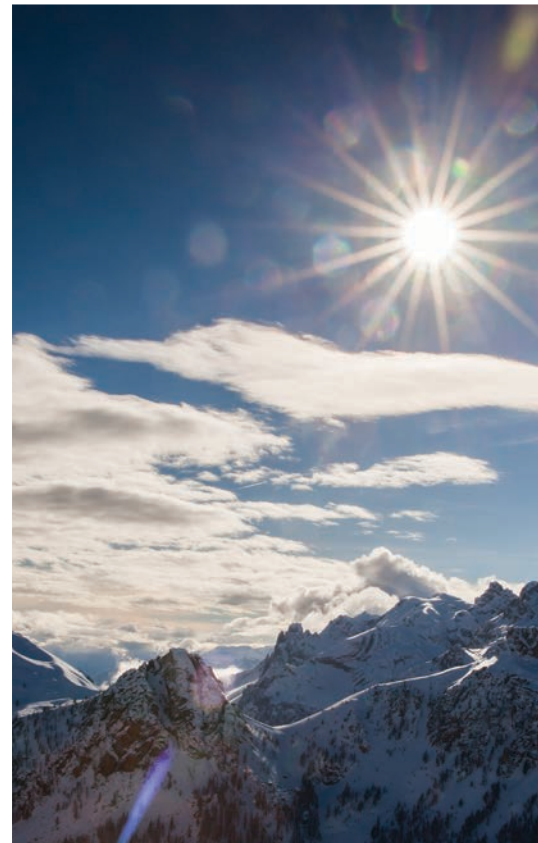
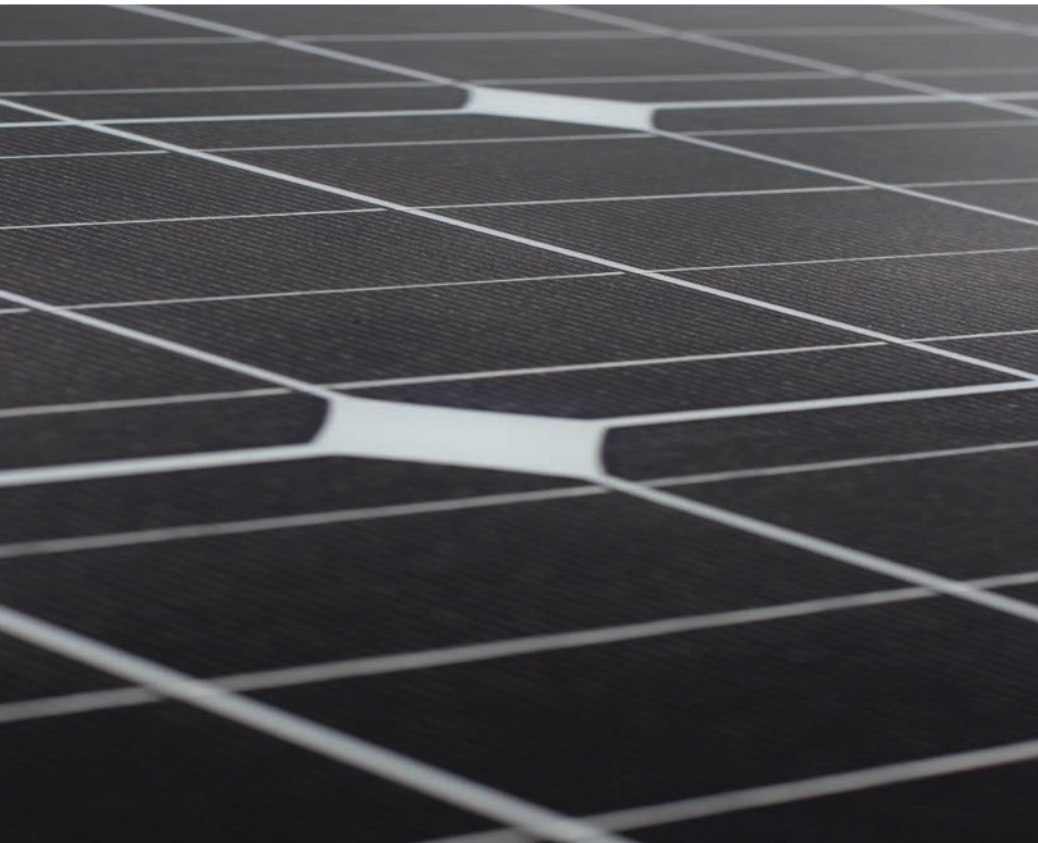
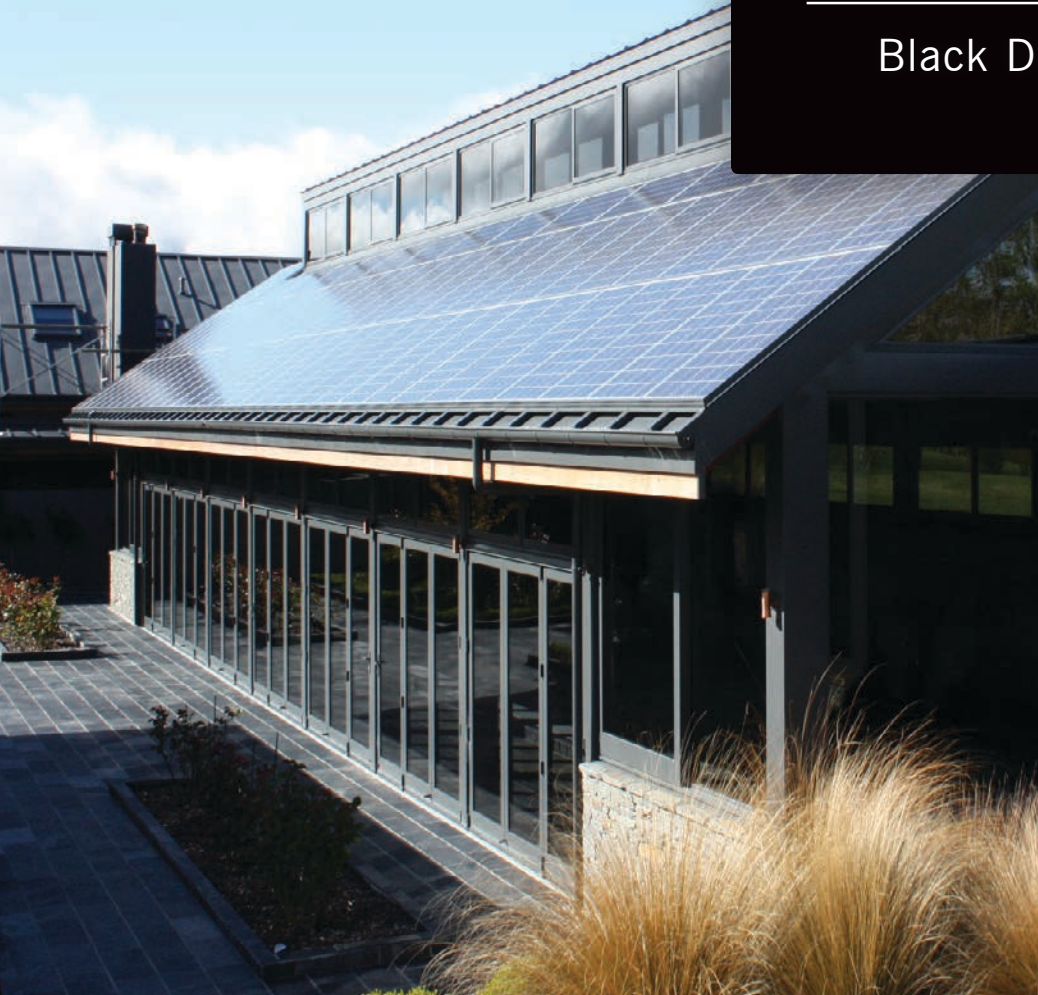




