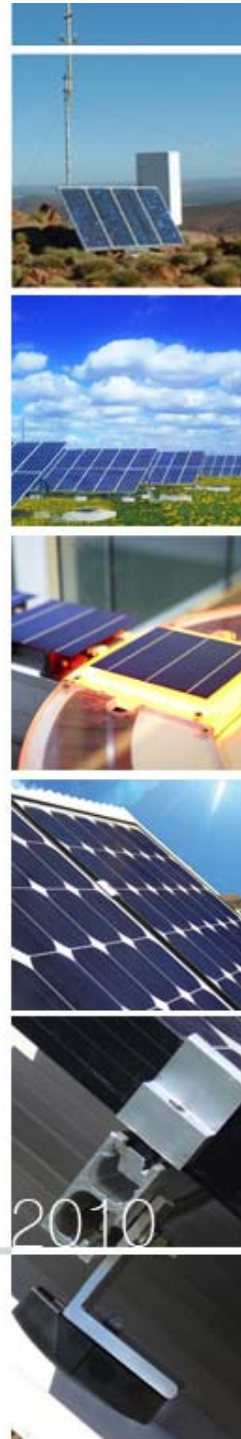


Module Roadmaps

SHARP

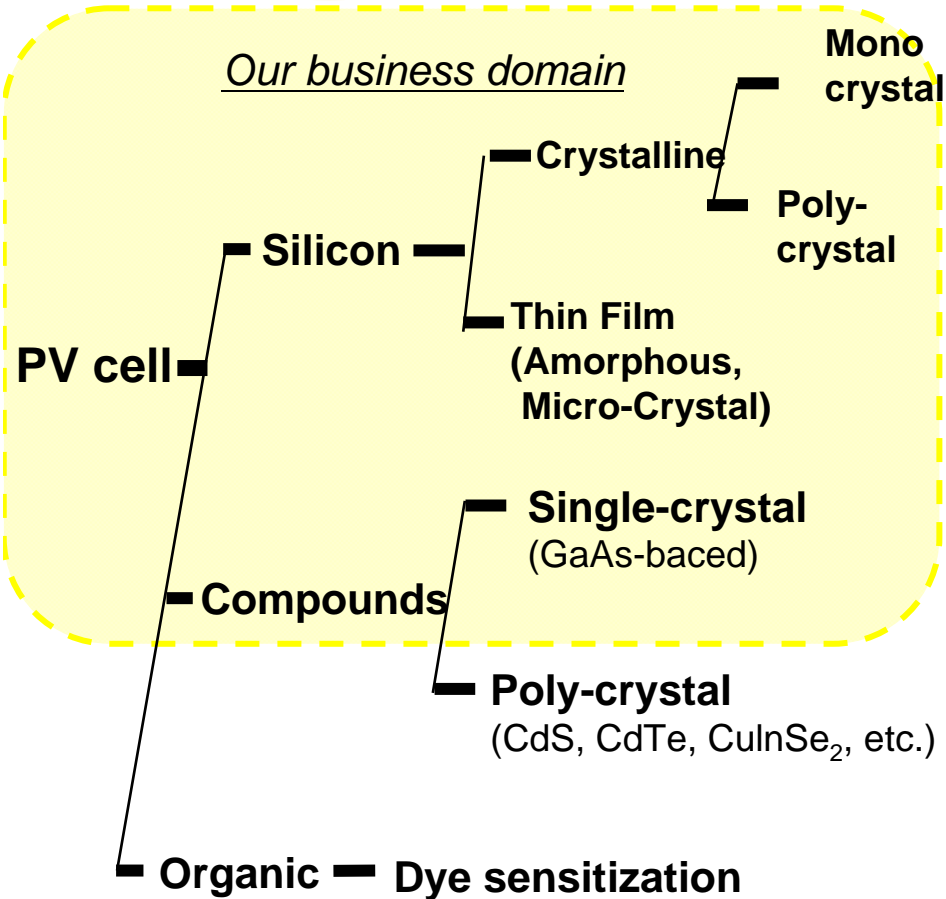
Solar

Solar Products Roadshow 2010



Classification of PV cells

Materials and types



Feature

Material	Conversion Efficiency	Cost	Feature
Mono-crystalline silicon	◎	○	High conversion efficiency
Poly-crystalline silicon	○	◎	Suitable for mass production
Amorphous	○	◎	Few volume of Si materials
Single-crystal compound	◎	△	Highest conversion efficiency
Poly-crystal compound	○	○	Few resources
Organic(Dye-sensitization)	—	—	New type photovoltaic

Current PV modules

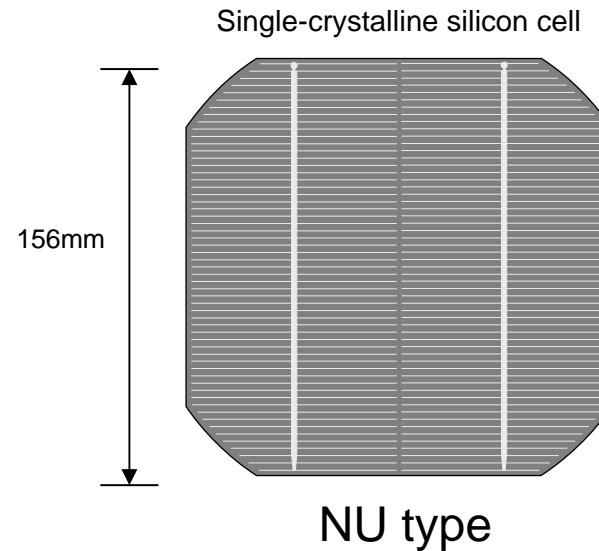
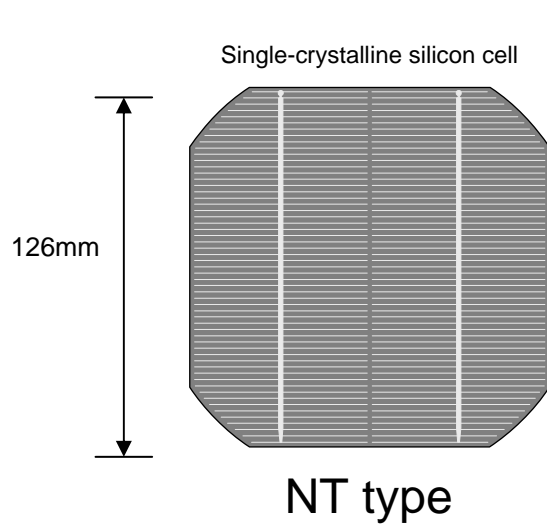
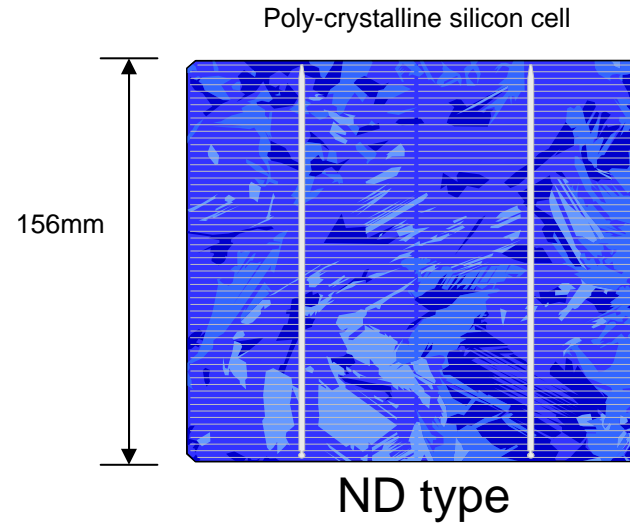
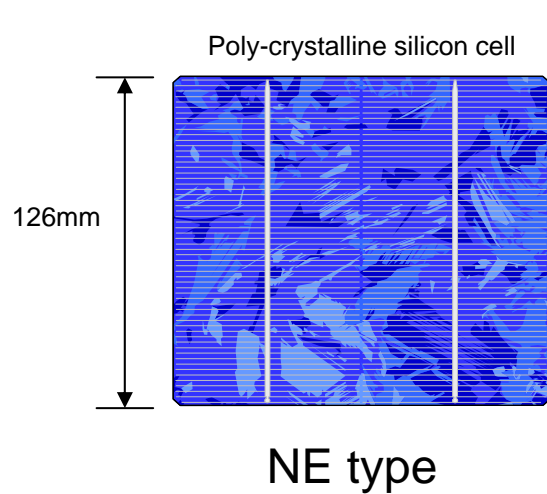
167W – NEQ7E3E - Poly-crystalline
72 cell (43.1 volts) 5.3A



