

## Social Systems, Solutions and Service Business (SSB)

### Create a Society Where People Can Experience Happiness at All Times

Managing Executive Officer  
President and CEO OMRON SOCIAL SOLUTIONS Co., Ltd.  
**Katsuhiro Shikata**



— You were appointed the president of the Social Systems, Solutions and Service Business (SSB) this year. What is your vision?

SSB's vision is "Design Next Social Structure – Creating 'Social Good' by Organically Linking People and Society through Social Automation." As we head toward the year 2030, new social issues will emerge, posing a threat to the security, safety, and comfort of our daily lives, such as more frequent natural disasters in view of global warming and an insufficient labor force owing to the declining birthrate and population aging. We are endeavoring to "design" next-generation social systems to create a society where people can experience happiness at all times.

— Net sales for fiscal 2022 were ¥107.3 billion yen. What is your analysis of the factors that enabled SSB to exceed the target for fiscal 2024?

There are two factors. First, despite parts shortage, we ensured the supply of products in response to the growing demand for storage batteries arising from soaring electricity costs in the energy market as well as the increasing need for renewable energy due to the expansion of subsidies. The other is that we captured the demand associated with the recovery of customers' investment in line with the recovery of the number of rail passengers, which had fallen during the COVID-19 pandemic.

— What are SSB's strengths that you would like to develop in order to achieve sustainable growth, and what do you think are the challenges for SSB?

SSB has two strengths. Firstly, we are able to cover the entire business value chain from development to manufacturing, maintenance, and operation. We support social infrastructure throughout Japan with the organizational strength of 130 bases nationwide and approximately 1200 engineers. Secondly, we have gained trust and a high market share through our long history of providing products that support social systems, such as railway public transportation system and traffic and road management system. Many of our products have the first or second largest market

share in their respective fields.

On the other hand, SSB has two challenges. The first is to further strengthen the energy business. The demand for renewable energy is increasing in view of the overriding need to achieve carbon neutrality and the recent hike in electricity costs. We have gained a high market share in PV inverters and storage battery systems, which are indispensable for solar power generation. I believe there is room to further leverage such strength. As the need for renewable energy expands, we will strive to expand our energy business through smart control using energy management systems (EMS) and smart integration of distributed energy resources.

The second is the transformation from "1 solution x 1 market" to "N solutions x N markets." In particular, we will work on "4x4 multilayered value proposition" as the flagship, which involves proposing solutions to four issues in four markets. Our solutions have a high market share and a presence rooted in their respective markets and industries, but the issue is that we are offering only one solution in one market. Therefore, we will work to achieve transformation of our value proposition so that we can offer multiple solutions to multiple markets and industries and customers in a multilayered manner. For example, in the railway market, our solutions are focused on labor saving and manpower saving, such as automation of station ticket gates, support for various transactions (tickets, cards, etc.), and reliable fare collection. Going forward, we will strive to deliver value in a multilayered manner by implementing various strategies that leverage our strengths, such as proposing solutions for energy saving in the railway market. Going beyond resolving on-site issues through the provision of existing equipment and services, we aim to resolve customers' management issues by working together with them, while leveraging the expertise SSB has accumulated.

— To achieve SF2030, SSB is promoting "provision of control systems that stabilize power generation," "management and service systems that support efficient use of on-site systems," and

**“enhancement of operational efficiency of the social infrastructure business.” Can you give us a progress report?**

We have some major achievements to our credit. Regarding provision of control systems that stabilize power generation, the number of connected energy management devices, which is a social value KPI, was 24000 units in fiscal 2022, whereas the target is 50000 units connected by 2024. As of the end of the first quarter of fiscal 2023, the number of connected energy management devices has already reached 43000 units. Moreover, regarding the energy management system (EMS), in January 2023 self-consignment of electricity began from the OMRON Miyazu Solar Panel Plant (Miyazu City, Kyoto) to the Keihanna Technology Innovation Center (Kizugawa City, Kyoto), a business site at a distance of 100 km. Thanks to this EMS control technology, while maximizing the use of renewable energy generated in-house, the Keihanna Technology Innovation Center can satisfy around 30% of its annual electricity demand with the electricity supplied by the power generation facility in Miyazu City. Regarding management and service systems that support efficient use of on-site systems, we have enhanced our integrated maintenance services. In addition to multi-vendor support, which means we accept requests for inspection and repair of products even if they are made by other manufacturers, we have expanded logistics, kitting, and reporting agency services. In February 2023, we launched “assessment & design services” for companies facing challenges in maintenance management and facility operation. Using digital technology, the new services optimize business processes through “business process assessment” and “business process design.” Regarding enhancement of operational efficiency of the social infrastructure business, we have promoted “predictive maintenance,” which involves collecting on-site equipment operating data to grasp equipment conditions, and analyzing and utilizing such data to ensure that the necessary personnel are dispatched to provide maintenance services whenever needed.

