

Feature: Four Focus Business Domains

An Innovation Partner for the IoT Era

Accelerating the Pace of Collaborative Creation with Customers in the Ever-Evolving Social Innovation Business

Four Focus Business Domains



Power/Energy

Main Products and Services

- Nuclear power generation systems
- Renewable energy power generation systems
- Transmission & distribution systems

Industry/Distribution/Water

Main Products and Services

- Manufacturing and logistics systems
- Water treatment systems
- Industrial machinery

Urban

Main Products and Services

- Elevators/Escalators
- Railway systems
- Automotive parts
- Air-conditioning equipment/ Consumer electronics

Finance/Social/Healthcare

Main Products and Services

- Systems for financial institutions
- IT systems for social infrastructure operators (power, transportation, other)
- Systems for public authorities
- Medical equipment and systems

Power/Energy

In the Power/Energy domain, leveraging Hitachi's strengths in operational technology (OT), IT, and products, we provide power generation systems, transmission & distribution systems, and other solutions to a diverse range of customers across the energy value chain spanning production, distribution, and consumption. We are achieving social innovation by tackling issues in the constantly changing energy market, based on applying our extensive knowledge and advanced technology.

Kamisu Offshore Wind Farm No. 1
Wind Power Ibaraki Co., Ltd.

Future Growth Drivers of the Business

Wind Turbines

Wind turbines are an excellent source of renewable energy that provide a solution to resource depletion and global warming, while also supplying energy to local or regional areas in ways that meet community needs and help realize a recycling-based sustainable society. Hitachi's downwind turbines are designed for harsh weather conditions with frequent bouts of high wind. They capture upward-blowing winds efficiently, and can also operate safely if a typhoon or storm causes a local blackout by switching to a free-yaw mode of operation to reduce wind load. Hitachi has supplied many turbines for wind farms in Japan. In 2018, based on this track record, we received an order to supply wind turbines for an offshore wind farm in Taiwan. Going forward, we will strive to meet customer needs by developing total solutions that use grid interconnection technology to distribute wind power in combination with high value-added maintenance services utilizing IoT.



Fukashiba Wind Power Station in Kashima Port
Hitachi Wind Power Ltd.

Nuclear Power Plants (ABWR*)

The major advantage of nuclear power systems is lower environmental impact. Compared with fossil fuels, they can generate huge quantities of power safely from limited resources with substantially lower emissions of carbon dioxide, a significant factor in global warming. Hitachi was the main contractor in the construction of Chugoku Electric Power's Shimane Nuclear Power Station Unit 1, which began operating in 1974. It was the first commercial nuclear power system built entirely in Japan. As one of the world's leading manufacturers of nuclear power equipment, today we are involved in efforts to restart nuclear power plants in Japan based on new safety standards and in the reactor decommissioning program in Fukushima Prefecture.



Shimane Nuclear Power Station
(Unit 3, under construction)
The Chugoku Electric Power Co., Inc.

Overseas, we are involved in a project to build a new nuclear power station in the UK. Hitachi aims to make a broad contribution to realizing a safe and sustainable society through the maintenance and development of nuclear technology.

* ABWR: Advanced Boiling Water Reactor

Executive Vice President's Message

Market-related Issues

As we work towards realizing a sustainable society, global markets for power and energy are undergoing a major transformation due to the “three Ds” of decarbonization, decentralization, and digitalization. For widespread adoption of wind power and other renewables as sources of base load power, we not only require systems that can cope with harsh natural conditions, but it is also essential to develop resilient power transmission and distribution infrastructure so that power generated from renewable sources can be delivered efficiently and reliably to residential and corporate users. Nuclear energy can generate large quantities of power with minimal environmental impact, irrespective of the weather. Provided we pay more attention to the safety aspects, we believe it has the potential to be a major future source of base load power in many parts of the world.

Recently, we have also seen moves to apply cutting-edge digital technology to facilitate more advanced maintenance and management of power generation systems. Decentralization is an important emerging trend, with regions taking advantage of local characteristics to develop distributed energy resources that generate power efficiently for local consumption as part of creating a recycling-based sustainable society.

Where Hitachi Is Focusing

With over a century of experience in delivering world-class products, services, and solutions, Hitachi is contributing to industrial development and the realization of a sustainable society through the supply of low-emission and zero-emission power generation systems. To this end, we are looking to generate high returns as market leader by investing aggressively in growth sectors such as the non-carbon energy solutions business.