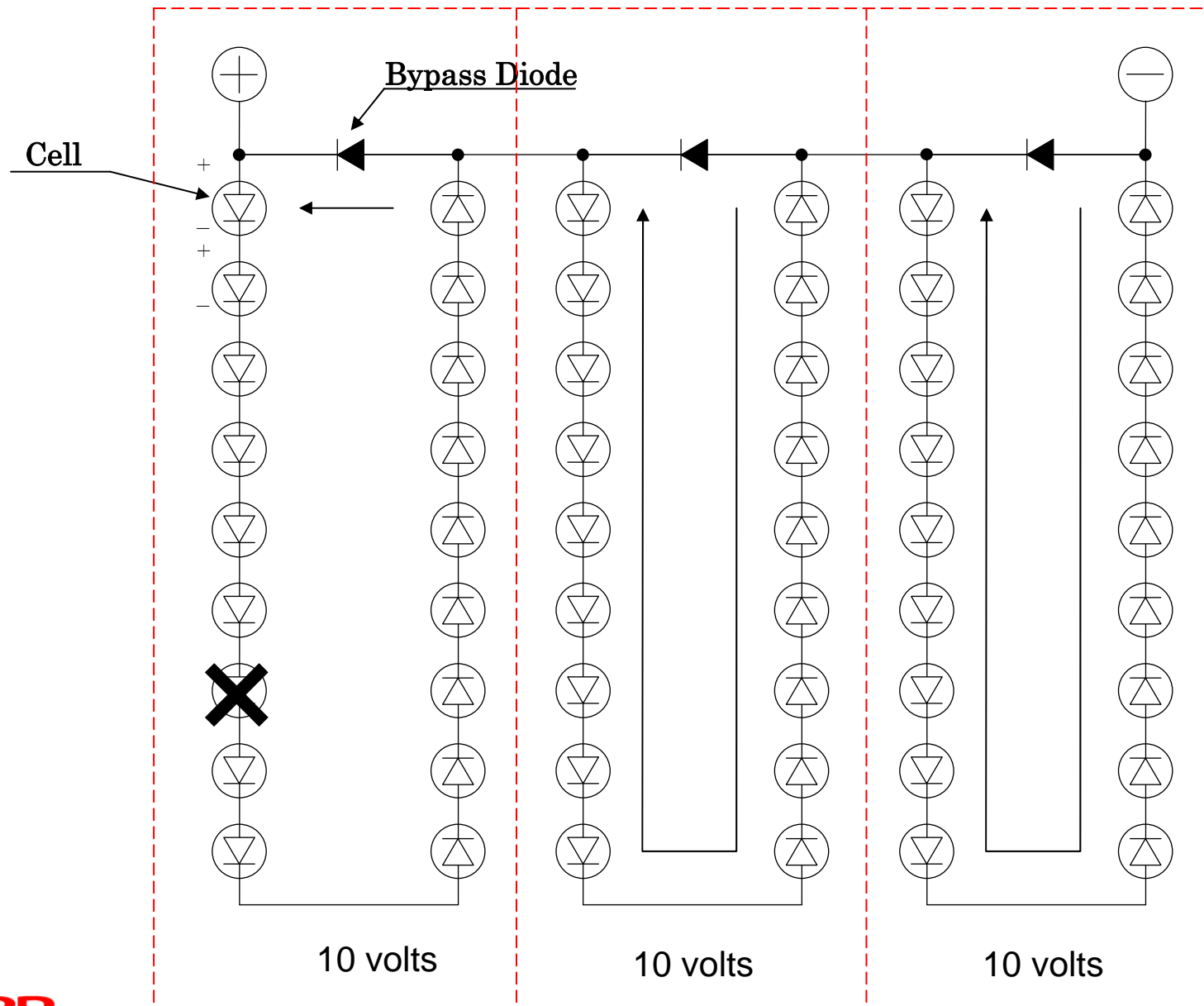
185W – NUS5E3E - Mono-crystalline
48 cell (30.2 volts) 8.54A



Cell types/ model prefix



Shading Diodes



Modules - coming soon

- 220W plus poly module
- 128W Tandem junction amorphous Thin Film
- High efficiency module~ 19%

JH-1600E Inverter



SHARP

SOLAR POWER INVERTER
Model Name : JH-1600E

DC Input Voltage Range :
60V-320V $\equiv \equiv \equiv$

DC Input Current :
Max. 8.5A

AC Output Voltage Range :
210-255V (230V Nom., 50Hz)

AC Output Current :
Max. 7.6A

AC Output Power :
1600W (Max. Power at 200-320Vdc)
310-1600W (Derating at 60-200Vdc)

Standby Mode Input :
Nom. 230Vac, 50Hz, 0.16A, 1Wmax.

IP Classification :
IP65(Main Body) / IP55(Wiring Box)

Certificate of Approval Number : CS090015V

Serial Number



92700001



SHARP CORPORATION
MADE IN CHINA

JH-1600E specifications

JH-1600E

4. Specifications

■ Solar power conditioner specifications

Model		JH-1600E	
Input (DC)	Maximum system voltage (VOC)	350 V	
	Rated input voltage	240 V	
	Range of operating DC voltage	60 V – 320 V	
	Maximum array short circuit current (ISC)	10A	
	Maximum operating current	8.5A	
Output (AC)	Nominal output voltage	230 V	
	Operating frequency range	47 Hz – 53 Hz	
	Nominal output frequency	50 Hz	
	Operating voltage range	210 V – 255 V	
	Maximum continuous output current	7.6 A	
	Maximum output fault current	10 A	
	Maximum continuous output power	1600 W (DC input 200 VDC – 320 VDC)*1	
Misc.	Power factor	More than 0.95 (more than rated output power 1/8)	
	Total current harmonic distortion	Less than 5%	
	Operating temperature range	-20°C ~ 60°C (Derating at 40°C ~ 60°C) -4°F ~ 140°F (Derating at 104°F ~ 140°F)	
Size & Weight	Dimension	without wall mount	348 mm(W) x 440 mm(H) x 141 mm(D)
		with wall mount	348 mm(W) x 440 mm(H) x 153 mm(D)
	Shipping dimension		581 mm(W) x 465 mm(H) x 245 mm(D)
	Weight	Unit	14 kg
		Shipping	19 kg*2
	Input connection		From#16 to #10 AWG
Output connection		From#16 to #10 AWG	
Main Circuit System	Solar power conditioner system		Voltage Fed current controlled inverter system
	Switching system		PWM (Pulse Width Modulation) system
	Insulator system		Built-in high frequency insulation
	Electric system		1-phase 2-wire system
Protection	Grid-connected protection		Input/Output fuses AC over/under voltage/frequency, AC overcurrent Anti-islanding

