Creation of Social Value in Key Business Sectors

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OVERVIEW: Based on a corporate mission that it has pursued since its formation, Hitachi has sought to operate its businesses in ways that make a broad-based contribution to society. The embodiment of this corporate mission in the present era is Hitachi's core Social Innovation Business through which it is working to overcome the challenges faced by Japan and other countries or regions and to realize a sustainable society. Hitachi's aim for the future is to operate its businesses globally to create new social value through the construction of social infrastructure and the solution of problems.

INTRODUCTION

AS economic activity becomes increasingly global, the nations and regions of the world are facing a variety of challenges, including global warming due to climate change, rapid urbanization in emerging economies, and aging populations and falling birthrates in developed economies. Hitachi operates its Social Innovation Business globally. In addition to corporate profitability (economic value), it is seeking to create new social value by helping overcome these challenges.

This article gives an overview of Hitachi's Social Innovation Business and describes some major examples of solutions that deliver social value in the water, smart grid, and mobility sectors.

SOCIAL INNOVATION BUSINESS

Overview

Hitachi's Social Innovation Business is based on its Mission "contributing to society through the development of superior, original technology and products" that dates back to the company's formation. This mission has been handed down for more than 100 years, and Hitachi's Social Innovation Business is all about continuing to put this mission into practice in the future.

Japan and other countries around the world face a variety of social problems in areas like the environment, energy, education, and healthcare, creating a need to help resolve the problems that challenge these countries and regions and thereby put global society onto a sustainable basis. It is for this reason that Hitachi is pursuing its Social Innovation Business that combines products, services, and information technology (IT) (including the cloud) to deliver all-encompassing solutions.

To provide the products and services that these nations and regions genuinely need, it is important to have an accurate understanding, including of their markets, economic circumstances, and culture, and to be able to adapt to these flexibly. In addition to locally based management, this requires an active approach to globalization through measures such as the building of partnerships.

Key Technologies

The key technologies in Hitachi's Social Innovation Business are water, mobility, elevators and escalators, IT, smart grids, healthcare, construction machinery, materials, and key devices. The following sections describe each of these in turn.

(1) Water

The water sector will become increasingly important around the world in the future due to the need to make effective use of precious water resources, including water treatment and improving the efficiency of water distribution. With its extensive water-related technology, Hitachi has supplied numerous water treatment, sewage, and other water related systems, including monitoring and control systems, to sites around the world. Its aim is to help improve the world's water environment by combining this know-how with advanced IT to implement more advanced intelligent water systems.

(2) Mobility

Transportation infrastructure continues to play an important role, both in the increasingly urbanized emerging economies and in developed economies where the concerns are about things like disaster resilience and the aging of infrastructure. Hitachi delivers solutions that provide total support for railway systems, extending from the design and manufacture

of rolling stock to traffic management, maintenance, and travel and other information services. As a total systems integrator for mobility, Hitachi is working to build the next generation of transportation infrastructure, including developing technology for electric vehicles (EVs) to provide a transportation environment that gives greater consideration to the natural environment.

(3) Elevators and escalators

The primary role of the elevator and escalator business is to create a convenient environment in which people can move from place to place in safety and comfort. In addition to seeking to deliver functions and other design features that suit specific facilities such as office buildings, hospitals, or railway stations, Hitachi also provides a variety of functions and services in response to social needs, such as greater security and higher energy efficiency. Hitachi also takes a global approach to development, including the research and development of large capacity elevators that operate at very high speeds for use in the world's large high-rise buildings.

(4) IT

Hitachi sees IT as having an essential role underpinning social infrastructure. Specifically, its activities include research and development in technologies such as big data, cloud computing, storage, next-generation networks, radio-frequency identification (RFID), and also the fusion and integration of these technologies with social infrastructure and other services with the aim of creating a sustainable society that is safe and comfortable.

