

SHARP



SHARP SOLAR SOLUTION ASIA

OUR COMPANY

Founded in 1912, Sharp Corporation (SHARP) has achieved global recognition as a comprehensive electronics manufacturer. SHARP produces world-class electronic components including solar cells and modules through exceptional dedication and effort in research and development.

A photograph of a modern industrial building with a white facade and large glass windows. The word "SHARP" is written in large red letters on the upper part of the building. In the foreground, there are rows of blue solar panels. The sky is bright blue with scattered white clouds and a sunburst effect in the upper right corner. A red geometric shape is overlaid on the top left of the image.

SHARP

BUSINESS CREED

“Sincerity and Creativity”

BUSINESS PHILOSOPHY

We do not seek merely to expand our business volume. Rather, we are dedicated to the use of our unique, innovative technology to contribute to the culture, benefits and welfare of people throughout the world. It is the intention of our corporation to grow hand-in-hand with our employees, encouraging and aiding them to reach their potential and improve their standard of living.

Our future prosperity is directly linked to the prosperity of our customers, dealers and shareholders ...indeed, the entire Sharp family.

Sharp will continue doing what is both its mission and its joy: provide products, services and technologies that help make society a better place.

HALF A CENTURY HISTORY OVER 60 YEARS

Half a century ago, in 1959, Sharp began developing solar cells. As a manufacturer of products that consume electricity, we've always felt it's our responsibility to create electricity as well. No other companies were thinking like that 60 years ago. We were one of the first to realize the effectiveness of solar energy and have continued to develop it ever since. Our sense of responsibility for the environment makes Sharp a global driving force in the research and development of photovoltaics.



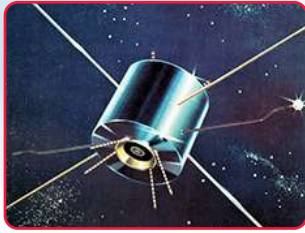
“If we could find a way of generating electricity from limitless solar heat and light, that would benefit humankind to an extent we can scarcely imagine.”

Tokuji Hayakawa
Founder of SHARP Corporation



SUCCESS STORIES

1967 Ume satellite was launched with Sharp's solar cells on board



Started development of space solar cells



First Transistor Radio with solar cell

Operations began at the Shinjo Plant (now Katsuragi Plant).

Oita Marine Ranching system employs photovoltaic module.

Obtained Overseas Safety Standard certification UL (United States) and TUV (EU) for photovoltaic modules

Commercialization of residential solar power system (Grid-connected)

1959

Started development of solar cells

1961

1963

Success in mass producing solar cells



1963 Started mass production of standardized solar modules

1967

1976

Successful launch of operational satellite with Sharp's solar cells on board

1981

1983

Production of a two-layer stacked solar cell using a roll-to-roll method

1988

1992

Cell conversion efficiency of 17.1%, the world's highest for polycrystalline solar cells, is achieved.