Black Diamond Solar Panels



Why Choose Solar?

The time for solar is now. As power prices continue to track upwards and the initial upfront cost of solar is steadily decreasing, installing Solar PV will make an immediate and noticeable impact on your monthly power bill. It takes an average of only seven to ten years to make back upfront costs with electricity savings.

By slightly altering energy usage habits, for example by setting appliances to run during daytime hours, the payback period can decrease even further. With an impressive output warranty of 25 years, installing a solar array is truly an investment in your future and can even enhance the resale value of your home.

Why Choose Mitsubishi Electric?

The decision to purchase a Solar PV system is a long term investment, meaning no compromises should be made when choosing a brand you can trust to be there for you in the long run. With 40 years of manufacturing experience and innovation, Mitsubishi Black Diamond Solar Panels give you peace of mind you are investing in one of the most reliable, high quality systems engineered to stand the test of time.

You can have the unwavering confidence that Black Diamond Solar Panels from Mitsubishi Electric are made to last and are backed by local on-going support for future years to come.



Made for NZ Conditions

Tailored to suit New Zealand conditions, Mitsubishi Black Diamond Solar Panels are of the highest quality and reliability, resulting in consistent top level performance.

Protect your investment

At Mitsubishi Electric we understand that New Zealand has a unique environment, from city to sea. This rugged environment can damage solar panels due to high salt content in the air. This is why Mitsubishi Black Diamond Solar Panels are coated with two layers of high quality anti-corrosion material, meaning our panels can be safely installed in coastal areas without harm.



High loading

Mitsubishi Black Diamond Solar Panels have been designed to withstand harsh environmental conditions. The high structural strength of these panels has passed the IEC 61215 static loading test at 5400Pa making them the perfect solution for areas that experience snow.