(5) Smart grids

Smart grids have an important part to play in the realization of a low-carbon society. The use of IT to control the balance between suppliers and consumers is essential to ensuring a reliable supply of electric power while also making efficient use of renewable forms of energy that are anticipated to enter wider use in the future. Hitachi develops and supplies smart grid systems by drawing on its distinctive capabilities that arise from its diverse range of technologies, including the communication and control technologies needed to maintain the stability of power systems.

(6) Healthcare

The rise of social issues such as the aging population and an increase in lifestyle diseases make healthcare an important sector. Hitachi sees healthcare as an essential part of the infrastructure. By utilizing its comprehensive strengths in technology development and in the supply of relevant systems, solutions, and services, it seeks to help create a society in which everyone can enjoy a healthy and secure way of life.

(7) Construction machinery

The construction machinery sector, which has been experiencing ongoing growth against a background of economic development in emerging markets, has an urgent need for environmental measures. Specifically, this means complying with the increasingly severe exhaust emission regulations being adopted in developed economies, and improving energy efficiency to help prevent global warming. Hitachi is actively working on the development of new construction machines that combine performance enhancements with environmental features through a diverse mix of technologies, including electric drive and control techniques.

(8) Materials and key devices

Hitachi's Social Innovation Business is made up of systems from fields that fuse IT with social infrastructure, and also the materials and key devices that help make these systems more sophisticated and competitive. Hitachi supplies materials and key devices that deliver high performance and efficiency to meet the needs of society, while also researching and developing materials such as amorphous metals and rare earth magnets, and key devices such as electric motors, inverters, and lithium-ion batteries.

RECENT EXAMPLES

Among the technologies used in the Social Innovation Business described above, water, smart grids, and mobility lie at the core of the smart city business to which Hitachi is devoting considerable effort. This section describes solutions in these fields that help create social value.

Water

One notable example from the water sector is a seawater desalination project in the Indian state of Gujarat (see Fig. 1). The project involves the construction of a seawater desalination plant at an industrial complex in the Dahej Special Economic Zone (SEZ) in Gujarat and is intended to provide a reliable supply of water for industrial use over a 30 year period.

Having experienced strong economic growth in recent years, India faces concerns about increasingly severe water shortages due to greater industrialization. This has created an expectation of growing demand for water recycling and for seawater desalination in coastal regions. Hitachi has formed a consortium

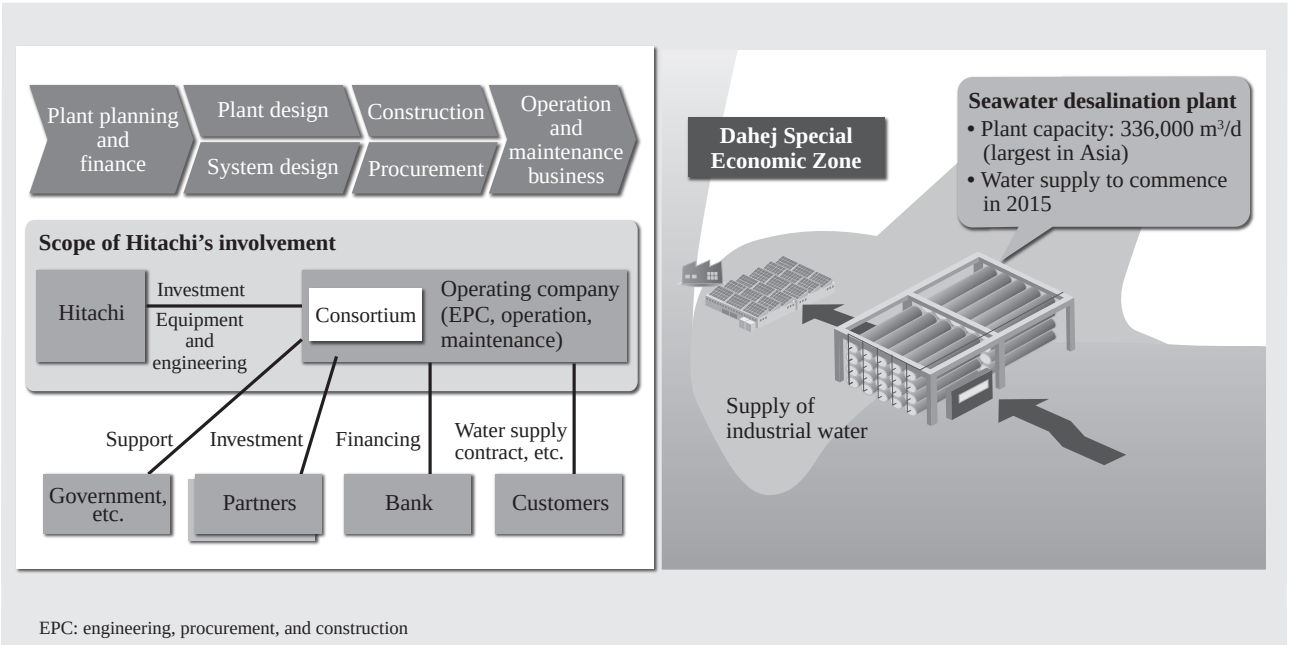
comprising a Japanese company and Hyflux Ltd., a large Singaporean water treatment company, and has been studying the potential for the business as part of the "FY2010 Infrastructure System Export Promotion Study Project (Feasibility Study of Smart Community Business in Global Markets)" project of Japan's Ministry of Economy, Trade and Industry that is targeted at the construction of energy-efficient and low-carbon smart communities. A water supply contract was signed with Dahej SEZ Ltd. in January 2013, including agreement on the volume of water to be supplied (336,000 m^3/d), contract duration (30 years, including construction), and pricing.