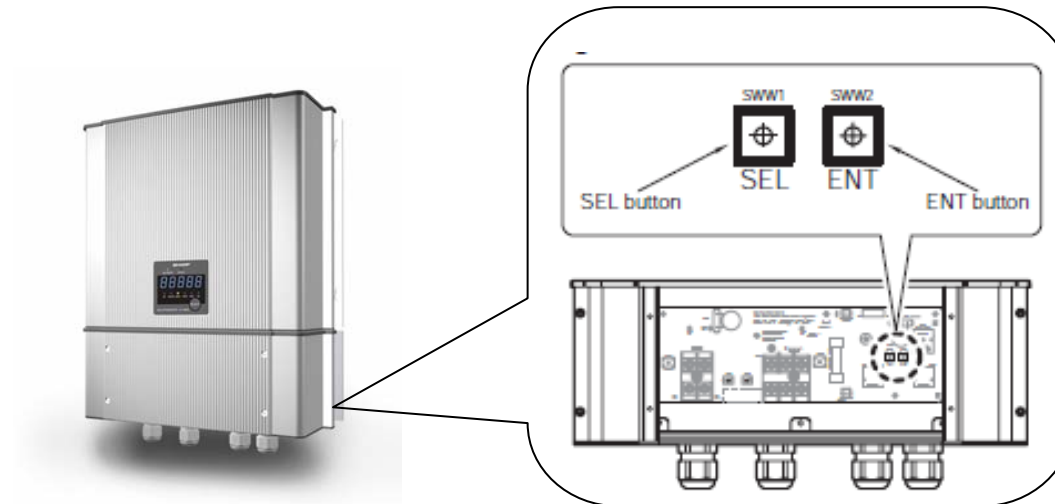
*1: For more details, see the DC Input voltage/output power characteristic chart below.

*2: Bracket included

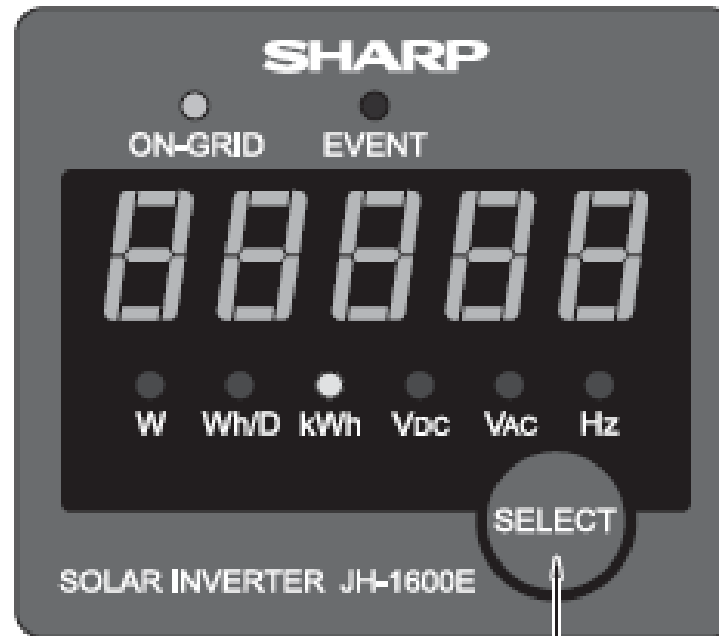
JH-1600E Programmable Settings

Setting Value and Parameter (Shaded values are the default.)

Item	Function	Parameters			
		250	255	260	
1	Utility over voltage (VAC)	250	255	260	
2	Utility under voltage (VAC)	205	210	215	
3	Voltage abnormal trip time (sec.)	1	1.4	1.8	
4	Utility over frequency (Hz)	52	53	54	
5	Utility under frequency (Hz)	46	47	48	
6	Freq. abnormal trip time (sec.)	1	1.4	1.8	
7	Recover timer (sec.)	10	60	150	300
8	RJ-45 ID	5	6	31
9	Operation frequency	50	60		



JH-1600E Display



SELECT button

Coming soon – wireless monitoring

A wireless logger plugs directly into the JH1600E onboard comms port RS485 connector and transmits the data to a wireless device



Additionally, the data is uploaded to a website for monitoring anywhere.

Monitoring – Galapagos indoor display

SHARP



Typical monitoring screen shots

Welcome to Eclogger

Home | FAQ | Forum | Contact Us | EPCOR

My Eclogger | Resources | Eclogger shop | Register

What is Eclogger?
Eclogger is an ideal tool for the energy conscious consumer who wants to monitor their carbon footprint as well as track energy costs while control it provides an energy monitoring solution that allows you to record and receive your energy production and usage.

Statistics are collected using low power monitoring devices that report back to a central server system. This data is then processed and made available to you through a number of interfaces such as the website and our Android and iPhone mobile applications.

While we may utilize anonymous data to generate statistics that allow you to compare your figures against system averages, all personal information and individual usage is treated privately unless you explicitly choose to share it with others.

Eclogger community
Solar Bids, NSW, Australia
Current Output: 900W
Yesterday's Output: 1,300W
Output for August: 3000W
View to date

Latest Eclogger news
Launch of mobile platform
Eclogger is pleased to announce their new Android application for mobile devices. By installing the application on your Android mobile handset, you'll be able to monitor your sensors from anywhere!

Recent Eclogger forum activities
13:18pm Today
Checked out that by using the Ecloggers I have been able to track the meters and path of my solar panels to get the best results for each season of the year.
see Click to view more

8:10pm Today
Installed by Eclogger to monitor 7.1.2.3 yesterday, and found a whole lot of new features and updates that weren't there before. I'll share a help manual article that will show you how to use the Eclogger to either have more features! see Click to view more

Experience the improvement of performance, reduce quality and energy savings with Sharp Aquos LED backlight LCD TV. It's not just LED... it's Aquos LED.

The revolution of Sharp Aquos LCD TV... really possesses the combination of Flat panel LCD technology, 100% environmental safety and quality.

My Eclogger

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My Eclogger's performance

Total output	640kWh
\$ earned	\$384
CO2 saved	569kg
Output today	984Wh

Site information

This site has 8 Sharp NUA188EY 188W panels for a total of 1.504kW. The panels are west facing and connected to a Sharp JH1600E inverter.

If you look at the daily output, you can see the effect of the afternoon shade from a neighbour's tree.