Going forward, while continuing initiatives to improve operational efficiency, we will seize business opportunities, such as needs for digitization of tickets, including QR codes in the railway market and needs for labor saving for efficient management and operation of traffic flow in the transportation market.

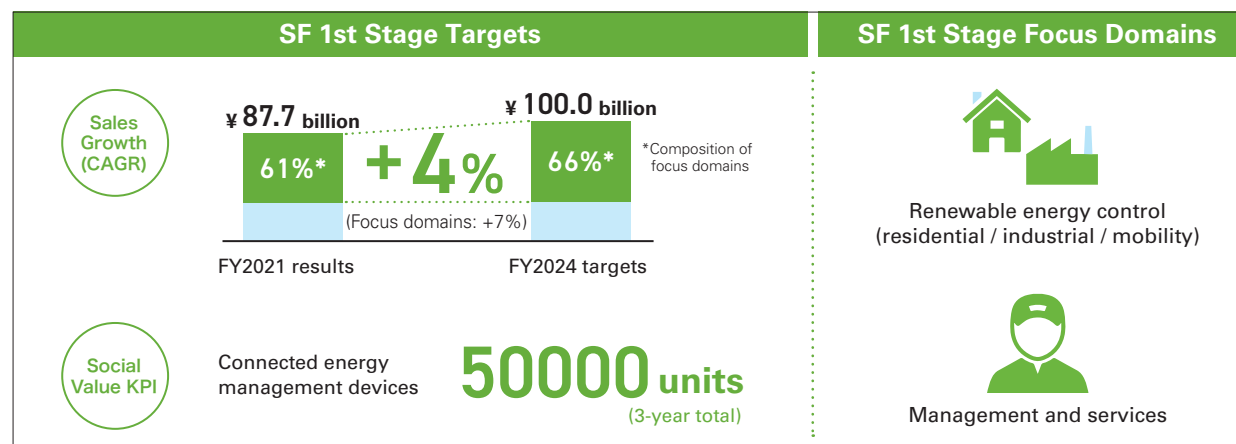
**— Could you speak about SSB’s business plan for fiscal 2023 and prospects for medium- and long-term growth?**

We expect the business environment to be generally firm due to rising demand in the energy business and the recovery of investment in the railway-related business. We have positioned fiscal 2023 as a year to “establish a foundation of sustainable growth” and “further strengthen the revenue base” toward “complete practical application of our strengths” for the medium to long term. In the energy business, our priority focus domain, we will strive to expand provision of distributed energy equipment, such as PV inverters and storage batteries for homes and small stores, and connect them to systems through a network. In the industrial domain, we will expand the introduction of systems combining large storage batteries with EMS, which efficiently manage renewable energy in response to electricity

demand. Need for efficient use of solar and other natural energy will increase in order to increase the ratio of renewable energy. Thus, I think technology to control energy equipment and systems will be important.

**— What are SSB’s competitive advantages in the energy domain?**

We have three competitive advantages in the energy business. Firstly, our grid connection control technology. By connecting solar power generation systems to a power company’s grid, OMRON’s unique control technology ensures stable connection. Even in the case of an increase in the grid, transmission and distribution lines will not become unstable and stable sales of electricity to the power company will be maintained. Secondly, we have the ability to swiftly provide uniform maintenance services anywhere in Japan. Thirdly, the versatility of our PV inverters and storage batteries, which can be linked with products from various manufacturers in a system. This allows for optimal configurations to match the needs of the demand side in terms of usage, performance, cost, etc. We will add “ability to provide services through EMS” to these three competitive advantages to minimize power generation losses and provide long-term stable operation, thus encouraging greater use of renewable energy.