In the renewable energy sector, we aim to expand our wind turbines business globally, while also developing total solutions to deliver reliable power from the bulk power network to residential and other users at the edge of the grid. We are also applying IoT, data analytics, and other digital technology to develop innovative systems, including virtual power plants* to support state-of-the-art power generation as well as more advanced facilities maintenance systems. Mixed energy distribution solutions that can integrate decentralized power sources with a large-scale power grid are another major focus for us.

In the nuclear energy sector, our primary emphasis is on fulfilling our social responsibility as a manufacturer of nuclear power equipment through our engagement in domestic initiatives. These include efforts to modify existing nuclear power plants to meet new safety standards ahead of restarts, and an active role in the decommissioning of reactors at the Fukushima Daiichi



Toshikazu Nishino

Executive Vice President and Executive Officer

Nuclear Power Station for Tokyo Electric Power Company Holdings, based on the lessons learned from the Great East Japan Earthquake. Overseas, in the UK, we are assessing the economic rationality as a private company for a project that involves the construction of a new nuclear power station, amid ongoing discussions with the British government.

Our Future Mission and Role

A reliable supply of uninterrupted power is essential to the lifestyles and safety of consumers living in our modern, highly urbanized society. At Hitachi, we are committed to promoting collaborative creation with a range of customers across the energy value chain that can support reliable supplies of eco-friendly energy for the safety and peace of mind of users. We are also striving to provide new value through the utilization of digital technology.

The Creation of Social Value

Finding ways to ensure the reliable and efficient supply of the energy essential to modern society while minimizing environmental impact is vital to an affluent and sustainable future. We aim to contribute to industrial development and the realization of a sustainable society by developing power generation systems to exploit renewables and other zero-emission energy sources, along with innovative solutions to support efficient on-demand supplies of energy.

* A virtual power plant (VPP) is a technical solution for balancing power supply and demand. It uses energy management technology utilizing IoT to aggregate distributed energy resources such as storage batteries or power generation systems operated by households or factories, controlling the energy generated from these sources remotely to integrate them in a way that functionally emulates a power plant.

SDG Focus



Industry/Distribution/Water

In this domain covering the Social Infrastructure & Industrial Systems segment, Hitachi develops products and services such as industry/distribution solutions, water solutions, and industrial equipment. With a 108-year manufacturing history since Hitachi was founded in 1910, we can supply everything from products for the manufacturing workplace to control systems for facilities and business support IT systems. Our goal is to be the best solution partner for customers throughout industries worldwide.

Future Growth Drivers of the Business

Smart Manufacturing Solutions

Utilizing Lumada, our smart manufacturing solutions help customers in various manufacturing industries to increase production efficiency, automate production, develop more reliable quality, transfer skills, or address other production-related issues. Solution development often utilizes the high-efficiency production model established at the Omika Works, or systems are developed in collaborative creation with customers. We offer a wide range of solutions, from manufacturing site visualization and predictive equipment failure detection systems to debottlenecking support and production planning optimization. Reforming the manufacturing workplace using digital technology helps our customers become more competitive.



Monitoring System for the Progress and Operational Status developed in collaborative creation with Okuma Corporation

Generating Post-acquisition Synergies with Sullair

In 2017, Hitachi acquired Sullair, a manufacturer of air compressors with operations in North America, China, and other countries. This move strengthened Hitachi's global air compressor business. Air compressors are an important source of power for various types of equipment used in factories, and this market is expected to grow in the future. The combination of the Sullair sales network with a range of products that incorporate Hitachi's high-level technical expertise in this field promises to help us expand this business globally. The acquisition will also support global expansion of Hitachi's overall business in the Industry/Distribution/Water domain by affording opportunities to supply Sullair customers with marking systems and other industrial equipment, as well as air compressors and digital solutions.



Town hall meeting at US factory of Sullair

Executive Vice President's Message

Market-related Issues

In the Industry/Distribution/Water domain, we supply products, systems, and services to a wide range of customers, mostly manufacturers but also firms in the retail and transport sectors.