My Eclogger

Experience the improvement of performance, reduce quality and energy savings with Sharp Aquos LED backlight LCD TV. It's not just LED... it's Aquos LED.

Today's output

Some Text Chart
Source: log file

Welcome to Eclogger Bob Smith

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My Eclogger sensors

- My sensors
 - AC Power (W)
 - DC Power (W)
- My Friends sensors
 - AC Power (W)
 - DC Power (W)
- Local / National averages
 - AC Power (W)
 - DC Power (W)

My Eclogger sensors date range

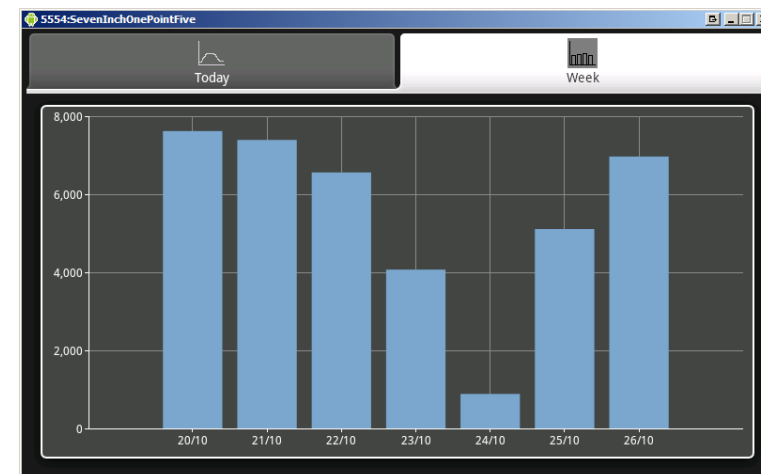
Select common date range
Date range selected: Today

or define a customised date range.
Start date:
End date:
Add to chart >>

My Eclogger sensors - AC Power (W)

Some Text Chart
Source: log file

Seconds since epoch



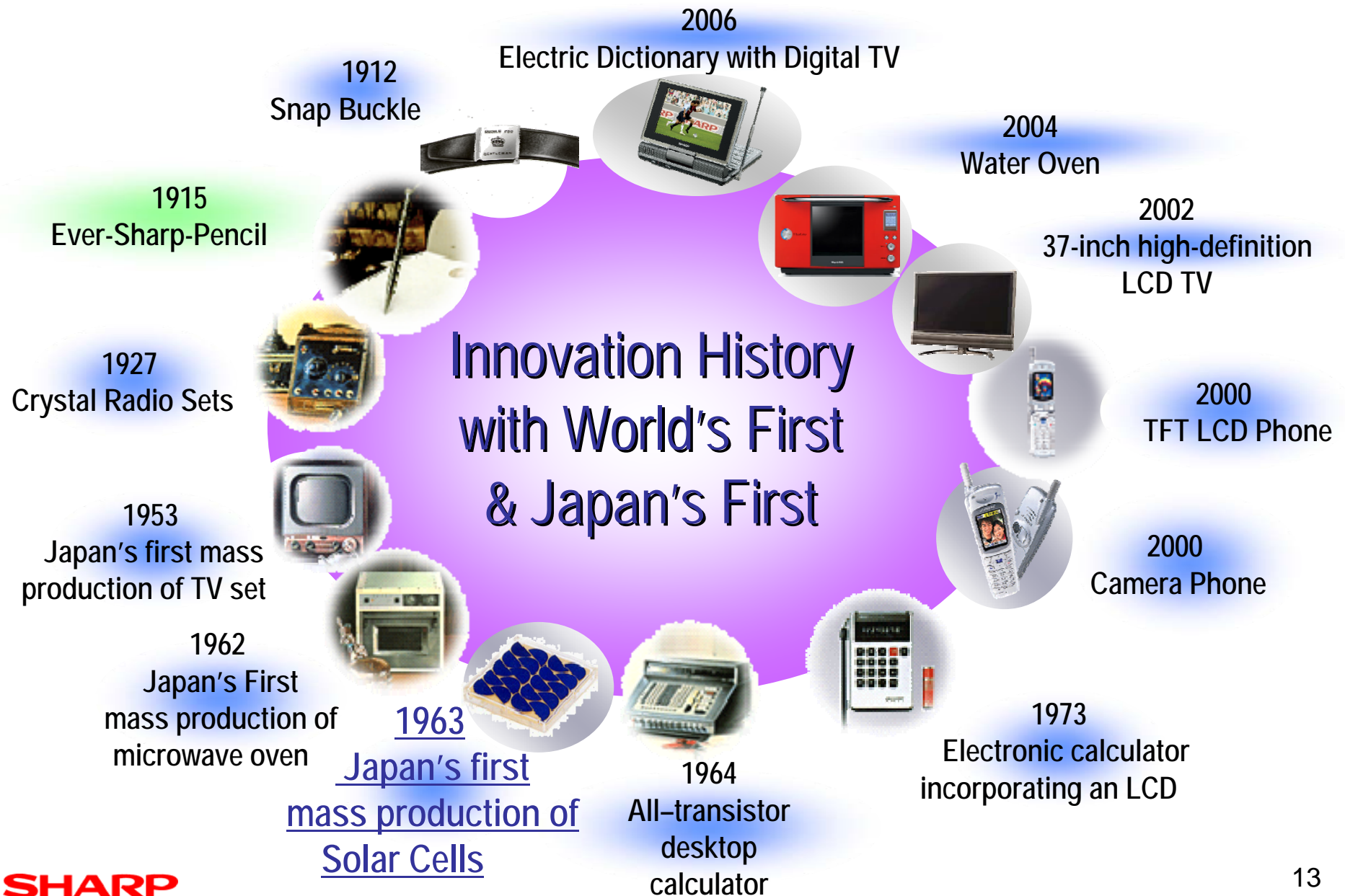
SHARP Solar – The Brand



SHARP

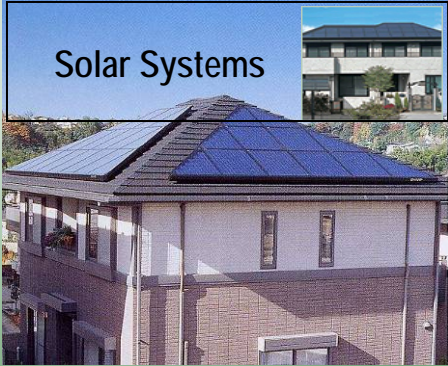
CS Promotion Center, Solar Systems group

A History of "First"



SHARP Environmental Policy

Energy generation Products



Energy Saving Products

Plasmacluster Products



Safety/Reliability

Activity

Katsuragi
Factory



Hiroshima
Factory



Nara Factory



PV system installation to all domestic factories

We aim to become zero emission company

Tenri Factory



Tochigi Factory



Kameyama Factory



Sharp's Advanced LCD Factory

Super Green Factory, “Kameyama(亀山)”



1) LCD Panel + LCD TV
- Vertical Factory

2) Energy-Saving
- Cogeneration System

3) Water Purifying System
- 100% Water Recycling

4) Solar Power Generation

The integration of energy creating and energy saving —
Sharp installed a photovoltaic power system —
the largest of its kind in the world.