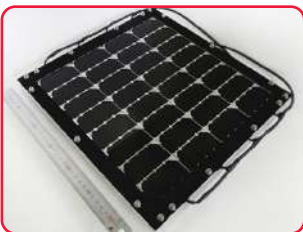
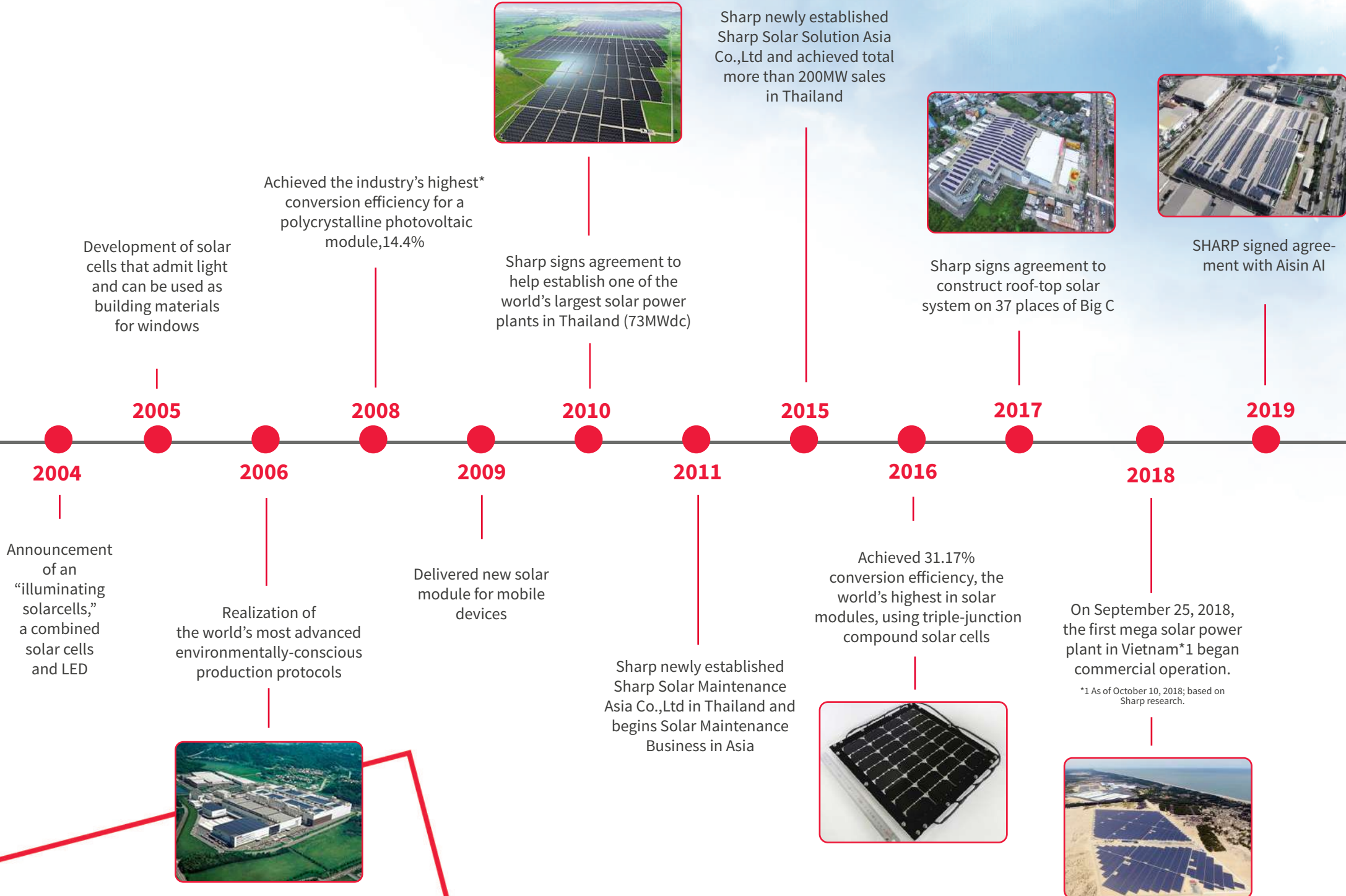
The world's highest cell conversion efficiency of 22% for single-crystal type solar cells capable of mass production

1994

2000

Worldwide-leading manufacturer of solar cells/modules

2001



*1 As of October 10, 2018; based on Sharp research.

WHY SHARP?

Sharp is a leading global specialist in solar energy solutions. And not just since yesterday - over 60 years' experience is a testament to our heritage, know-how and reliability. We create energy in an environmentally friendly way and use it wisely to enable a more comfortable lifestyle, making a positive contribution to society on a global scale.

- Solid company with reliable quality
- Financial stability
- Top PV brand award
- Local Presence
- High PV Module Performance & Efficiency
- Technology leadership
- Product and performance guarantee
- Robust product design
- Worldwide support

A person wearing a white lab coat with dark grey accents on the sleeves is holding a white hard hat. The hard hat has the word "SHARP" printed in red on its front. The person is also wearing dark trousers. The background is a blurred outdoor setting with a blue sky and some greenery.

SHARP

Millions of customers worldwide are already using energy solutions from Sharp. Together we make a great contribution to the environment. Whether for private or for business customers, we think solution-oriented and offer each client the perfect products and services.

WHY SOLAR?

“The sun is a clean, safe, and limitless energy source.”



SHARP

Be Original.



A solar energy system is a long-term investment. In order to be satisfied with your decision for a long time, you should be able to rely on the quality. Sharp's 100 year history and more than 60 years of experience in solar technology give you confidence for your investment.