Abundant all year round

New Zealand's geographical landscape and temperate climate means it is perfectly suited to harnessing the sun's energy. Many cities across the nation boast solar energy resources significantly higher than cities in Germany and Japan, countries with some of the highest solar PV uptake rates in the world!

This abundance of solar energy spans the length of the country and means places in the lower South Island, that have some of the lowest annual sunshine hours, can on any given day experience solar energy levels higher than that of known solar hotspots i.e. Nelson, largely considered one of the most sunny places for the uptake of solar PV.

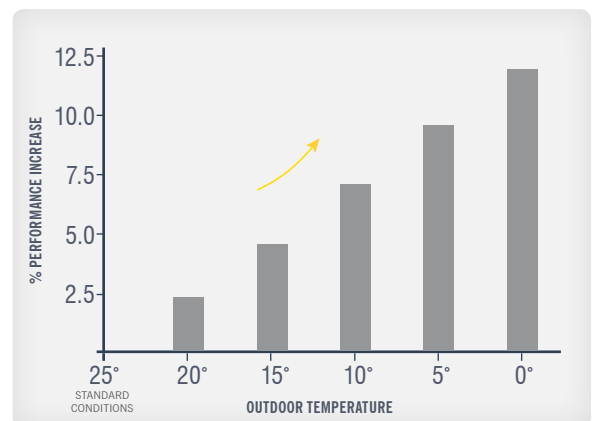
How much energy could you generate?



Enhanced performance in cool temperatures

Alongside high levels of solar energy, New Zealand enjoys relatively low ambient temperatures year round. All Mitsubishi Black Diamond Solar Panels exhibit performance enhancing characteristics. As a result energy generation performance increases as outdoor temperatures fall† meaning your Black Diamond Solar Panels are able to harness even more of the sun's indispensable energy.

† When subject to all other ambient conditions being identical.



*All kWh output figures expressed above are based on a 3.24kW solar system and are estimates only, based on NIWA mean daily global radiation data for each city and surrounding area. Factors such as roof orientation, shading, buildings, trees, elevation and micro-climate can all affect energy generation. For an appraisal based on your specific location and environment, and to obtain a quotation for a Mitsubishi Black Diamond Solar array to suit your requirements please contact us so we can recommend a preferred PV Specialist in your region.



Quality you can trust

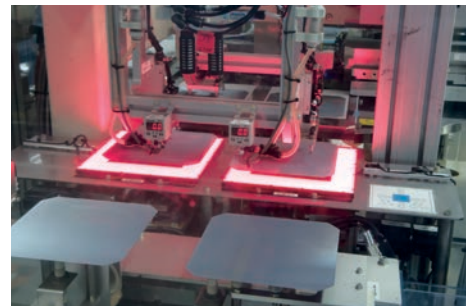
Before Mitsubishi Black Diamond Solar Panels are selected for use throughout New Zealand they must first pass some of the most stringent testing standards on the factory floor of our manufacturing facilities in Japan that are well above those required by international standards.



Each individual panel is marked with a unique identifiable barcode for tracking through every step of its production as part of our quality control.

Assembled on a state-of-the-art highly automated production line, Mitsubishi Black Diamond Solar Panels are examined by high precision machinery to ensure an unsurpassed level of uniformity. Every solar PV cell produced is measured for its electrical characteristics ensuring all cells are uniform, leading to optimal performance.

Once complete, each panel's maximum output is recorded and only those which perform at or above their rated output are sent out the door for installation on the roofs all across New Zealand.

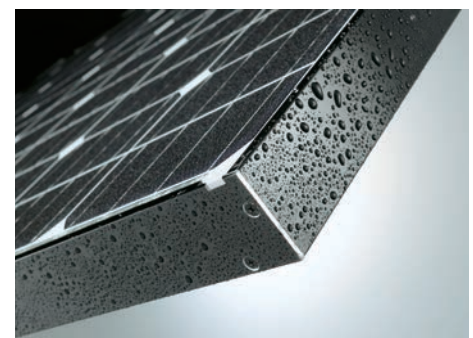


Premium panels, premium output

All Mitsubishi Black Diamond Solar Panels produced for New Zealand homes are of monocrystalline variety. Monocrystalline panels offer many advantages to home and office owners.

Not only does the uniform black colour offer a sleek design which matches the colour of many roofs, monocrystalline panels are more efficient*. This increased efficiency leads to increased energy generation, allowing you to maximise both your roof space and the return on your investment.

*Per m² when compared to polycrystalline panels identical physically in size, and subject to the same ambient conditions.