Today, to tackle challenges such as declining working-age populations, increased workforce diversity, and supply chain globalization, manufacturers in Japan and other countries are looking to address urgent issues such as making operations more efficient or labor-saving, or ensuring the transfer of technical know-how. Faced with climate change, water shortages and other issues, reducing the environmental impact of operations is also of increasing concern. These structural shifts within industry and social issues are leading customers to focus not only on our tangible products, but also on intangible aspects such as the value that Hitachi can add to their business.

Where Hitachi Is Focusing

In this domain, Hitachi can supply everything from industrial equipment for the manufacturing workplace (Products) to facility control systems (Operational Technology, OT) and IT systems to manage operations. Our aim is to be the best solution partner for customers based on our ability to supply the total package of products, OT, and IT.

We have begun offering smart manufacturing solutions that use Lumada, based on systems we have developed in collaborative creation with Daicel Corporation, Okuma Corporation, Daikin Industries and other customers for tackling manufacturing challenges such as increasing production efficiency or transferring technical know-how. We are reinforcing our lineup by developing unique products that incorporate amorphous motors with world-class efficiency. Our vision is to offer the best solutions to customers by understanding their issues based on Hitachi's more than a century of manufacturing heritage, and by developing value-added combinations of products, OT, and IT.

Our Future Mission and Role

My objective is to scale up the business significantly through closer links between the various divisions that I lead. Including Group companies, the Industry/Distribution/Water domain spans different industrial sectors and customer bases of differing size. Starting from the systems and products offered by each of these companies, we are expanding the business by providing



Masakazu Aoki

Executive Vice President and Executive Officer

fully integrated Hitachi total solutions and services aimed at raising production efficiency or developing more sophisticated operations. Hitachi's acquisition in 2017 of the Sullair-branded air compressor business has also secured us new customer channels in North America and China. Our customers in the industry domain face the same issues worldwide. Leveraging our experience in Japan and Hitachi's strengths in products (manufacturing and production technology), OT (control/operational technology), and IT (technologies for data analysis and processing), we will develop the Social Innovation Business using our digital technology through approaches to a broad range of customers around the world.

The Creation of Social Value

Solving issues for customers also helps to achieve the SDGs. We will contribute to realizing a sustainable society in which people can enjoy dynamic and comfortable lives worldwide through the supply of systems with low environmental impact and energy-saving products.

SDG Focus



Urban

The Urban domain is composed of the four businesses of: Building systems (elevators and escalators) and Railway systems from the Social Infrastructure & Industrial Systems segment, Automotive systems (automotive products and car information systems), and Smart Life & Ecofriendly systems (home appliance and air-conditioning equipment). In this domain, our aim is to improve the Quality of Life for people worldwide by providing products and services that are essential for daily living.



Future Growth Drivers of the Business

Building Services for Advanced Lifestyle Support

Hitachi provides building services including round-the-clock remote monitoring of elevators and other equipment. We offer advanced IoT-based services that use collected operational data to formulate plans for parts replacement and other maintenance, and to predict when a breakdown might occur without needing an inspection by a service engineer. Going forward, in addition to accelerating the global development of the high-quality maintenance services that we have developed over many years, we plan to fine-tune building services by utilizing Lumada to collect and analyze a range of data, including operational data from building equipment and data on the flow of people inside buildings. These services include providing buildings guidance support using service robots, and enhancing the value of building facilities based on the analysis of those entering the building.



Building equipment is monitored remotely from a call center

Railway Systems/Solutions for High Quality and Reliability

Hitachi is developing systems and solutions globally to support rail services of high quality and reliability as a provider of rolling stock and traffic management systems, along with fully integrated solutions that include project management. In the UK, we are applying advanced IoT-based maintenance services for the rolling stock of the Intercity Express Programme. With the Copenhagen Metro, we are testing a Dynamic Headway solution to adjust the frequency of train services automatically to the degree of crowding inside stations. Going forward, we will leverage Lumada technology to develop railway systems/solutions that deliver added value to our customers in innovative ways.

Executive Vice President's Message

Market-related Issues

In the Urban domain over which I preside, Hitachi is developing global businesses based on products that are highly familiar in daily life, including elevators, railways, automobiles, and home appliances. For consumers, these businesses form the public face of Hitachi.

Given the continued advance of urbanization around the world today, notably in Asia, we expect markets to continue expanding within the Urban domain.

