "PV system" which includes the PV module, roof rack, and the roof itself.

Fire Class actually refers to the building roof fire rarting. Roofs are classified for fire resistance using a scale of A, B, C or unclassified. Class A roofs are the most fire resistant and are frequently required in areas sensitive to wild fires particularly in "Wildland Urban Interfaces" or WUI's. In some cases, entire jurisdictions, like Oakland, California, have mandated all residential structures have class A roofs.

Class A Roofs:

Buildings and structures requiring Class A roofs must use PV systems (PV panels with the rack support system) that have been tested, listed and identified with Class A fire classification in accordance with UL 1703.

Class B Roofs:

Buildings and structures requiring Class B roofs must use PV systems that have been tested, listed and identified with either a Class A or Class B fire classification in accordance with UL 1703.

Class C Roofs:

Class C roofs are those that are effective against light fire-test exposure. Class C roof assemblies and roof coverings shall be listed and identified as Class C by an approved testing agency.- Use PV systems that have been tested and listed for Class A, Class B, or Class C fire rating per the most recent version of UL 1703 (2002 edition with revisions through October 2013)

Module "Typing" for Fire Classification

To better evaluate a solar PV system for fire performance, an update of the UL1703 was required. The new fire test protocol necessitates the same two fire tests for the module needed for the old UL1703 and borrowed from the roof fire rating standard, UL790: A Spread of Flame Test and a Burning "brand"* test.

***a "brand" here is a bundle of kindling of certain specifications**

The UL1703 requires up to four tests with the mounting system if the mounting system is designed for steep and low-slope roofs.

- **A low-slope roof, commonly referred to as a flat roof, has a slope of 3/12 or less.**
- **A steep-slope roof also referred to as a pitched roof has a slope of 4/12 or more.**

All of these tests bring us to the development of a "module fire type"

The new UL1703 standard introduces the concept of a PV module type, based on four construction parameters and two fire performance parameters. The purpose of this classification is to certify mounting systems without needing to test them with every module.

Fire Performance is categorized by two items (same as old UL1703 test)

1) Spread of flame on the top surface of the module; and,

2) Burning brand on the top surface of the module.

October 2013 version of UL1703 provided an example of 3 types and defined how types could be created. 2014 version of UL1703 provided a matrix of 15 types based on the permutations of the first three types.

Construction & Fire Performance for Various PV Module Types

Type	Glass	Frame	Encapsulant (Super/Cell)	Encapsulant (Cell/Sub)	Substrate	Spread of Flame	Burning Brand
1	Thick	Metal	Thin	Thin	Thick polymer	<6 ft. in 10 min.	C brand
2	Thick	Metal	Thin	Thin	Thin polymer	<6 ft. in 10 min.	C brand
3	Thin	N/A	N/A	Thick	Glass	<6 ft. in 10 min.	C brand
4	Thick	Metal	Thin	Thin	Thick polymer	<13 ft. in 4 min.	C brand
5	Thick	Metal	Thin	Thin	Thin polymer	<13 ft. in 4 min.	C brand
6	Thin	N/A	N/A	Thick	Glass	<13 ft. in 4 min.	C brand
7	Thick	Metal	Thin	Thin	Thick polymer	<8 ft. in 10 min.	C brand
8	Thick	Metal	Thin	Thin	Thin polymer	<8 ft. in 10 min.	C brand
9	Thin	N/A	N/A	Thick	Glass	<8 ft. in 10 min.	C brand
10	Thin	N/A	N/A	Thick	Glass	<6 ft. in 10 min.	B brand
11	Thin	N/A	N/A	Thick	Glass	<13 ft. in 4 min.	B brand
12	Thin	N/A	N/A	Thick	Glass	<8 ft. in 10 min.	B brand
13	Thin	N/A	N/A	Thick	Glass	<6 ft. in 10 min.	A brand
14	Thin	N/A	N/A	Thick	Glass	<13 ft. in 4 min.	A brand
15	Thin	N/A	N/A	Thick	Glass	<8 ft. in 10 min.	A brand

(Source: https://www.homepower.com)

A PV module is type tested—the type of the module and the performance in the spread of flame test is transferred to the mounting system process.

If a PV module is Type 1, the spread of flame test on the top surface of the module has already passed the first required mounting system test (If the module is Type 7, the top surface spread of flame test can be performed in the mounting system, in case the mounting system can improve the top surface performance).

Racking systems do not require fire testing with every make and model of PV module used with their racking systems. If a PV rack with a "type 1" module achieves a Class A fire rating, the installer can use any other "type 1" module and retain the fire classification.

Solar Modules from Heliene are typically Type 1 or Type 2 – refer to the specific data sheet for your module to confirm this and then consult with your racking manufacturer to determine the complete system rating and if it is suitable for the Class of roof on the building in question.