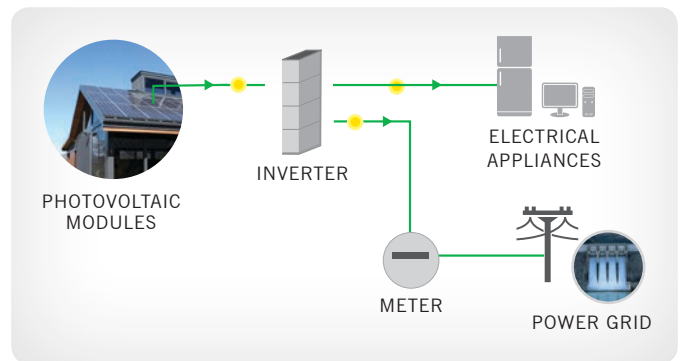


On or off grid, a system to suit every individuals needs

ON-GRID SYSTEM

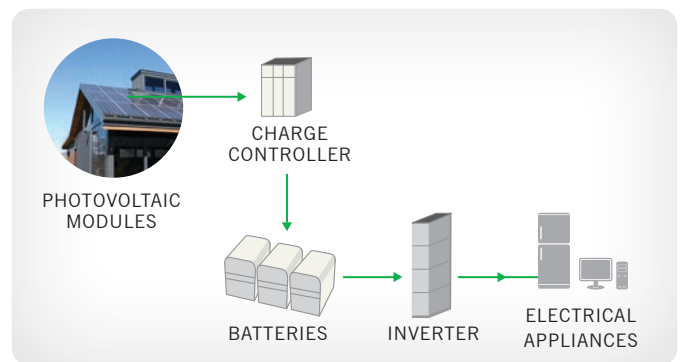
The energy captured by the Mitsubishi Black Diamond Solar Panels is supplied to an inverter that converts this into AC power suitable for domestic use. This power is automatically directed to the household for use, and any surplus power is then exported to the grid and credited against the electricity bill.

These systems are typically sized to reduce part of your electricity bill, but larger systems can also be designed so that any surplus electricity generated by the PV system is sent into the grid and credited against the electricity bill.



OFF-GRID SYSTEM

This system is ideal for consumers wanting to be completely self-sufficient. The energy captured by the Mitsubishi Black Diamond Solar Panels is supplied to a charge controller which maintains and charges the storage batteries. This is then converted by the inverter into AC power suitable for domestic use. The stored energy can be used to power different requirements within the house such as lighting and electrical appliances.



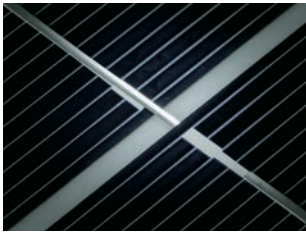
What system is right for you?

The Mitsubishi Electric solar selector removes the guesswork out of finding the right solar solution for you. As well as offering an estimate for two systems (to match 50% and as close to 100% of your needs), the solar selector also gives you an indication on what main components will be involved as well as on how much this system (excluding installation costs) is likely to cost. From here, we can arrange for one of our nationwide solar installers to contact you for a quote specifically tailored to meet your needs.

Visit www.mitsubishi-electric.co.nz/solar to find out which system suits your needs.

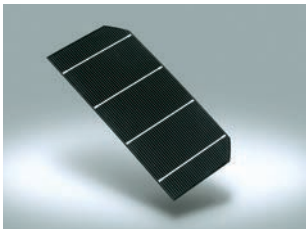
Leaders in Photovoltaic Technology

Mitsubishi Electric's philosophy for manufacturing photovoltaic products comes from three unwavering basic principles: superior technologies, the highest quality, and long-term reliability. Photovoltaic systems are a long-term investment; therefore, no compromises should be made when choosing the right products in order to avoid future problems. The Mitsubishi Electric difference lies in all of the small details that add up for outstanding performance.



FLEXI-CELL TAB WIRING

Flexible tab material has been developed to reduce physical stress on the cells caused by thermal fluctuations.



