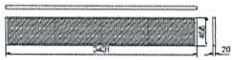
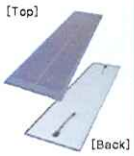
Module Specification

●Specification

Structure	Steel plate reinforced
Model	FPV2092SFR2
Cell type	Amorphous silicon tandem
Nominal Maximum Output	92W
Minimum Power Output	319.0V
Maximum Powar Voltage	0.288A
Maximum Power Current	435.0V
Open Circuit Voltage Voc	0.379A
Short Circuit Current	3,431×466×20mm
Size (LxWxH)	13.4kg
Weight	

FPV2092SFR2





●The specification may change without notice. ●The above ratings represent the values measured with Fuji's solar simulator (SPI-SUN SIMULATOR1040I) as defined in JIS C8933 as grade B (IEC60904-9) under the conditions (STC) at an ambient temperature of 25 degrees C, with an irradiance of 1kW/m2 and an air mass of 1.5. ● It is recommended that solar modules be bent to a radius of more than 1m when it is necessary to bend them for installation. DO NOT fold or crease solar modules.

会社概要

社　名	さつき株式会社
代　表	代表取締役社長　祖父江　一郎
住　所	〒542-0081 大阪市中央区南船場4丁目10番29号 さつきビル
URL	http://www.satsuki.co.jp/
E-mail	info@satsuki.co.jp
主要事業内容	●太陽光発電システムの販売・施工 [建設許可番号 (特-23)第130985号] ●家電を主としたOEM/EMS ●LED・風力発電等の省エネ商品の販売
資本金	9,500万円
年　商	118億4,000万円(2009年度実績)
グループ年商	170億円(2009年度実績)
決算期	年1回12月
創　業	1931年5月1日
設　立	1947年5月1日
従業員数	115名
グループ従業員数	132名
主要取引銀行	三菱東京UFJ／信濃橋支社 三井住友銀行／船場法人部 みずほ銀行／大阪支店 りそな銀行／船場支店 北陸銀行／大阪支店 商工組合中央金庫／船場支店

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TEL:06-6252-4751(代)　FAX:06-6251-4147
□東京支店
〒103-0013 東京都中央区日本橋人形町3丁目1番11号 NNTビル5F
TEL:03-5695-0681(代)　FAX:03-5695-0696
□日立支店
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TEL:0294-36-0561(代)　FAX:0294-36-3600
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TEL:086-224-3828(代)　FAX:086-224-3889
□福岡支店
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TEL:092-477-8411(代)　FAX:092-477-8414
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TEL:072-922-5734(代)　FAX:072-922-7148
□春日部物流センター
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□韓国事務所
〒420-816 韓国京畿道富川市素砂区上岡449-1 東亜HIGHTS BLDG.202-2号
TEL:82-32-326-6668　FAX:82-32-326-8668
□上海事務所
〒200070 中国上海市天目西路547号遠通国際大厦C棟2015室
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http://www.satsuki.co.jp/

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株式会社 川口スチール工業
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TEL/0942-83-6331　FAX/0942-85-2612
E-mail/mail@steel-k.com　http://www.steel-k.com

Solar Panel Manufacturer

富士電機株式会社
〒141-0032 東京都品川区大崎1-11-2
TEL/03-5435-7111(代)
http://www.fujielectric.co.jp

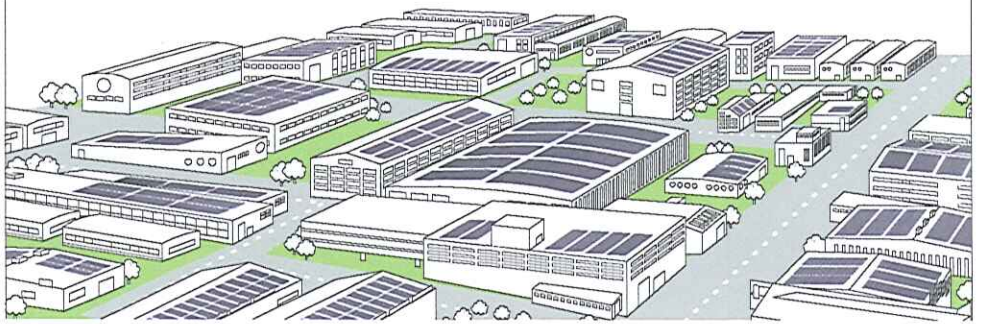
Luz-solar

Commercial Solar Panel Power System

For business and public organizations

- Feature 1 Light
- Feature 2 Inexpensive in total cost
- Feature 3 10% more electricity generation
- Feature 4 5 degree Celsius heat dissipations
- Feature 5 Installation on the curvy and side walls

For the slate & seam jointed folded-plate roof



さつき株式会社

From Energy saving to Energy generation

The roof is the vast vacant land!
Let's promote ecological usage of the renewable energy by utilizing the roof.