The project is proceeding as part of the Delhi-Mumbai Industrial Corridor Project, a joint venture between the governments of Japan and India for utilizing private investment to establish industrial sites along the approximately 1,500 km between Delhi and Mumbai. It is seen as a project that will facilitate the effective use of water resources in India. Hitachi intends to continue its discussions with Dahej SEZ Ltd., including working through the environmental assessment and consenting process, with a goal of reaching a final agreement.

Smart Grids

Hitachi is working on a number of projects in Japan aimed at the development of smart cities, and is also actively involved in this field elsewhere. One example is the Japan-U.S. Island Grid Project (see Fig. 2). The project is being undertaken by the New Energy and Industrial Technology Development Organization (NEDO) based on a technical collaboration between Japan and the USA on clean energy, with Hitachi having been contracted to run a demonstration project until the end of FY2014 on the Hawaiian island of Maui in collaboration with the state of Hawaii, the Hawaiian Electric Company, Inc., the University of Hawaii, a US National Laboratory, and other partners.

Maui is installing renewable energy, primarily wind power, with the objective of replacing 40% of the total power generation capacity on the island by 2030. However, because Maui is a remote island where the cost of electric power is comparatively high, and because renewable energy is influenced by the weather, there is a need to use energy as efficiently as possible. There are also issues such as variations in the output of renewable energy influencing the frequency and causing problems with grid voltages. The demonstration project will seek to minimize these problems as it works toward the target of 40% renewable energy. The project will utilize EVs and construct a smart grid that incorporates advanced technologies that have been developed over time, including distribution grid control, consumer load control, and EV operation and charging control. It will also investigate the results of deploying these technologies.



EPC: engineering, procurement, and construction

Fig. 1—Seawater Desalination Project in Indian State of Gujarat.
This seawater desalination project is located in the Dahej Special Economic Zone in Gujarat.