— How do you envision the future of energy management? In what ways do you plan to strengthen the energy business?

Thanks to the advent of storage batteries, renewable energy generated by solar panels can now be efficiently controlled. That energy is portable, as typified by EVs. We expect stable and flexible electricity distribution to become possible by 2030 through integrated control and management of these distributed energy resources. In Japan, it is becoming increasingly difficult to find suitable sites available for installation of solar panels. Maximizing the efficiency of renewable energy use will be the key to achieving carbon neutrality. We will leverage our strength in components, such as PV inverters and storage batteries, and our PPA services for companies, which will increase the ratio of in-house consumption through conclusion of power purchase agreements, as a way to secure a foothold. We will promote initiatives to build an energy business that provides value for various power systems, such as by adjusting the supply-demand balance and avoiding output curtailment of renewable energy sources through EMS-based control, integration, and networking of distributed energy resources. As EMS is a field that will continue to expand, many companies are preparing to enter the market. In these circumstances, we are expanding the range of our EMS services, such as self-consignment of electricity from the OMRON Miyazu Solar Panel Plant and the use of large storage batteries for energy control. In May 2023, we launched a V2X system to enter the field of energy control using EVs, in anticipation of the future mass adoption of EVs.

— What is your view of transformation for growth?

Pursuing what we call “4+1+1 transformation,” we will work on four transformations in terms of business and one each in terms of human resources and organizational culture. For business, firstly, we are pursuing transformation from “1 solution x 1 market” to “N solutions x N markets,” which I mentioned earlier is a challenge. Secondly, transformation to the

“essential value perspective.” In addition to providing value targeting customers’ current issues, i.e. “on-site x short-term” issues, we will work to create value for future issues, i.e. issues related to “management and industry x mid-term” from the essential value perspective. Thirdly, creation of a recurring revenue model. By increasing the ratio of recurring revenue business for which multi-year contracts and future revenue can be expected, we will shift from providing value in a single year to providing value over the medium to long-term. Fourthly, transformation to a “solution cycle.” This involves transformation of our position from an outsider, that is, one who listens to customers’ explanations of their on-site issues and provides value targeting certain functions (implementation, operation), to an insider who identifies business issues together with customers and provides value targeting every phase of their operations (planning, implementation, operation, improvement). Regarding human resources, we are aiming to “develop human resources who will play a key role in creating businesses from the essential value perspective and in achieving recurring revenue,” SSB has defined four model human resources: producers who can create business that will drive growth from the essential value perspective; influencers for maintaining and strengthening OMRON’s influence and position in the industry; experts with specialized skills necessary for business continuity, enhancement, and evolution; and management for maximization of organizational results. SSB is currently developing all these human resources. Regarding the organizational culture, we aim to create an organization where management and all employees enhance one another through interactive relationships, rather than a top-down or bottom-up approach of one-way relationships between management and employees.

— What is your view of the current revenue structure?

In terms of ROIC, we aim to increase both return on sales and invested capital turnover by increasing the ratio of subscription-based business (recurring

revenue). At the same time, in order to maintain and improve ROIC, we will increase investment in assets that generate higher returns. For the Miyazu power plant that I mentioned earlier, we adopted a PPA\* business model: we leased the land, invested in construction of the power plant, including installation of solar panels and storage batteries, and are recouping our investment by selling the generated renewable energy to OMRON.

\*PPA: Power Purchase Agreement in which a business leases the roof or idle land of a site owned by a company or municipality and installs power generation equipment free of charge, and the company or municipality uses the electricity generated at the site and pays a service fee for the electricity consumed to the business.

— How does SSB practice and promote high cycle management?

We are applying high cycle management in the “4x4 multilayered value proposition” initiative, which I mentioned earlier. When working to resolve issues at the customer’s frontline, we simultaneously propose the various solutions that SSB can offer. Then, decision-making among top management will accelerate the prioritization of proposals, trial implementation, and decisions as to which proposals should be pursued. High cycle management is becoming entrenched at each workplace. I see that more and more people are engaged in high cycle management. They are considering and discussing how best it can be applied in their work.

— On becoming president, you made a promise to your employees, didn’t you?