Energy Saving

13,360kw = 168Bottle
(1 bottle contains 18 liter.)

10Kw Luz-solar can generate 13,360Kw※ energy per one year, which is equivalent to 3,032 liter, or 168 bottles of 18 liter tank of the petroleum.

※The number is calculated based upon the data measured at Saga Prefecture Solar Power Station in 2010.

CO_2 Reduction

4.4 tons of CO_2 = 11 trees
(Based upon the camphor tree at 10 meter elevation)

10Kw Luz-solar can reduce 4.4 tons of CO_2 per one year, which is equivalent to absorbency of CO_2 by 11 camphor trees at elevation of 10 meter.

Emergency Power

The recent earthquake in Japan has revealed desperate need for emergency power supply. If the solar power system is available, energy can be continuously provided even for the night and/or rainy days with the aid of the battery, without the grid power.

Company's Contribution to Ecology

The Solar Power System is a good gesture of CSR (Company Social Responsibility), which entails ecology enlightenment to the sociality. The company's good image as well as contribution to the society, both will be easily attained.

Commercial Solar Panel Power System

For business and public organizations

Luz-solar

Industrial Solar Battery

Luz-solar for the big roof

Feature 1 **Light**

Much lighter than the crystal type Solar Panel
Easy to install on the slate and
/or the seam jointed folded-plate roof

Feature 2 **Inexpensive in total cost**

Patented construction system eliminates
the heavy mounting kits.
Installation cost is significantly reduced,
especially mid and/or large Solar System.

Feature 3 **10% more electricity generation**

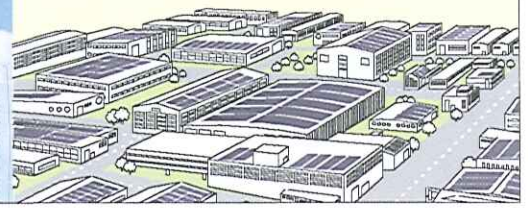
10% more generation per one year
over the crystal type Solar System

Feature 4 **5 degree Celsius heat dissipations**

Approx. 5 degree Celsius of the room temperature is reduced due to the double roof structure,
as well as reinforcement of the old roof.

Feature 5 **Installation on the curvy and side walls**

The module is light, thin and possible to bend,
which allows installment on the stylish building with
the patented construction system.



Beauty of lightness

The entire Solar System can be installed on the slate or the seam jointed folded-plate roof WITHOUT any reinforcement.

Luz-solar Industrial Solar Battery

Luz-solar DOES NOT need any mounting base unit.
Luz-solar is the thin film amorphous type solar panel. The panel itself is very light.
This feature enables installation of the solar system on the slate and/or the seam jointed folded-plate roof, which has been impossible to place any heavy materials.

Feature 1

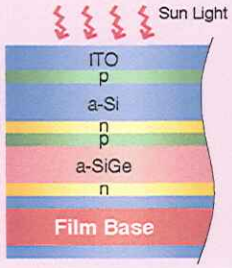
Light

Luz-solar is so light to install on the slate and/or the seam jointed folded-plate roof.

Compared with glass-laminated crystal type Solar Panel, the thin film amorphous Solar System is thinner by 1/30th and lighter by 1/6th. The total weight of the system is only 9Kg/m2, which is almost half of the glass-laminated type Solar System. The slate and/or the seam jointed folded-plate type roof is impossible to bear weight of 10Kg/m2, which is prohibiting installation of the glass-laminated Solar system on the roof.

Thin film amorphous Solar System

Structure



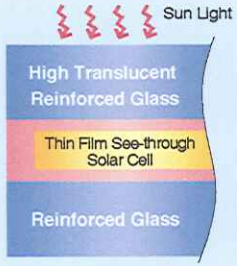
Weigh after installation

Per one square meter
9 kg

Possible to install on the slate and/or the seam jointed folded-plate roof

Glass-laminated crystal type Solar Panel

Structure



Weigh after installation

Per one square meter
20 kg

Most of the roof of the factory, warehouse and gymnastic building are of the slate and/or the seam jointed folded-plate roof.