FOUR BUSBAR CELL

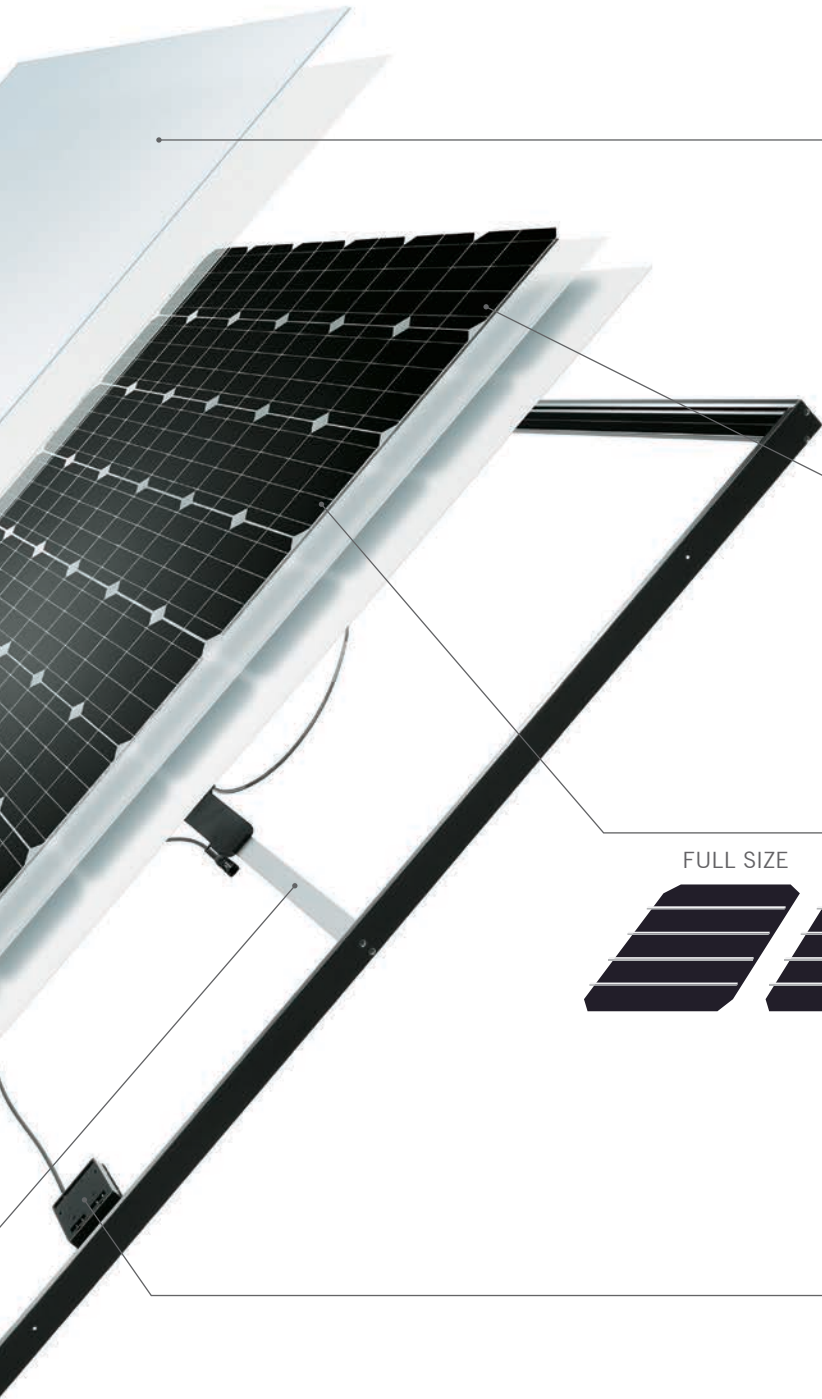
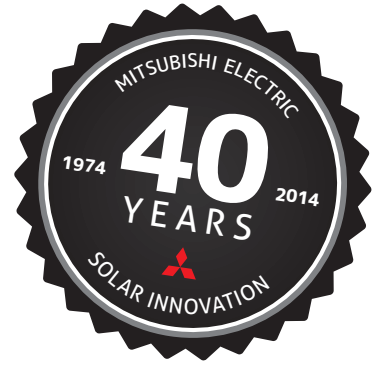
Through an industry leading innovation of integrating four busbars (conductive bars) into each cell, internal electrical resistance is reduced, boosting cell output by 3%.



L-FRAME DESIGN/PROTECTION BAR

The newly refined L-frame increases PV panel strength approximately twofold. Through using a smart protection bar insert, the structural strength of the panel is enhanced, which enables it to endure extreme environmental conditions.





ANTI-REFLECTIVE GLASS

Anti-reflective coating added to each panel improves light transmittance which, in turn, has led to an output increase of 2%.

SELECTIVE EMITTER

Introducing a new selective emitter process allows Black Diamond Solar Panels to achieve a cell output increase of approximately 5%.

HALF-CUT CELL



Innovative half-cut cells result in the electrical current carried by each busbar being reduced by half, decreasing electrical resistance and increasing overall efficiency by 2.5%.

NEWLY RE-DESIGNED JUNCTION BOX

Each junction box features a waterproof, flame-resistant four layer barrier of protection. Combined with highly heat-resistant diodes, efficient heat-sink, and secured intertwining tab connections, these junction boxes boast a top-class level of safety.





CASE STUDY

Christchurch Residence

Energy efficiency is a key consideration for any home owner. This was no different for a Christchurch family setting out to build a 345m² home featuring the latest in Mitsubishi Electric heating and air conditioning. As a stay-at-home family they needed a solution which would ensure their energy usage was kept to a minimum across the entire day.

The family installed fourteen Mitsubishi Black Diamond Solar Panels, allowing a maximum system output of 3.64kWp. As an 'on-grid' system, the energy captured by the solar panels is supplied to an inverter, which converts it into power suitable for domestic use. This power is automatically directed to the household for use, and any surplus power is then exported to the grid and credited against the family's electricity bill.

The family chose an Enasolar 3kW Grid-Tied Inverter due to travel commitments. With built-in Wi-Fi as standard, they can access their Mitsubishi Black Diamond Solar array from anywhere worldwide. The inverter also has a simple to use monitoring program to track generation.