I promised to cultivate an organizational culture in which employees can bring their capabilities into full play based on a high level of psychological safety, and then to build an organization equipped with outstanding execution capabilities and competitiveness based on that culture. Such an organization allows employees to speak up and challenge higher goals while respecting one another’s diversity. I am convinced that a flat culture with a supportive atmosphere will lead to high execution capabilities and greater competitiveness.

**Case 1**

**Utilizing Self-Consignment System to Accelerate the Introduction of Renewable Energy**

OMRON announced its medium- to long-term environmental target, OMRON Carbon Zero, with the goal of reducing Scope 1 and 2\* greenhouse gas (GHG) emissions to zero by 2050. To achieve this goal, we are working to achieve zero GHG emissions at all 76 sites in Japan. OMRON FIELD ENGINEERING Co., Ltd. (OFE), a member of the OMRON Group, which provides engineering, field service, and operation management services to customers nationwide, is participating in a project to introduce renewable energy at sites in Japan in furtherance of the OMRON Group's carbon zero initiatives.

In order to continue business activities while reducing GHG emissions, it is vital to utilize electricity generated from renewable energy sources at solar power plants. However, it is difficult to find sufficient space for such a facility at offices in urban areas. Meanwhile, if we turn our eyes to more rural areas, we can still find spaces large enough for installation of power generation facilities. OFE has come up with the idea of supplying electricity from renewable energy sources in rural areas via "self-consignment." Self-consignment is a scheme that allows companies to transmit electricity generated at their own facility at a remote location to their own factories and offices through the transmission/distribution network. There are only a few examples of self-consignment in Japan so far. By taking advantage of this scheme, OFE has realized supply of power to OMRON's R&D base, Keihanna Technology Innovation Center, from the OMRON Miyazu Solar Panel Plant (Miyazu City, Kyoto), located at a distance of approximately 100 km. As a result, approximately 670 MWh of electricity per annum, which accounts for around 30% of the electric power consumed at the site, will be supplied from a remote location, enabling a reduction of approximately 200 tons of GHG emissions per year. The biggest challenge for enabling self-consignment

was "keeping energy production equal to energy demand (balancing)." To stabilize power transmission and distribution networks, self-consignment service providers are required to submit their prediction of the power generation volume and consumption volume to electric power companies beforehand and ensure that the planned value coincides with the actual value, a process demanding high-precision energy management. To achieve this precise control, OFE introduced an original energy management system (EMS) using large storage batteries. The EMS predicts the power generation volume with a unique algorithm that incorporates meteorological data from the Japan Meteorological Agency and private weather information services and past power generation data, as well as know-how gained from the experience of working with over 2000 power generation facilities. By controlling energy based on these predictions, OFE developed a system that minimizes errors between planned and actual values by charging storage batteries when the power generation volume exceeds the planned value and discharging when it is below. Many Japanese companies are introducing facilities generating electricity from renewable energy sources as they endeavor to achieve carbon neutrality by 2050, giving rise to high expectations for the use of self-consignment schemes. OFE will continue to take on the challenge of adopting such a new scheme and developing the related technologies so as to contribute to the achievement of carbon neutrality.

\* Scope 1: Direct GHG emissions from the company's use of fuels  
 Scope 2: Indirect GHG emissions from the use of electricity/heat purchased by the company  
 Scope 3: GHG emissions from the company's value chain

Energy Management HQ  
 OMRON FIELD ENGINEERING Co., Ltd.  
**Noriaki Hayakawa**



**Employee Comments**

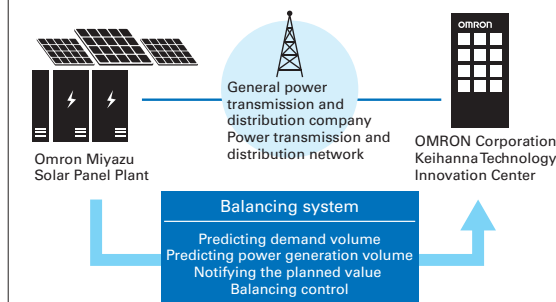
Keihanna Technology Innovation Center has been working to reduce GHG emissions, centering on Scope 2, to achieve OMRON Carbon Zero. However, the use of renewable energy relevant to Scope 2 was limited to a small amount of electricity generated by a solar power generation system at the Center, and there was no prospect for further progress. In these circumstances, the adoption of "electricity supply via self-consignment" that OFE is promoting has led to significant progress in the introduction of renewable energy. Following the start of the operation of the power generation facility, approximately 30% of the electricity consumed at the Center in the first quarter of fiscal 2023 was covered by electricity supplied via self-consignment and solar power generation at the Center, contributing significantly to the reduction of GHG emissions. Going forward, we will promote energy saving by upgrading to energy-efficient facilities and contribute to the carbon neutrality of society through our R&D outcomes.