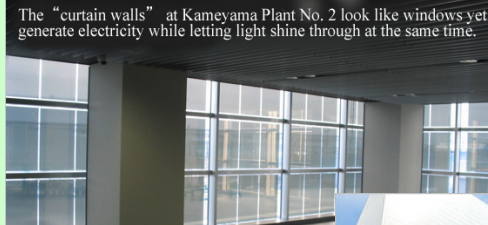


To the greatest extent possible, Sharp minimizes
discharged waste that would otherwise be
sent to landfill.



- 5.21MW system

The “curtain walls” at Kameyama Plant No. 2 look like windows yet
generate electricity while letting light shine through at the same time.



Thin-film, see-through
photovoltaic modules
have been installed
on the walls of Kameyama
Plant No. 2



The amount of CO₂ emission reduction



About **3,400** tons of
CO₂



The amount of CO₂ absorbed by
about 960 hectares of forest

Manufacturing Complex for the 21st Century

Solar Cell and LCD Panel Plants



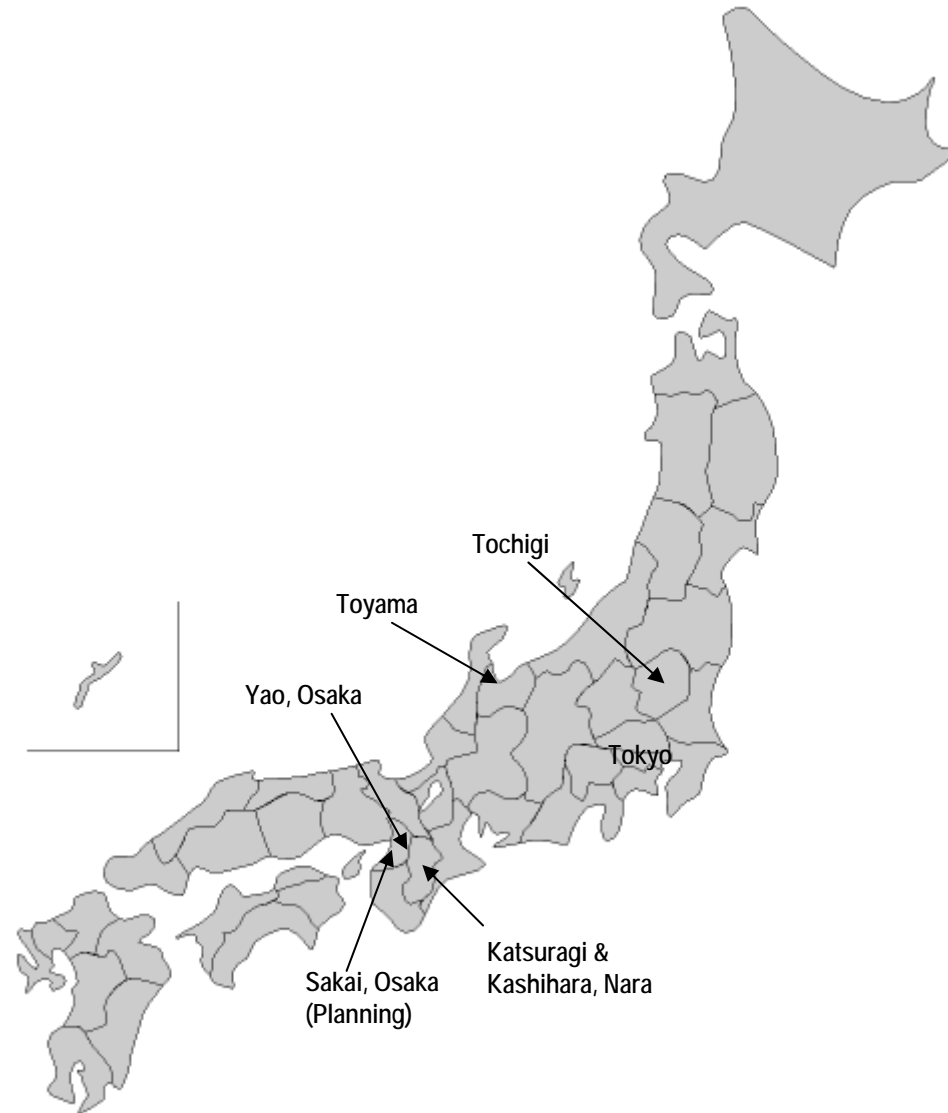
Overview of the Solar Cell Plant

Start of operation : By March 2010

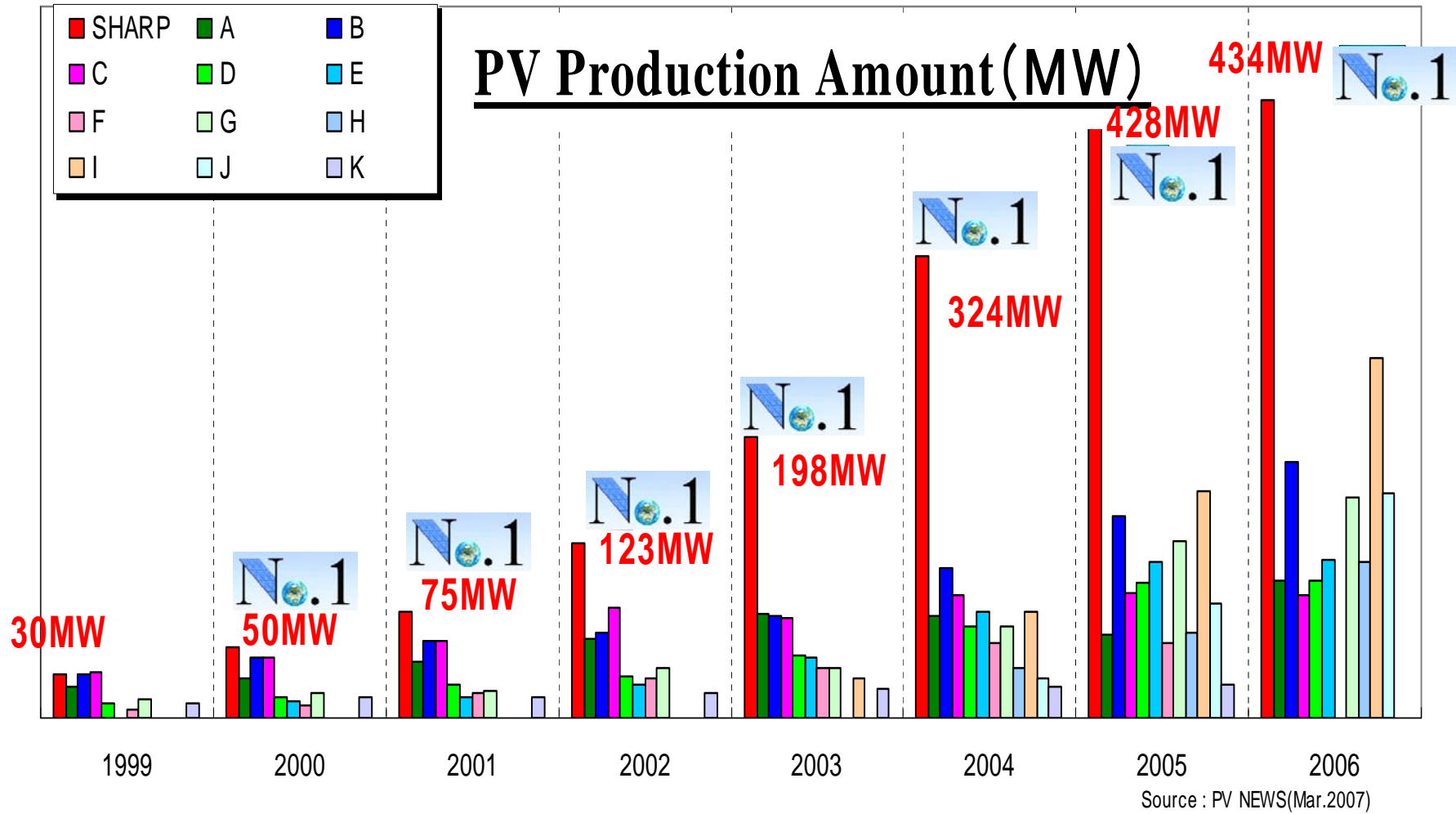