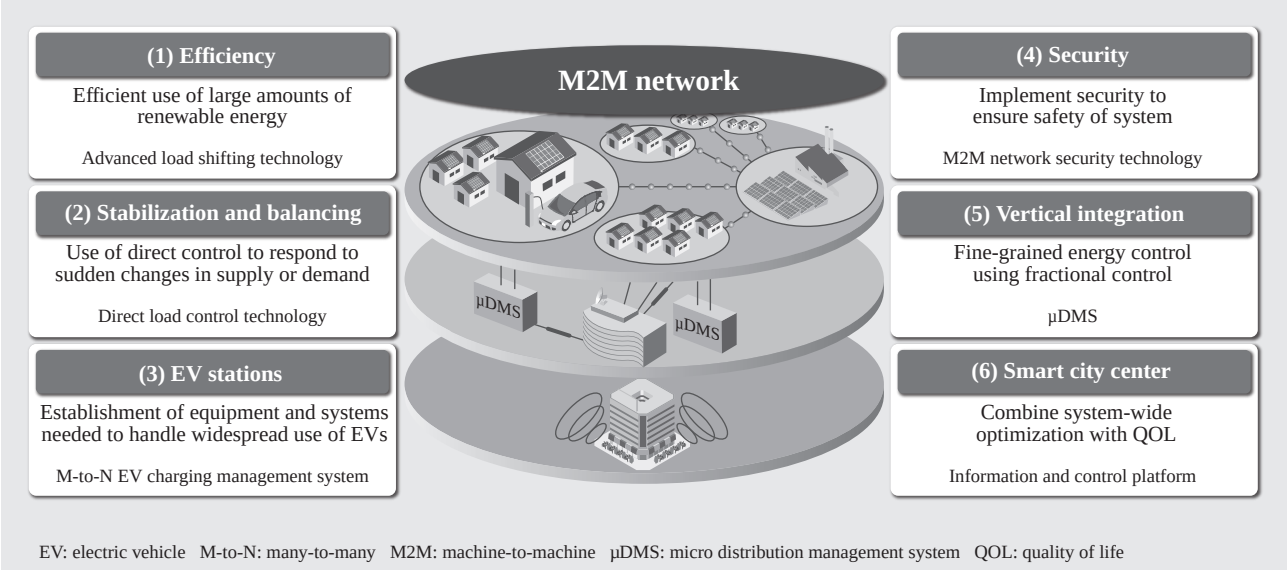


Fig.2—Hitachi's Involvement in Japan-U.S. Island Grid Project in Maui, Hawaii.
This demonstration project will showcase six advanced initiatives being pursued by Hitachi.

Hitachi will also conduct an economic assessment of the results of the demonstration project with a view to deploying the business in other areas by establishing business models for low-carbon society systems on remote islands.

Mobility

While Hitachi operates its transportation infrastructure business globally, one project that has attracted considerable attention in Japan and elsewhere is its successful bid for the UK Intercity Express Programme (IEP), a major project for the replacement of aging express trains. The final contract was signed in July 2012. The project involves the leasing of rolling stock for the East Coast Main Line and Great Western Main Line in the UK, and includes the manufacture of 596 cars and a 30-year maintenance contract (see Fig. 3).

The factors behind this success include the strong reputation in the UK of Hitachi's Class 395 trains, which were used for shuttle services at the London Olympics. Because the UK standards for rolling stock are different from those in Japan, it was not possible simply to export Japanese rolling stock and railway systems unmodified. The high-speed Class 395 trains that run between London and the Channel Tunnel comply with European standards for safety and other requirements, and they have achieved high reliability and contributed to trouble-free operation since commercial operations formally commenced in December 2009. The IEP project also included research and development work aimed at resolving issues specific to Europe. Hitachi has taken steps to establish itself in the UK, including the recruitment of local staff to ensure that it accurately understands and conforms to the railway market and culture in that country.

For the future, Hitachi is preparing itself for the commencement of IEP operation in 2017 through initiatives that include establishing a rolling stock production facility at Newton Aycliffe in County Durham in the UK, and also a research and development organization and maintenance facilities.

CONCLUSIONS

This article has given an overview of Hitachi's Social Innovation Business and described some major

Fig. 3—Intercity Express Programme Train for UK (Computer-generated Image).
The project includes the manufacture of 596 cars and a 30-year maintenance contract.

examples of solutions that deliver social value in the water, smart grid, and mobility sectors.

Hitachi utilizes the technology and the know-how it has built up in the past and brings together capabilities from across the group to operate its various Social Innovation Businesses on a global basis. These initiatives result in the creation of new value that leads innovation in the wider world, and can help build safe and secure societies.

ABOUT THE AUTHORS

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