To help fund their dream home the family chose to switch their home mortgage to Kiwibank, and as such qualified for the Sustainable Energy Loan. This saw Kiwibank contribute almost 20% towards the investment cost of their array.

Within a year the family have already experienced savings which far exceed their initial expectations:

- The total savings over the first year totalled \$1,126.07.
- Almost 5 megawatts of power was produced (4993kWh)!
- 51.2% of power generated was self-consumed at time of generation.
- The payback rate is estimated to be just over 7 years, and future increases in electricity prices will see this reduced further!



SOLAR PV PANELS

14 x PV-MLE260HD Premium Monocrystalline 260W Solar PV Panels

SOLAR INVERTERS

1 x ES-3.0kWGT-AUNZ - Enasolar 3kW Grid-tied Inverter

ENERGY GENERATED*

3.64 kWp

*Potential peak output at full sun



CASE STUDY

Garin College

For commercial buildings in New Zealand, the real cost of electricity can be tens of thousands of dollars every year. Garin College wanted to find an energy efficient solution that would make the most of the climate in sunny Nelson, and decided to install a 17.68kWp system to minimise their operating costs.

The New Zealand climate is ideal for maximising solar technology due to the high number of sunshine hours. Commercial buildings which operate during daytime hours have a great opportunity to self-consume energy at time of generation.

This is the case for Garin College which focuses on self-consumption to make the most of their solar PV system. With 100% self-consumption predicted during day time hours, it is expected that all of the power generated will be self-consumed, allowing them to truly maximise their investment and make significant cost savings.

The system is expected to produce around 23,000kWh per year, and within the first three months it produced a solid 8,900kWh, a fantastic result!



SOLAR PV PANELS

68 x PV-MLE260HD Premium Monocrystalline 260W Solar PV Panels

SOLAR INVERTERS

1 x STP17000TL SMA Sunny Tripower 3 phase Grid-tied Inverter

ENERGY GENERATED*

17.68kWp

CASE STUDY SUPPLIED BY:



*Potential peak output at full sun

Mitsubishi Black Diamond Solar Case Studies

Dedicated to providing New Zealanders with long-term protection from increasing electricity prices, Mitsubishi Black Diamond Solar Panels have been installed in homes and commercial buildings throughout New Zealand.

CASE STUDY

Queenstown Residence



A secluded house in the Queenstown district features one of the most picturesque photovoltaic (PV) installations in New Zealand. The system is rated at an impressive 21.6kWp with the install split between the roof of the house and a ground-mount system. In total 120 Mitsubishi Black Diamond Solar Panels were installed.

As this residence is located in an area where power cuts can be both frequent and sometimes lengthy, the installation combined both on-grid and off-grid capabilities, commonly referred to as a back-up system.

CASE STUDY

Black Diamond Technologies Limited Head Office



Black Diamond Technologies Limited were concerned about the rising cost of electricity and looked for an effective solution to decrease energy costs. The solution was a 30.68kWp array consisting of 118 Mitsubishi Black Diamond Solar Panels. The energy generated by solar panels installed on BDT Head Office is automatically directed for use within the company before surplus energy is exported to the grid and credited against BDT's energy bill. BDT now enjoys 100% self-consumption of the generated power during office hours.