Renewable Energy Introduction  
 Project member  
 OMRON Keihanna Technology  
 Innovation Center

**Kenichi Nishikawa**



**Self-consignment system linking power generation facilities in remote locations with business sites**



**Case 2** **Creating New Services with OMRON Product Users**

Companies are working to decarbonize their operations in order to achieve a carbon neutral society by 2050. However, since many companies are finding it difficult to achieve their goals through energy conservation and the introduction of renewable energy alone, decarbonization is a major challenge for management. On the other hand, electricity generated at home and consumed at home has been overlooked instead of being recognized as something that could fulfill a significant role in reducing CO<sub>2</sub> emissions. In January 2022, OMRON SOCIAL SOLUTIONS (OSS) launched a new service, “Our Eco Life Circle,” to leverage the environmental value inherent in this electricity. This service covers users of solar power generation and storage systems provided by OSS. OSS collects data on self-consumption of power generated by solar power systems at the homes of the users of this service and converts it into environmental value credits, utilizing the J-Credit Scheme\*, a global warming countermeasure of the Japanese government. Credits can be reported as the amount of renewable energy procured through initiatives such as RE100 and SBT, and companies can promote environmental management by utilizing the credits to make up for the portion they cannot achieve by energy saving and energy generation efforts. Users of this service will also receive points that can be exchanged for various types of electronic money and gifts according to the amount of self-consumption. NTT SMILE ENERGY, Inc. (NTTSE), which provides remote monitoring services for solar power generation, operates this point reward service. NTTSE does not simply reward users with points, but also utilizes its expertise in promoting interest and concern for the environment in order to encourage users to become

more environmentally aware. As a result, users not only experience an environmentally friendly lifestyle based on renewable energy, but also have a stronger sense that their actions at home are connected to the realization of a carbon-neutral society. A society that aims for carbon neutrality, users who are the driving force of society, and OMRON and its partners are connected in a virtuous circle to create a better society. This concept is reflected in the name of our service. Since its launch in January 2022, the service has been well received and currently has over 15,000 users. Our target is to collect 36 GWh of self-consumption of solar power generated as environmental value in three years from the launch of the service. As of August 2023, the amount had reached 25 GWh, far exceeding the plan, and has already reduced emissions by 11,000 tons of CO<sub>2</sub> equivalent. With OMRON Carbon Zero as its long-term vision, OMRON is working to decarbonize all its 76 sites in Japan. In fiscal 2022, with the addition of energy generation and energy saving at each site, five sites achieved carbon zero by utilizing this service. Through the service, OSS will fulfill its social responsibility as a company that promotes carbon neutrality and decarbonization, and contribute to the creation of a sustainable society.

\* J-Credit Scheme: Under this scheme, the Japanese government certifies the amount of emission reductions and absorption of CO<sub>2</sub> and other greenhouse gases through initiatives such as introduction of energy-saving equipment and forest management as “credits.”

Emergent Strategy Dept., Energy Solutions  
Business HQ  
OMRON SOCIAL SOLUTIONS Co., Ltd.