Production item : Thin-film solar cells

Place : Sakai City, Osaka Prefecture, Japan

Domestic Factory Location



Worldwide PV Cell Production

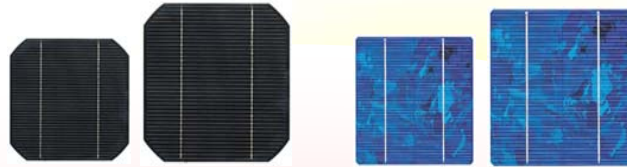


Wide Range of PV Products

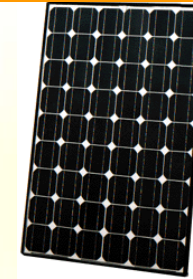
Conventional



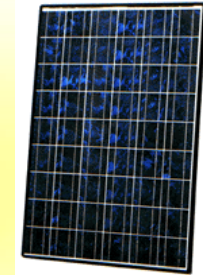
See-through



Cell (Crystalline-Silicon)



Single Crystalline Silicon

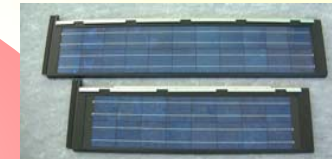


Poly Crystalline Silicon

Thin Film Type



Cell (Compound semiconductors)



Roof Tile Type



Light-through type

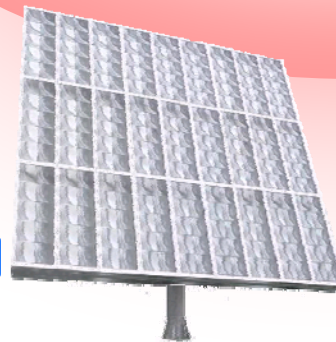
Module



Small Home System



Street Light



Light Concentrator



Thin Film Type

Flexible solar cell



Power Conditioner

Installation Examples



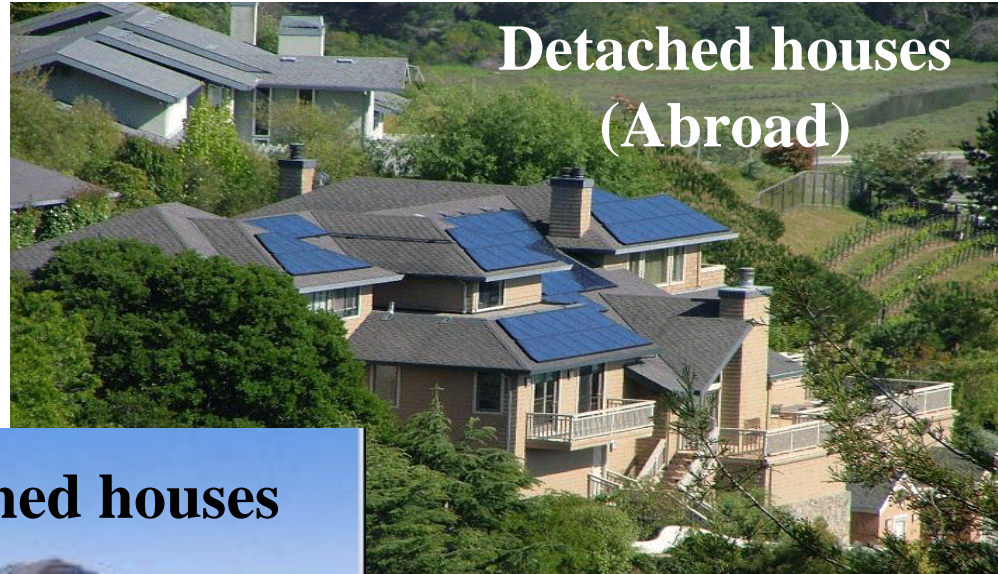
SHARP

Installation Examples (Houses)