The total area of the slate roof is expected to be over 1,500 million square meter in Japan, and most of the roof of the huge factory, the historical warehouse and the school gymnastic building are of the slate and/or the seam jointed folded-plate roof.

Slate Roof

This is one of the typical roofs, which is using the thin stone plate, attaining lightness, easy to process, less shrinking and inexpensive. Many factories and the warehouses are using.

Seam Jointed Folded-plate Roof

This roof has unique shape in structure, which is designed for the steel construction buildings. This is one of the typical metal roofs in Japan.

Better than the crystal type!

Superior "Cost Performance"
Luz-solar

Feature 2

Inexpensive in total cost

**Luz-solar does not need any mounting kit thanks to the patented construction method.
The construction cost can be significantly reduced.**

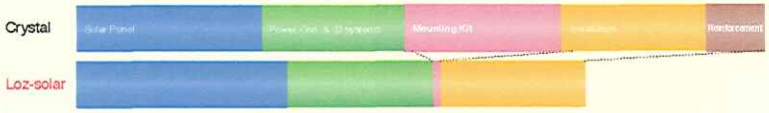
Luz-solar is specially designed for commercial solar power generation. With the unique patented construction method and solar panel's characteristics, the initial cost can be maintained at very low level. Lease arrangement can be made upon request, subject to appraisal of credit.

Total Cost Comparison

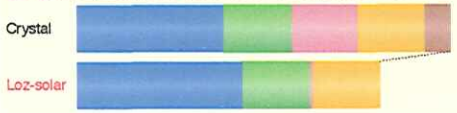
Solar Panel / Power Conditioner & Sub-systems / Mounting Kit / Installation / Reinforcement

The crystal type needs the mounting kit, which may also needs reinforcement work in addition.
The mounting kit has little scale merit depending on volume.

100Kw system for business and public use

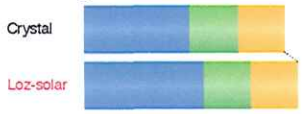


50Kw system for business and public use



3Kw system for home use

The mounting kit and reinforcement work would not be necessary for the crystal type.



Luz-solar Industrial Solar Battery

**The biggest advantage of the amorphous Solar Panel,
Luz-solar is to produce more energy in a year.
Plus, no mounting kit nor reinforcement construction work is necessary.**

Feature 3

10% more electricity generation

**Reasons why Luz-solar can generate
10% more energy per one year**

Crystal poor in summer
Amorphous powerful in summer

The amorphous type Solar Panel shall not reduce generation power so much thanks to annealing effect even in hot summer season while the crystal type Solar Panel reduces its generation power, especially at above 40 degree Celsius. It is also common that temperature of the roof in the summer season exceeds 50 degree Celsius. Luz- solar has big advantage in this respect.

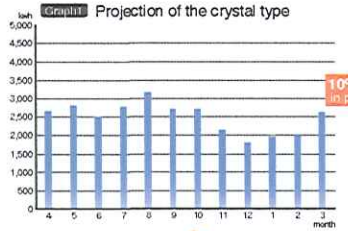
Power generation from morning till evening

Luz-solar is the amorphous type . This amorphous type can generate power utilizing from the short wave to the long wave of the sun light, which enable the amorphous type Solar Panel to generate power even morning and evening, which is difficult for the crystal type.

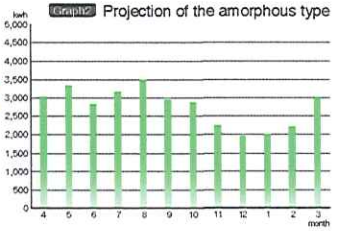
Actual Data

30Kw Solar Panels of both the amorphous and crystal type were evaluated at the school in Saga Prefecture. The following charts indicate "projection" and "Actual Data measured".