Quality/Warranty Assurance



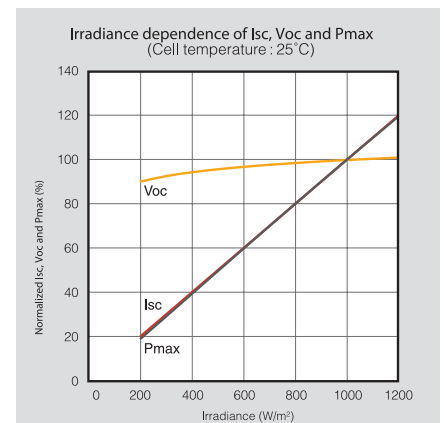
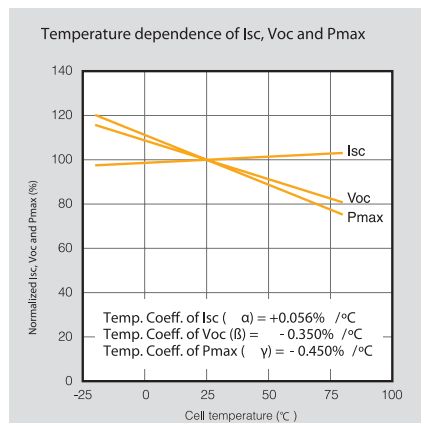
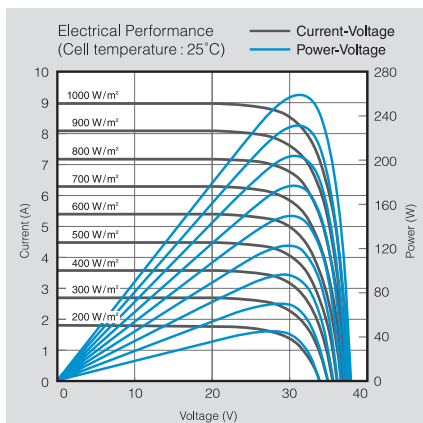
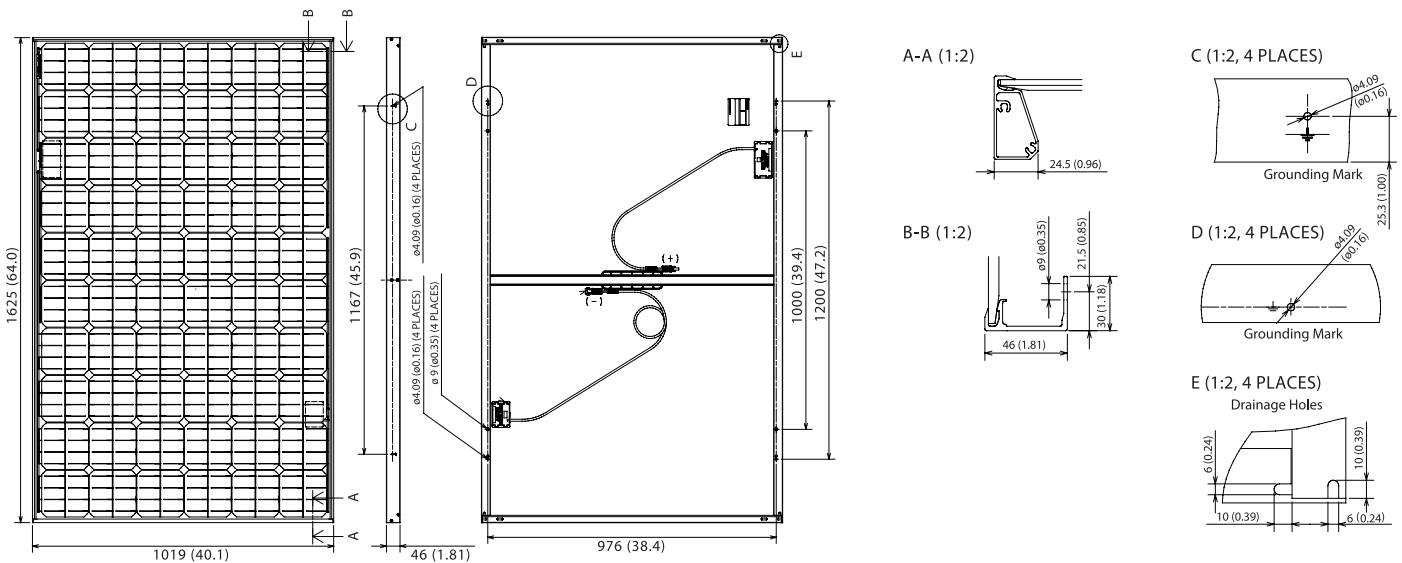
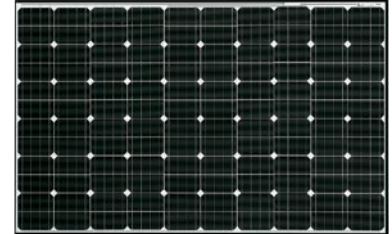
With unwavering confidence in the quality of our products and meticulous confirmation of real-world performance data, all Mitsubishi Black Diamond Solar Panels carry a 25 year output warranty. This guarantees at least 93% output of the name plate rating for the first 10 years and 80% for 15 years thereafter.

And with every panel produced bearing the Mitsubishi Electric stamp of approval, Mitsubishi Black Diamond Solar Panels allow you to take comfort your 25 year warranty is backed by one of the most stable companies in the world.