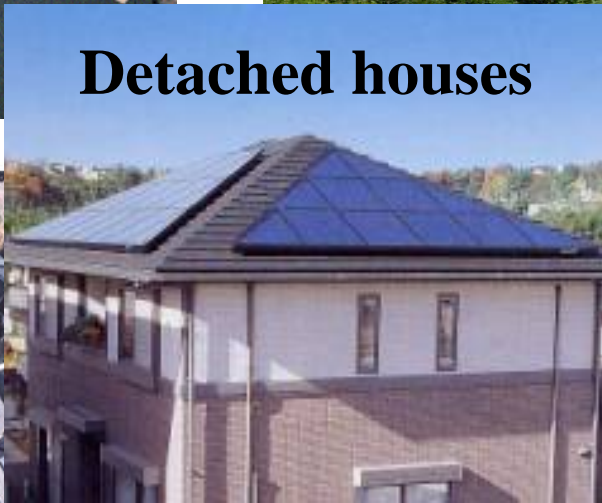
Detached houses



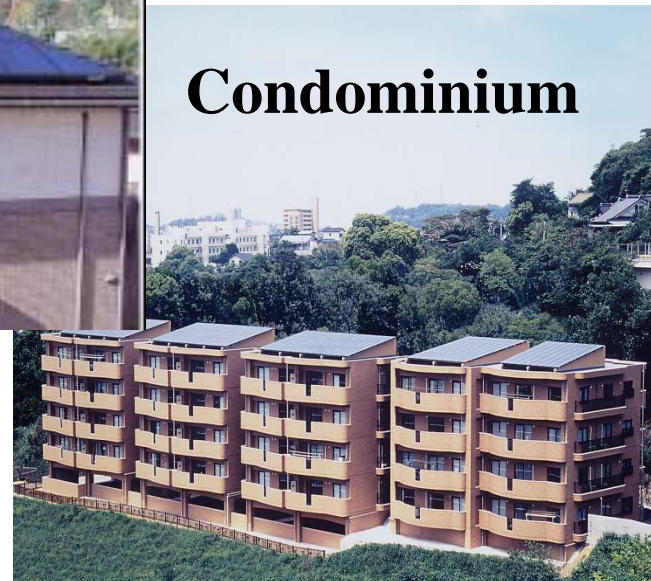
**Detached houses
(Abroad)**



Detached houses

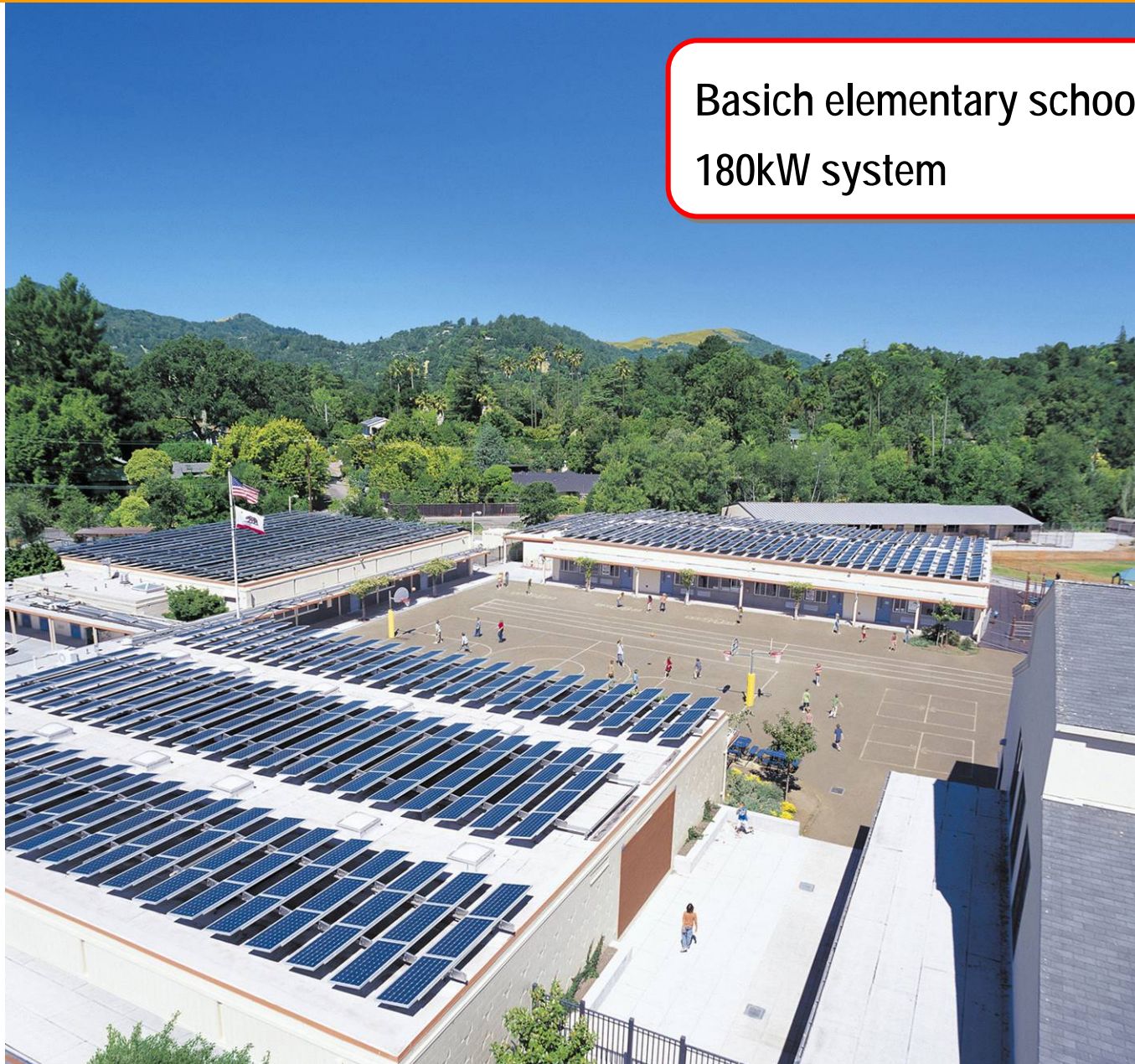


Condominium



Installation Examples (US • California)

Basich elementary school
180kW system



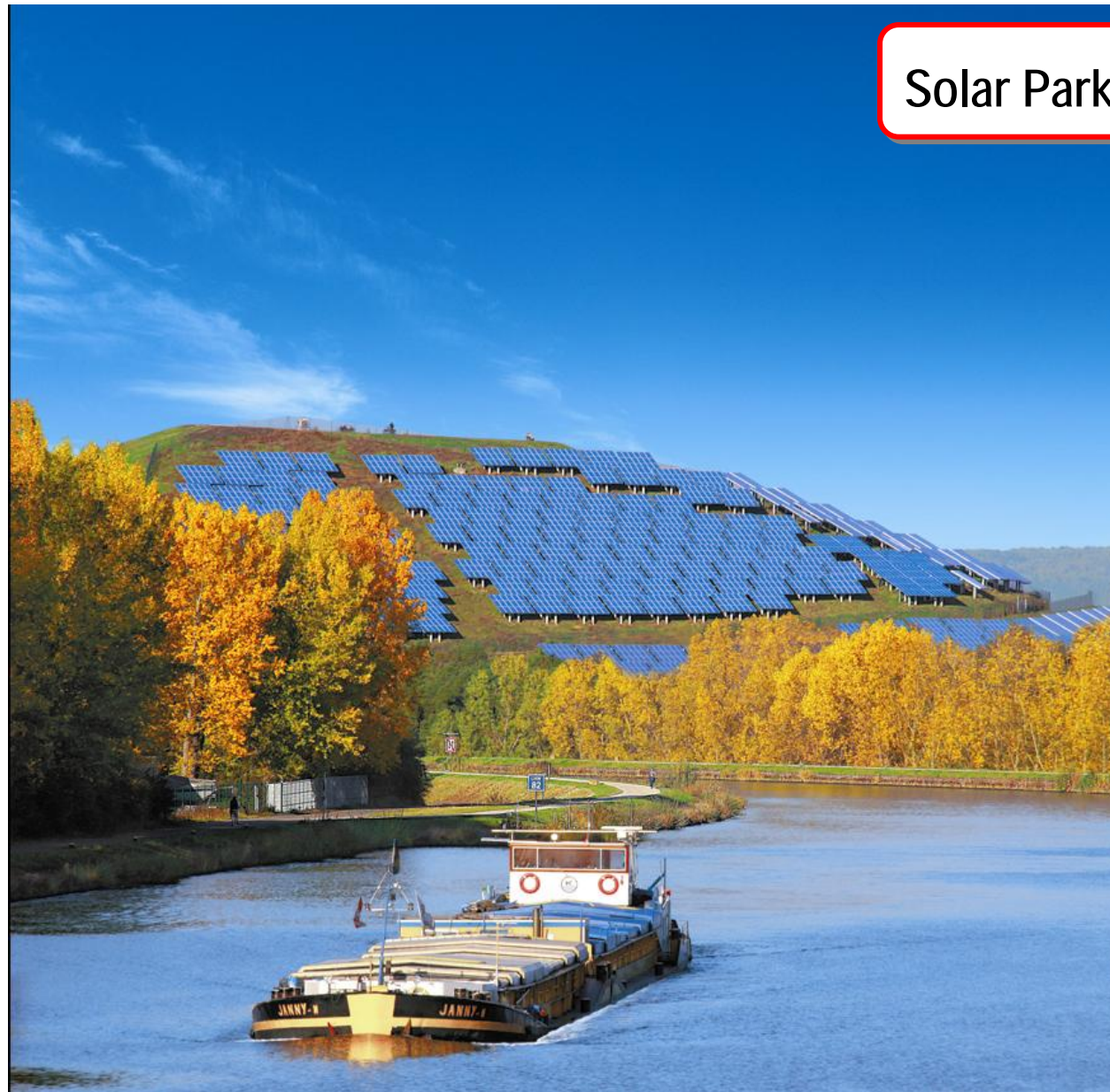
Installation Examples (UK - Manchester)



