



October 12, 2021

Press Release

Company Name: Idemitsu Kosan Co., Ltd.
Representative Director & Chief Executive Officer:
Shunichi Kito
(Company Code: 5019, TSE, First Sect.)
Contact person: Munehiro Sekine, General Manager,
Investor Relations Office, Finance & Accounting
Department (TEL: +81-3-3213-9307)

Announcement on Solar Frontier K.K.'s Business Restructuring

Idemitsu Kosan Co., Ltd. (chief executive officer: Shunichi Kito; hereinafter referred to as the “Company”) hereby announces that it approved a business restructuring plan for its 100% subsidiary Solar Frontier K.K. (“SF”) at its management committee held today.

1. Background for the business restructuring

Government efforts toward achieving carbon neutrality in are accelerating. The 6th Basic Energy Plan (draft) also points to expansion of renewable energy, particularly solar power generation. Interpreting this to be an excellent business opportunity, the Company reached the conclusion that it is necessary to evolve into a corporate entity which can respond to broad customer needs relating to solar power generation by leveraging the 40 years of operating experience at SF to the extent possible. We will therefore shift the resources being allocated to research and manufacturing of general-purpose solar power panels, which are currently in the midst of fierce price competition, to growth areas where we can capitalize on the Company and SF’s unique strengths.

2. Challenges in making solar power the primary source of energy to achieve the 6th Basic Energy Plan

We believe that Japan faces 3 major challenges in making solar power its primary source of energy.

(1) Limited space for solar panels

Most land suitable for mega-solar construction is already being used. Furthermore, deforestation and landslides resulting from construction are recently frowned upon due to their negative impact on the environment and scenery of regional societies.

It is therefore necessary to place panels where installation was previously believed to be difficult, in the interest of co-existing with the regional community.

(2) Long-term stable use of solar power plants and disposal of large amounts of solar panels

In Japan, small-scale solar power plants of 500KW or less makes up 40% of total capacity. There are concerns that many are not appropriately maintained and will be shut down at the end of the FIT term. It will become more difficult to secure the necessary renewable energy supply for carbon neutrality in 2050 if power plants are not maintained after FIT.

The warranty period for solar panels is generally 20 years, but can be used for longer periods if periodic plant maintenance is conducted. If problems are detected early and replacements with new solar panels or equipment are made, the plant can continue to be in use regardless of the life span of the solar panels.

Solar panels become industrial waste at the end of their product life, which also presents social issues. A material recycling framework to reduce landfill waste is desirable to resolve the industrial wastes disposal problem.

(3) Impact on stability of supply/demand of power systems

Power companies are suppressing output to avoid a notable impact of increased solar power generation on the stability of the supply/demand balance of power systems.

A framework of co-existence with legacy power systems is required in order to expand solar power use further, as solar power can only be generated during the daytime and is affected by weather conditions.

3. Details of the business restructuring

(1) Evolution into a next-generation systems integrator

SF seeks to evolve into a next-generation systems integrator which can propose specific solutions for the 3 social challenges mentioned above, in order to make solar power the primary source of energy.

■ Power generation systems design / EPC business (installation in as many places as possible)

As there is a shortage of suitable space to install mega-solar panels, we aim for installation in locations where panels could not be placed in the past to prepare society for power generation facilities exceeding 100 GW, which is the target for solar power generation in the 6th Basic Energy Plan (draft). SF provides 1) new construction methods to install panels on deck roofs, which was previously considered difficult due to the high construction costs, at half the cost, 2) new construction methods allowing for installation on existing wave slate roofs without putting on a new roof, and 3) built-in car ports which convert parking spaces into power generators. SF will continue to develop new devices, systems, and construction methods to further expand options for solar power plant installation sites going forward.