OUR MARKETS

BANGLADESH

MYANMAR

LAOS

THAILAND

CAMBODIA

VIETNAM

PHILIPPINES

MALAYSIA

SINGAPORE

INDONESIA

AUSTRALIA

NEW ZEALAND

East China Sea

TAIWAN

Luzon Strait

Gulf of Tonkin

Gulf of Thailand

Straf of Malacca

Tasman Sea

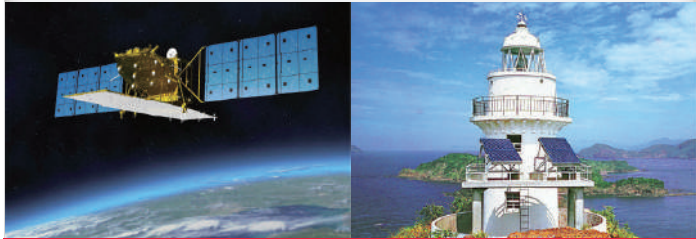
PALAU

Arc S

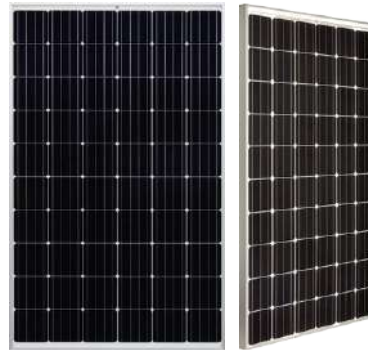
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OUR PRODUCTS

Using breakthrough technology, made possible by over 60 years of proprietary research and development, Sharp's solar modules incorporate an advanced surface texturing process to increase light absorption and improve efficiency. The solar modules are designed to withstand rigorous operating conditions and offer high power output per square foot of solar array.



PV MODULE



Monocrystalline PV module



Polycrystalline PV module



Monocrystalline PERC Half Cell

*For sales in certain countries





OUR SERVICES

Sharp provides comprehensive engineering and consulting services that can be contributed to customers' benefit. Our experts possess decades of engineering experience and apply this knowledge to the everyday challenges. Sharp works closely with customers to provide innovative, affordable solutions. We deliver improved efficiencies while reducing cost and risk by optimizing the use of energy.

Our engineering and design services range from planning and permitting through preliminary and detailed design to start-up and commissioning for all types of projects.

The quality of SHARP'S PV module

■ Quality Assessment Standard

Sharp's PV module is a product that has retained the quality based on the longest period class field test data in the world and has passed stringent tests.

Sharp has developed a unique quality assessment standard called QTSS (Quality Test Standard of Sharp).

- QTSS has been awarded with a certificate of conformance from the VDE , Germany's largest association for the electrical and electronics industries.
- It is anywhere from several to 10 times as strict as standards stipulated by the IEC (International Electrotechnical Commission).

*VDE (Association for Electrical, Electronic and Information Technologies)

*IEC (International Electrotechnical Commission).



■ SHARP'S Uniqueness and Strength

We can produce EPC + O&M with in-house team, so that we can manage construction schedule and quality firmly. Also, Japanese experienced engineer and sales team would support management and communication to avoid troubles during or after sales services.

TURNKEY EPC **(ENGINEERING PROCUREMENT & CONSTRUCTION)**

Our engineering, procurement, and construction (EPC) team provides **bankable**, innovative, and **high quality** solar energy solutions to customers around the world. From initial planning to project closure, we encompass a complete set of skills to complete your project beyond your expectations.



ENGINEERING SERVICES

- Design the plant layouts
- Cost calculation
- Yield analysis
- Technical planning : conceptual, basic and detailed engineering
- Consultancy



PROCUREMENT SERVICES

- Finalization of the project plan
- Supplier selection
- Milestone planning and project controlling



CONSTRUCTION SERVICES

- Construction site management
- Installation
- Quality inspection
- Commissioning and handover of the turnkey project

O&M **(OPERATION & MAINTENANCE)**

Sharp provide complete operation & maintenance services. We understand that after the construction, the sustainability is dependent on appropriate and sufficient operations and maintenance over short, medium and long term timelines.

We protect solar power plants and ensure its maximum power production by the essential operation and maintenance. From power generation status monitoring to inspection and management of the supporting system, we provide backup service to our customers' power plant during all years of operation.

We are glad to assist our customers with the best O&M services.