Greater urbanization also brings with it a set of emerging issues that we will need to address proactively, including the demographic aging, energy supplies, and ensuring the safety and security of people in the face of growing threats from disasters and crime.

The common trends affecting the four major businesses within the Urban domain of elevators and escalators, railway systems, automotive products, and home appliances are captured in the acronym CASE*.

First, we are seeing a significant move away from product ownership to usage models based on sharing. Second, there is a shift to autonomous operation—not only in automobiles, but also in many other products—that also places significant emphasis on the use of electronics as manufacturers focus on energy-efficient, low-carbon products. In addition, these products are increasingly connected using digital technology, which is enabling the development of new solutions for solving customer issues. While engaging with these trends directly, we are working to address various lifestyle-related issues in collaborative creation with customers.

*CASE: Connected, Autonomous, Shared, Electric

Where Hitachi Is Focusing

It goes without saying that digital technologies such as AI and IoT will hold the key to our addressing customer issues through the Social Innovation Business. At the same time, to expand the business globally in a cost-competitive way, we will also need to utilize digital technology to improve the efficiency of processes such as design and maintenance. For these reasons, I think digital technologies will be the most important growth driver in the Urban domain. Monitoring whatever is troubling customers in real time and providing appropriate solutions will require always-on connections to digital technology platforms. By collecting and analyzing the data from monitoring operations, we can determine where any problems exist in products and systems, and work out how to make improvements. For example, we are undertaking round-the-clock remote monitoring of elevators and other building equipment to collect operational data. Analysis of these data not only facilitates smart maintenance, but also allows us to provide services to help customers achieve goals such as optimizing the building power consumption.

Hitachi can also provide one-stop solutions to address customer challenges because we not only handle product design and manufacture as well as systems operation and control, but also build IT systems. For example, in the Railway systems business, Hitachi by itself can supply a fully integrated solution, from the manufacture of rolling stock and building traffic management and signaling systems, to maintenance services and the construction of ticketing systems. This can offer customers major advantages in terms of simplicity and efficiency compared with the complicated process of engaging multiple suppliers to build the system. In this way, our ability to combine OT (Operational Technology), IT, and products to connect customers to digital technology means we can create solutions that were never possible before. This is the original value Hitachi can



Keiji Kojima

Executive Vice President and Executive Officer

provide as an Innovation Partner for the IoT Era via collaborative creation with customers.

Our Future Mission and Role

The Urban domain enables us to evolve into a well-known global enterprise as a leader in the development of bold new technologies that are a fine testament to Pioneering Spirit, one part of the Hitachi Founding Spirit. With a high proportion of overseas revenues and an array of global talent in positions of leadership, ours is the domain spearheading Hitachi's globalization. My mission is to utilize Lumada and other digital technologies to radically reinforce the competitiveness of our product range, while also further developing global markets that are expanding as urbanization progresses. Another critical part of my mission is to optimize our investment in the Urban domain and ensure that we make timely investments to generate synergies at the consolidated level.

The Creation of Social Value

The Corporate Credo of Hitachi since its inception has been “Contribute to society through the development of superior, original technology and products.” As a company, we pursue not only financial targets, but also social contributions. In the Urban domain, based on our vision for next-generation urbanization, we will leverage digital technology to help achieve the SDG11 goal of sustainable cities and communities.

SDG Focus



Finance/Social/Healthcare

In the Finance/Social domain, targeting customers in social infrastructure fields such as finance, electric power, and transport as well as customers in varied areas including the public sector, we develop and supply a broad range of IT services from consulting to systems integration, operation, maintenance, and support. In the Healthcare domain, there are three core businesses that we are developing by leveraging Hitachi's strengths in digital technology: Diagnostics and Clinical (including diagnostic imaging equipment and particle therapy systems), Testing and Reagents (including analytical systems), and Informatics (based on big data utilization). We are contributing to the growth of medical institutions and related health professionals as well as the realization of healthy, enriched lifestyles for people.

This domain also plays a central role in developing and promoting the use of platforms that provide across-the-board support to Hitachi's front operations, in the process driving the growth of the overall Lumada-based digital solutions business.