Graph1 Projection of the crystal type



Graph2 Projection of the amorphous type

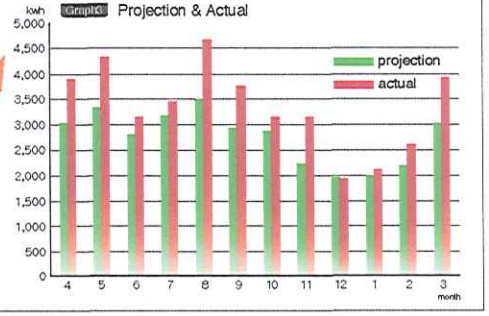


10% more in projection

15% more in actual data

Significant difference in power generation

Graph3 Projection & Actual



Graph1
Projection of the crystal type

Graph2
Projection of the amorphous type

Graph3
Comparison of projection and actual data

Ecology & Stylish!

Luz-solar has more advantages
and flexibility.

Luz-solar Transparent Solar Battery

「Luz-solar」の特許工法により、設置後の二次効果として
省エネ効果や屋根の補修効果をもたらします。
さらに「Luz-solar」の薄さと軽さがフレキシブルな設置を可能にします。

Feature 4

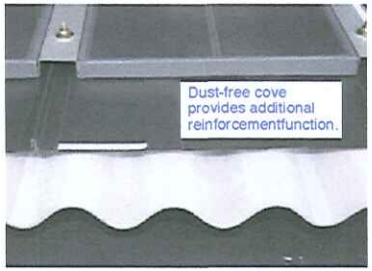
5 degree Celsius heat dissipations

Luz-solar can reduce the roof temperature by 5%.

Luz-solar can reduce the roof temperature by 5%. The unique Luz-solar installation design generates the air gap between the panel and the roof. This air gap functions as "heat insulator", attaining reduction of air conditioning bill of the building.

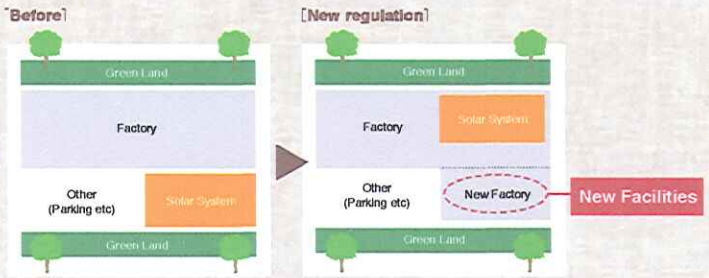
The unique Luz-solar structure provides additional reinforcement to the roof.

The unique Luz-solar structure provides additional reinforcement function to the old roof and/or the roof which requires reinforcement work.



New Governmental regulation program provides maximum usage of the land.

The new Governmental regulation classifies the solar system facility as the "environmental facility". This new regulation yields new land usage.



The new space can be used as the factory, utility space etc.

Feature 5

Installation on the curvy and side walls

Unique & Flexible Design

Luz-solar is the amorphous type thin film solar panel. It is possible to bend and/or to install on the side wall, thus providing unique and flexible design of the building.

Curvy roof

Thickness of Luz-solar is only 1.5mm. It is easy to bend. It is extremely easy to install on the curvy roof like the gymnasium and other stylish buildings.

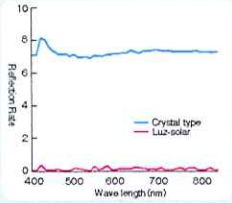
Mounting on the side wall and other unique design buildings

Luz-solar's unique features, light, thin and bendable, are so versatile to fit into any stylish buildings such as the museum.

Comfort & Safety

Special dimple treatment on the surface significantly reduces reflection of the sunlight, which contributes safety of the buildings near the airport and the streets.

- The chart shows reflection rate of the straight sun light with the wave length of 400-850nm.
- The reflection rate of the straight sun light is the sun light with the same incident and reflection angle. The higher, the brighter.

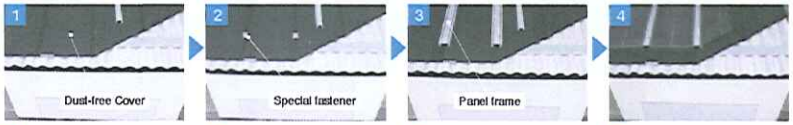


Luz-solar's Patented Construction Method attaining Light Weight System

Luz-solar can be installed to the roof with the special frame, without making any hole to the roof.
This method can be used to the slate and/or the seam jointed folded-plate roof assuring no water leakage.