**Shoko Kambayashi**



**Comments from Our Partner**

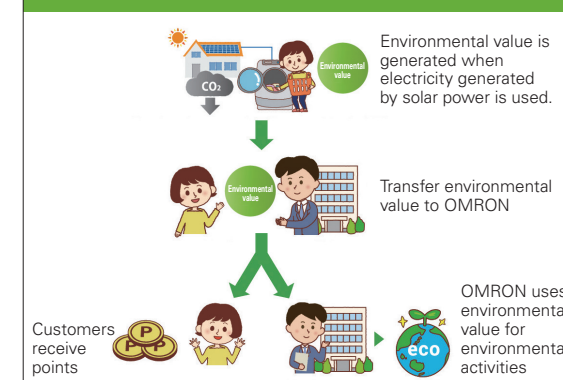
OSS and NTTSE have collaborated on sales of PV inverters, storage batteries, and other products, but there have been no cases of collaboration on business development. In the renewable energy industry, where a sense of speed is required, business development through collaboration is indispensable, and I am pleased that NTTSE was able to contribute with its speedy development capabilities and create an exemplary case study. The business in which customers are rewarded for environmental value is a precursor of the virtual power plant (VPP) business that will take off in the coming years. This is a new challenge for OSS, which aims to evolve from a manufacturer to a service provider, effectively utilizing users’ resources and promoting carbon neutrality and decarbonization together with users. We at NTTSE are also taking on this challenge together with OSS so as to achieve business expansion of the two companies.

Business Development Department  
NTT SMILE ENERGY, Inc.

**Keiichiro Umeda**



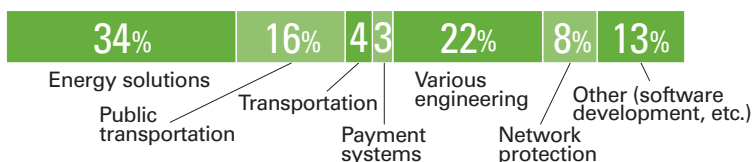
**How Our Eco Life Circle Works**



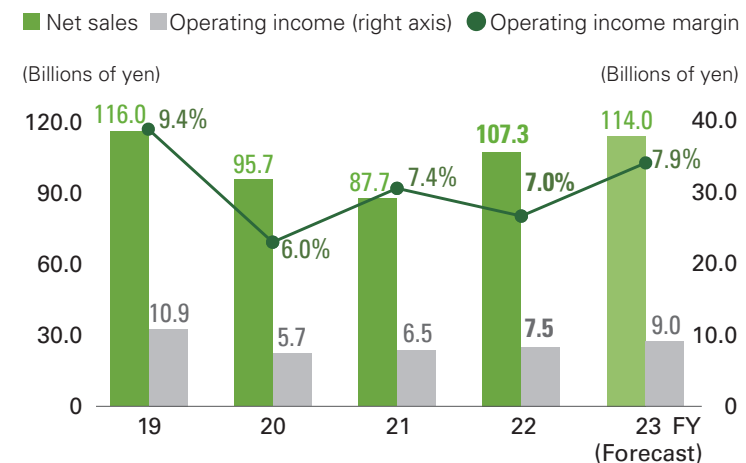
### Sales Composition by Business Domains



### Sales Composition by Product



### Net Sales / Operating Income / Operating Income Margin



## INPUT      OUTPUT      OUTCOME

- R&D cost: ¥3.5 billion (results for fiscal 2022)
- Capital expenditure: ¥3.4 billion (results for fiscal 2022)
- Started verification experiment of robotics, mobility, and building facility coordination service to save labor by introducing robots (September 2022)
- New entry into energy solution business for electric vehicles (EVs and PHEVs), launch of EV charging control service (November 2022) and V2X system (May 2023)
- Launched “assessment & design services” for management of maintenance and operation of chain stores, etc. (February 2023)
- Launched PPA services for companies and municipalities for on-site solar power generation and storage (April 2023)
- Launched storage battery remote control service for retail electric power companies (September 2023)

\*V2X (Vehicle to X): Technology that collectively refers to the connection or interconnection of an electric vehicle with something (X)  
\*PPA: Power Purchase Agreement, Power Purchase Agreement using the third-party model

- Net sales: ¥107.3 billion yen (+22.3% YoY)
- Operating income: ¥7.5 billion (+15.1% YoY)
- Connected energy management devices: 24000 units
- Cumulative shipped capacity of solar power systems: 11.3 GW
- Cumulative shipped capacity of storage battery systems: 1.1 GWh
- Cumulative total of certified credits through carbon offset services utilizing J-Credit Scheme: 25 GWh (as of August 2023)
- Started operation of “meemo,” a community-based MaaS, in Maizuru City, Kyoto (June 2022)
- Started operation of “self-consignment” of electricity generated by renewable energy sources for sites in Japan (January 2023)

- Contributed to realization of a better society in which people around the world can continue to live in a safer, more secure and comfortable society by expanding renewable energy and providing people-friendly next-generation systems