CIS Tower
390kW system

Installation Examples (Germany - Bayern)

Solar Park



Installation Examples (Germany - Mainz Succor Stadium)

Succor stadium
240kW system



Installation Examples (Austria - Salzburg)



Salzburg airport
200kW system

Installation Examples

(Tibet : there is the highest in the world)



Tibet in China
(above sea level : average more than
4000meters)

Installation Examples (Heritage in Noyon Village, Mongolia)

New Energy and Industrial Technology Development Organization
International Joint Experimental Study of Photovoltaic Power Generation System



- Stable power supply to 160-residence and minimum element to social life such as "Education", "Medication", "Communication" and "Government office".
- Total Project Cost: approximate US\$ 3 million
- In the future, in order to meet the requirement for "Commercial equipment", "Industrial facilities" and "Recreation" during the town development , more energy supply is required.

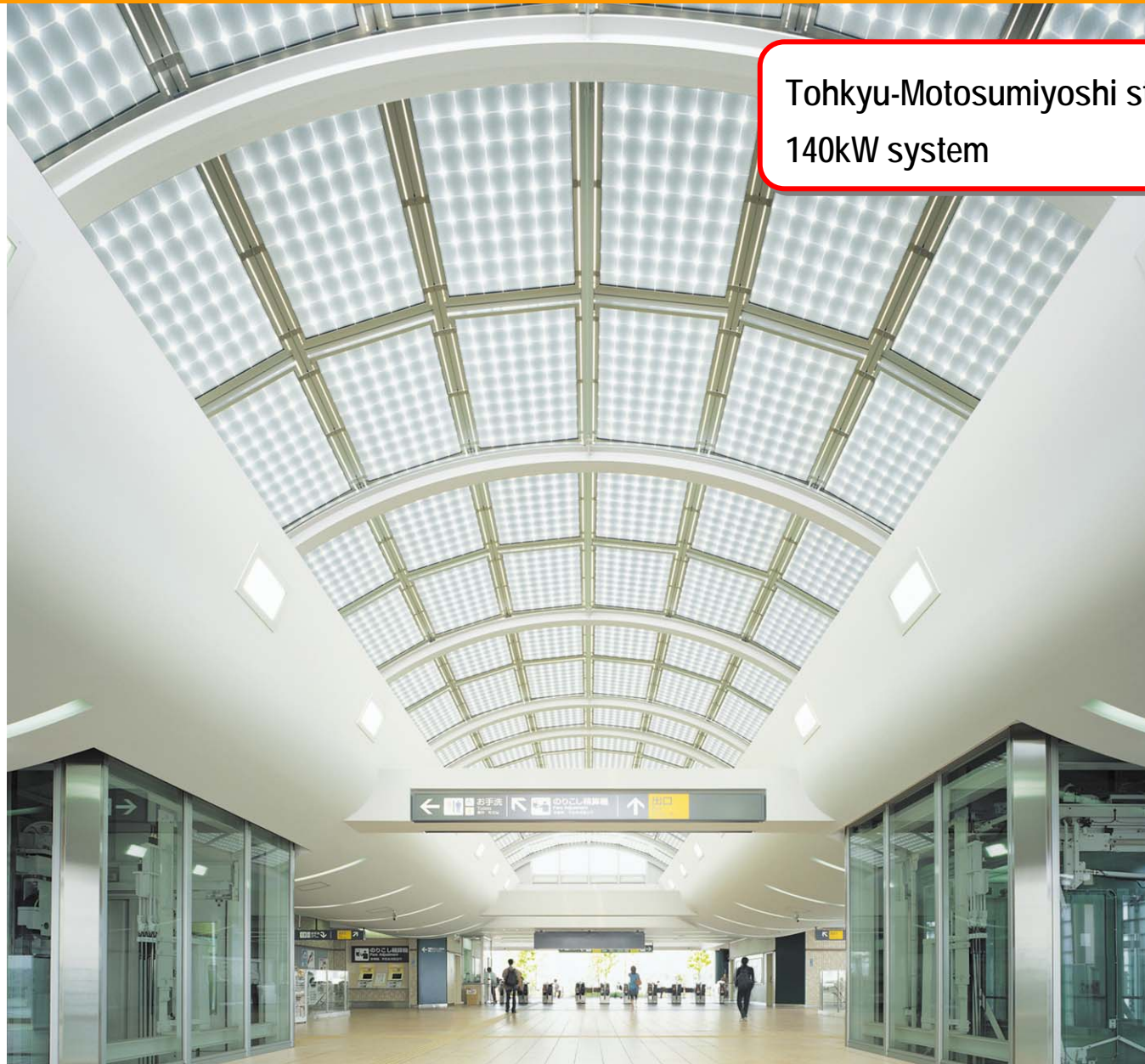
System Outline

- Hybrid System of PV and Diesel Power generation.



Installation Examples (Japan - Kanagawa)

Tohkyu-Motosumiyoshi station
140kW system



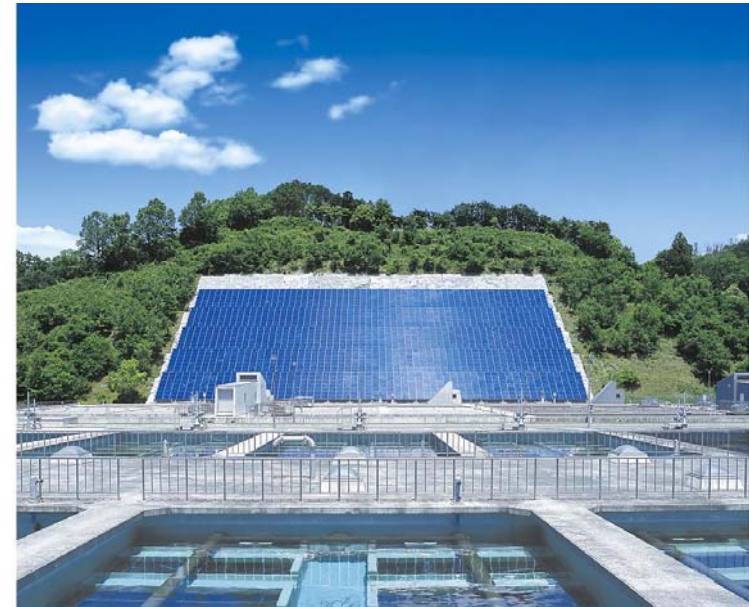
Installation Examples (Japan - Osaka)

Osaka Expo memorial Park



Installation Examples (Japan - Nara)

Water Purification Plant in Gose-City
790kW system



Thanks!

SHARP