Slate Roof

Installation Process



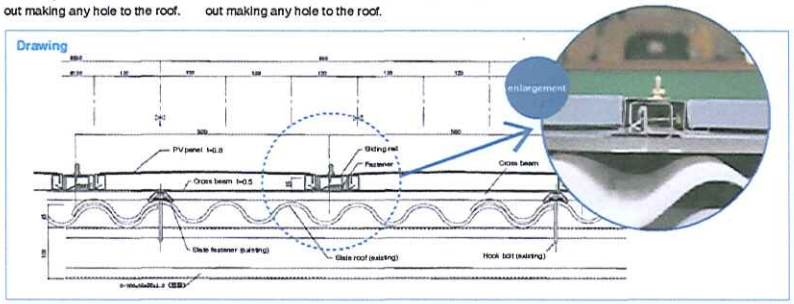
1 The dust-free cover is placed on the top of the slate roof without making any hole to the roof.

2 The special fastener is attached to the slate roof without making any hole to the roof.

3 The Solar Panel is connected to the dust-free cover.

4 Completion

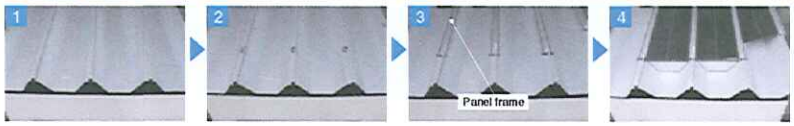
Drawing



Patent Pending Nbr. 2010-19209

Seam Jointed Folded-plate Roof

Installation Process



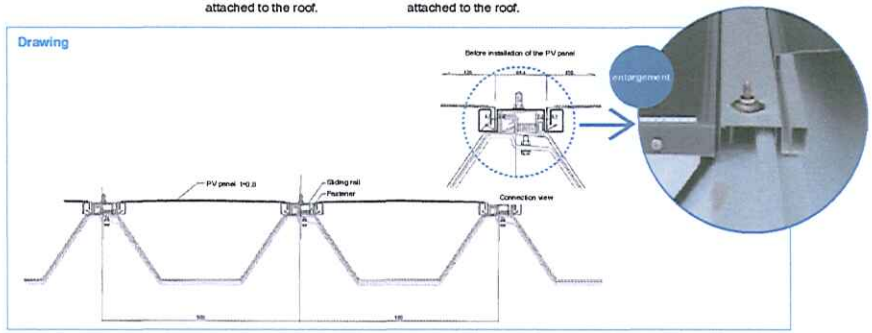
1 Before

2 The special fastener is attached to the roof.

3 The Solar Panel frame is attached to the roof.

4 Completion

Drawing



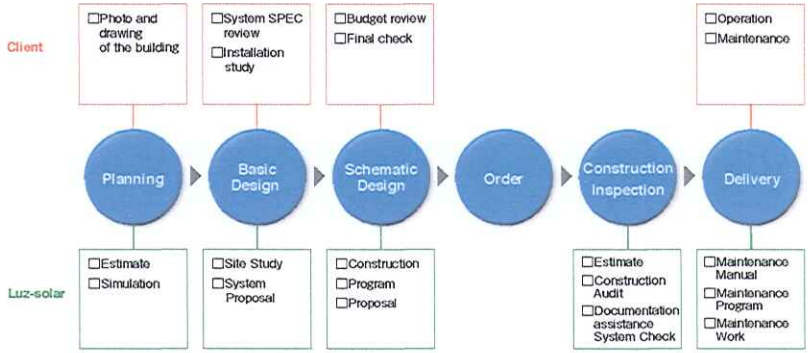
Patent Pending Nbr. 2010-158629

Comparison Chart of Luz-solar and Crystal type PV Panel

●比較表

	Luz-solar	Crystal Type PV Panel
Cell Foundation	Plastic Film	Glass
System Weight	Approx. 9kg	Approx. 20kg
Heavy Duty Mount	No Need	Need
Total Cost (mid size and larger)	◎	△
Annual Power Generation (comparison at the same rated power)	10% more than the Crystal type	–
Efficiency	8%	9~15%
Panel Size	△	○
Reinforcement to the Roof	◎	–
Heat Insulation	◎	–
Design Flexibility	◎ Bendable	○
Safety	◎ Non-destructive Non-glare	△

Installation Process



Luz-solar Warranty

1. PV Total System Warranty Period

1 year after installation

2. PV Module Warranty Period

①Function Error
1 year from installation
②Power Malfunction
10 year from installation
※Power Malfunction: Power reduction exceeds more than 10%

3. In case defective within warranty period

Replacement with the new parts