Future Growth Drivers of the Business

Solutions Group Utilizing AI, Big Data Analysis and Other Cutting-edge Digital Technologies

By combining the extensive business experience and know-how that Hitachi has acquired to date with cutting-edge digital technologies such as AI and Big Data analysis, we are offering Lumada-based solutions to customers across a variety of fields.

In the Finance domain, we support more advanced and efficient investigative screening of trading in equities by applying AI to analyze illicit transaction probabilities. Elsewhere, Hitachi analyzed medical big data by leveraging the analytical know-how we have cultivated in technology for forecasting healthcare expenditures, and we have developed a quantitative model to predict the possibility and length of hospitalization due to lifestyle-related diseases. This model can assist life insurers in reviewing broadening the scope of their customers who can take out insurance.

In the Social Infrastructure domain, we are supplying solutions to help deliver improved services for passengers and other end-users. We have been involved in the development of a service that distributes images of visualized people flows and related crowding phenomena inside stations in a timely manner, with people flow analysis technology utilizing images from monitoring cameras. We have also helped public transport operators optimize timetables in line with demand, based on analyzing and visualizing traffic volumes and transportation demand. In other initiatives to develop and build safe, secure, and comfortable urban infrastructure, we are supporting the development of advanced analytical tools for analyzing and predicting power demand and pricing trends in electricity retail markets with AI.

Going forward, Hitachi aims to engineer further evolution in the Social Innovation Business by supplying innovative Lumada-based digital solutions through collaborative creation with various stakeholders. In doing so, we hope to contribute to the realization of a society in which people around the world can live in safety, security, and comfort.



Executive Vice President's Message



Keiichi Shiotsuka

Executive Vice President and Executive Officer

Market-related Issues

In the Finance/Social/Healthcare domain, we are supplying innovative solutions to address various social issues, based on maximizing the strengths of Hitachi in digital technology. Examples include digital payments in the finance field and informatics in healthcare fields. In this domain, efforts are also directed toward undertaking the development of IoT platforms, and as a digital-centric business entity, we are playing a central role in promoting the expansion of Hitachi's overall digital solutions operations by encouraging the cross-sectoral utilization of Lumada.

Today, the connection of a wide range of things to the Internet enables access to knowledge gleaned from the analysis of vast quantities of data. This is causing a wave of digitalization to generate new value for society and businesses. Hitachi is required to create new business models and service models, and support dramatic improvements in productivity by leveraging our strengths in digital technology.

Where Hitachi Is Focusing

Beyond the domains of Finance and Social Infrastructure, in both of which Hitachi has been supplying IT services for many years, we are also expanding our digital technology-based operations into the Healthcare domain. In these areas, working beyond Business Unit structures, we are helping a variety of customers to undertake digital transformations.

As well as developing new finance and insurance products based on the utilization of AI and big data, we

are also assisting customers with solutions to help ease congestion or improve the efficiency of logistics operations, and developing services aimed at improving the quality of healthcare or its operational efficiency. We also aim to create new value across industrial sectors by using digital technologies. For example, we facilitate smarter contracts or transactions via linkage of settlement systems with various commercial and logistical flows using blockchain technology.

Today's rapid pace of technological innovation means it is essential for us to hone solutions in partnership with customers based on identifying issues, formulating hypotheses, and testing solutions in a continuous, fast-paced cycle. We aim to help customers reinforce competitiveness and realize an affluent society, we generalize the Lumada customer case in various fields and utilize it throughout the whole of Hitachi for rapid development and supply of solutions.

Our Future Mission and Role

My role is to take the lead in driving the growth of the Social Innovation Business and to generate growth in global markets by developing a mechanism for applying state-of-the-art digital technology across the entire Hitachi Group. I view our mission as the creation and timely market introduction of high value-added digital solutions using Hitachi's operational technology (OT), IT, and products. To this end, we recognize the importance of dynamically optimized HR assignments for our digital specialists so that we can strengthen the global delivery of these solutions.

The Creation of Social Value

Even as digital technology has evolved these days, it is people who are originating ideas and creating value. Technology is merely a tool, and the aim of Hitachi's Social Innovation Business is to pursue improvements in the quality of life for people, focusing on people who live there. We hope to contribute not only to the growth of advanced countries, but also to the development of nations and regions where residents find it hard to access safe drinking water, food, or healthcare. And we create solutions that use digital technology to make the world a better place.

SDG Focus