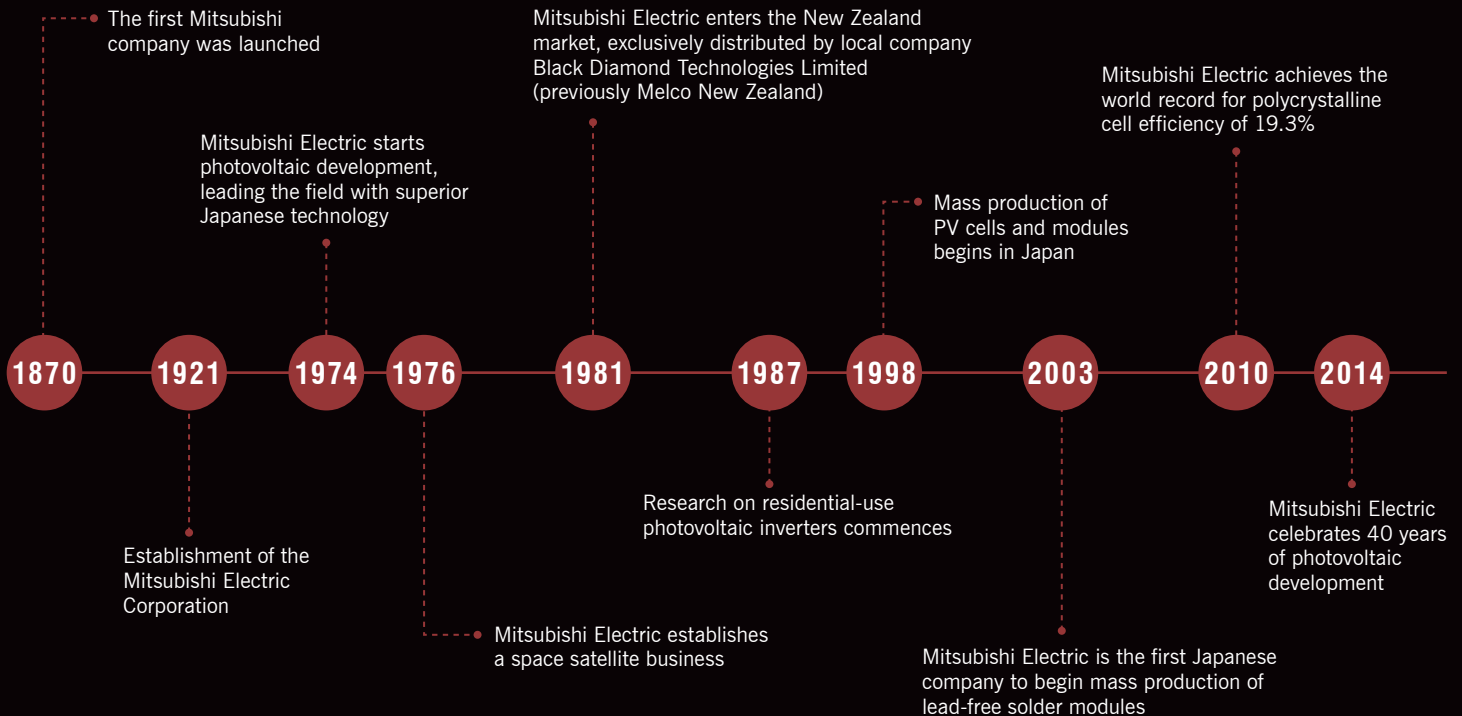
Black Diamond Solar Panels (MLE Series)

Unlike polycrystalline cells, monocrystalline photovoltaic cells are manufactured from one silicon crystal, making them both more efficient per square metre, as well as more uniform in colour. Mitsubishi Electric's new premium generation of monocrystalline photovoltaic panels continue to integrate industry leading innovation.

MODEL NAME	PV-MLE270HD
Cell type	Monocrystalline silicon, 78mm x 156mm
Number of cells	120 cells
Maximum power rating (Pmax)	270W
Warranted minimum Pmax	270.0W
Tolerance of maximum power rating	-0/+5%
Open circuit voltage (Voc)	38.4V
Short circuit current (Isc)	9.18A
Maximum power voltage (Vmp)	31.9V
Maximum power current (Imp)	8.48A
Normal operating cell temperature	45.7°C
Maximum system voltage	1000V
Fuse rating	15A
Dimensions	1625x1019x46mm
Weight	20kgs
Output terminal	(+) 800mm/(-) 1250mm with SMK (PV-03) connector
Panel efficiency	16.3%
Packaging condition	2 pcs / 1 carton
Certificates	IEC 61215 2nd ed., IEC 61730, UL 1703
Output Warranty	93% of rated minimum Pmax for 10 years 80% of rated minimum Pmax for 25 years



History of Mitsubishi Electric



All Mitsubishi Black Diamond Solar Panels carry a 25 year output warranty* and a 10 year product warranty that is locally backed.

*93% of rated minimum Pmax for 10 years, 80% of rated minimum Pmax for 25 years



For more information on Mitsubishi Black Diamond Solar Panels, please call our customer service team on **0800 784 382**



www.mitsubishi-electric.co.nz



Black Diamond Technologies
Exclusive distributor of Mitsubishi Electric products in New Zealand.

WELLINGTON HEAD OFFICE

1 Parliament Street
PO Box 30772
Lower Hutt 5040

Phone (04) 560 9147
Fax (04) 560 9133

AUCKLAND BRANCH

Unit 1, 4 Walls Road
PO Box 12726
Penrose, Auckland 1642

Phone (09) 526 9347
Fax (09) 526 9369

CHRISTCHURCH BRANCH

44 Halwyn Drive
PO Box 16904
Hornby, Christchurch 8441

Phone (03) 341 2837
Fax (03) 341 2838

Be sure to ask for Mitsubishi Electric. Other brands share the 3-diamond logo, however are separate to the Mitsubishi Electric brand and cannot supply the models, features or guarantees outlined in this brochure. | All features and specifications are subject to change and amendment at anytime. March 2015