■ O&M (Operation & Maintenance) business, plant evaluation/repowering business, solar panel recycling business (for longer use)

The maximum FIT period is 20 years. By appropriately evaluating power generation system status, discovering problems and conducting maintenance including replacement with state-of-the-art modules and devices as needed, power plants and power generation systems can continue to be used regardless of module life span. SF has engaged in the maintenance of numerous power generators from residential generators to large mega-solar generators, through its sales of over 6 GW of solar panels. Leveraging accumulated data and analytical capabilities obtained through quality control and assurance of solar panels including crystal silicon solar as well as CIS thin-film solar, SF will develop and provide services such as O&M, power plant evaluation, and repowering to allow for longer and safer use of power plants.

As power generation performance decreases over the life span of panels, the large amount of expected panel wastes will become an inevitable social problem in the 2030s. SF is currently co-developing low-cost material recycling technology with low environmental burden with NEDO, which is expected to reduce industrial wastes carried to the final disposal site. Efforts to develop new uses for materials, obtain the necessary permits, and formulate the business model are underway so that the solar panel recycling business can be launched during fiscal year 2024.

■ Expansion of the energy management system business based on an optimal combination of solar power generation and distributed energy (for more stable use)

A framework of co-existence with legacy power systems is required for stable power supply, as solar power is available during the daytime and is affected by weather conditions.

The Company and SF are engaging in efforts to control not only solar power generation but also bundles of distributed energy resources to achieve local production and local consumption of power. Specific efforts to develop an energy management system which optimizes power usage include 1) on-site and off-site development of solar power generation systems for home use, 2) power supply through corporate PPAs*, 3) system development combining devices such as EVs and storage batteries in addition to solar power generation and energy demand, and 4) increasing accuracy of generated energy

volume and demand forecasts.

*Power Purchase Agreements

■ Transition from production of general-purpose solar panels to OEM procurement

The Company will transition from in-house production of general-purpose CIS thin-film solar panels to OEM procurement of crystal silicon solar panels. As a result, the Company and SF decided to terminate CIS thin-film solar panel production at Kunitomi Plant (location: Kunitomi-cho, Higashimorokata-gun, Miyazaki) at the end of June 2022.

(2) Research and development of next-generation solar cells

Research and development for CIS thin-film solar cells will be centralized at the Company's Next Generation Technology Research Laboratory to accelerate research and development of next-generation solar cells aimed at adding higher value to CIS. Examples of focus areas include 1) uses in outer space, taking advantage of CIS's strong resilience to radiation and 2) uses for tandem-type solar cells, which are expected to be mounted on moving objects such as electric vehicles and telecom drones.

4. Kunitomi Plant

While Kunitomi Plant will no longer manufacture CIS thin-film solar panels, it will maintain some corporate functions as the Kunitomi Office and serve the following major functions as a key site in SF's transition to a next-generation systems integrator.

- 1) Sales support, quality assurance, and maintenance of solar power generation systems
- 2) Data analyses to evaluate energy management systems and power plants
- 3) Validation and development of energy management systems
- 4) O&M technology development
- 5) Solar panel recycling

Note that some Kunitomi Plant employees will be relocated to other offices within the Idemitsu Group.

5. Future outlook

The impact on the Company's consolidated financial results is negligible.

In the current medium-term management plan, the Company's vision for 2030 is to become a "Your Reliable Partner for Brighter Future" which contributes to Responsibility to protect the environment and lifestyles: in addition to providing stable energy supply. The plan also states that the Company will engage in efforts to achieve an energy/material transition to a recycle-oriented society and carbon neutrality by living up to its "responsibility to protect lifestyles and the Earth."

SF will also implement the restructuring detailed above in order to become a leading next-generation systems integration company.

References information

1. Overview of Solar Frontier KK

Representative: Hiroshi Watanabe, Chief Executive Officer
Core business: Manufacturing and selling of solar panels
Headquarters: Teigeki Bldg., 3-1-1 Marunouchi, Chiyoda-ku, Tokyo 100-0005
Paid-in capital: ¥7 billion (as of march 31, 2021)

2. Overview of Kunitomi Plant

Location: 1815 Tajiri, Kunitomi-cho, Higashimorokata-gun, Miyazaki
Product produced: CIS thin-film solar panels
Production commenced: February 2011
Site area: 400,000 m²