EXPERIENCES

Sharp will continue doing what is both its mission and its joy: provide products, services and technologies that help make society a better place. SHARP's cumulative Shipments of PV modules to all over the world exceeds 14.9GW (as of end of 2019)

THAILAND (Rooftop)

More than 80 projects



Chachoengsao, 2,027.1 kWdc



Rayong, 702 kWdc



Chonburi, 512.64 kWdc



Chachoengsao, 538 kWdc



Chachoengsao, 973.44 kWdc



Chachoengsao, 920.70 kWdc



Chachoengsao, 825.50 kWdc



Ratchaburi, 996.48 kWdc

Other Solar Rooftop :



Rayong, 3.4 MWdc



Rayong, 1.4 MWdc



Rayong, 0.6 MWdc



Samutprakarn, 2.5 MWdc



Phayao, 500 kWdc



Chachoengsao, 588 kWdc



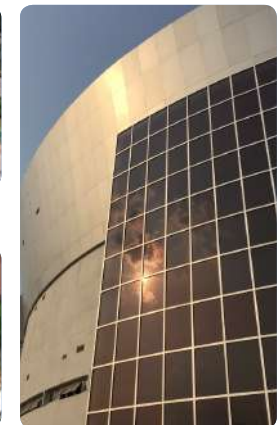
Chachoengsao, 378.04 kWdc



Chonburi, 400.4 kWdc



Cha-am, 350 kWdc



Nonthaburi, 13.755 kWdc

THAILAND (Solar Farm)

More than: 300MW



Lopburi, 84 MWdc



Lopburi, 52 MWdc



Lopburi, 10 MWdc



Lopburi, 2.5 MWdc



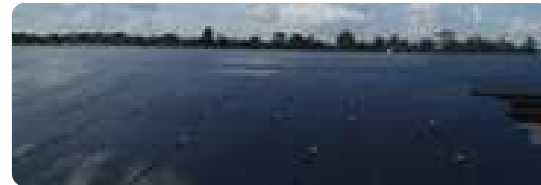
Prachinburi, 44 MWdc



Surin, 3.5 MWdc



Udonthani, 2.4 MWdc



Khon Kaen, 2.4 MWdc



Nakhonsawan, 1MWdc



Mahasarakham, 1MWdc

VIETNAM

More than: 500MW



Binh Nguyen, 50MWdc



Duc Hue, 50 MWdc



Phong Dien, 50MWdc



Clark, 4MW



Batangas, 3MW



Ham Phu, 50MWdc



Ninh Thuan, 50MWdc



Hanoi, 2MWdc



Batangas, 3MW

WORLDWIDE

More than: 2,000 MW



Darkhan-Uul,
Mongolia 10 MWdc



California,
USA 57.7 MWdc



California,
USA 6.3 MWdc

Solar Rooftop :



Enerife, Spain 13MWdc



La Solana , Spain 7MWdc



Thuringen, Germany 340 kWdc

Floating Solar :



Singapore, 100 kWdc

JAPAN

More than: 800MW



Fukuoka, 6.8 MWdc



Gunma, 2.2 MWdc



Tochigi, 13.9 MWdc



Hokkaido,
45.6 MWdc



Tottori,
Japan 42.3 MWdc



Oita,
25.2 MWdc



Hiroshima,
13.7 MWdc

Solar Rooftop :



Kumamoto,
600 kWdc



Kumamoto,
500 kWdc



Kumamoto,
400 kWdc



**Residential
Solar Roof top**



Haneda Airport, 2MWdc



Sharp Kameyama Factory, 112 kWdc

“CUSTOMER VOICE”

Message from AISIN AI (THAILAND) CO.,LTD.

On top of an optimized solar system to comply with 200V electrical system in our factory, Sharp Solar has also provided the best system that protects the reverse power flow to the grid. They also used special mountings in the design to avoid shading factors and flexibly responded to our requirements. Together with the long term maintenance service they offer, we believed the solar system was one of the best way to meet our corporate goal of reducing the CO2 emission. These facts are the reason why we chose Sharp Solar.

Mr. Uembyu,
Managing Officer
AISIN AI (Thailand) Co., Ltd.



Chachoengsao, 1,594.44 kWdc

“CUSTOMER VOICE”

Message from TOKAI RIKA (THAILAND) CO., LTD.

We could believe in Sharp Solar’s EPC work for their name and because they are one of the most experienced in the market, as they are licensed for construction themselves. After comparing with other companies, Sharp Solar designed the highest capacity for the given area, and their per unit cost was also the best. We were also comfortable working with Sharp Solar’s Japanese engineer, which eventually lead to better mutual understandings on design, installation, and project management plans. Overall, all of these reasons accounted for our decision to install the solar system with Sharp Solar. We are greatly impressed that the stable electricity supply from our solar system is ensuring us to adapt to the fast changing business environment. We are glad we made the decision to install solar system, and that we chose Sharp Solar for the work.

Mr. Okuda,
Managing Coordinator,
TOKAI RIKA (Thailand) Co., Ltd.



Rayong, 1,537.94 kWdc



SHARP

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