MESSAGE

Mobility for a Sustainable Future

Railway and Building Systems that Underpin People's Lives

Accelerating Innovation in Railway Systems for a Post-COVID Future

A guiding principle of Hitachi's approach to mobility has always been to look to the future. To try to understand the long-term trends that are shaping our world – and what they mean for how people will travel in coming decades. That way we can start making adjustments to our business today, so we are ready to offer solutions that will be needed for tomorrow.

While this approach has served our business well, it is fair to say that 18 months ago few of us predicted the extent of the adjustment that has been required by the global pandemic. The impact it has had on the way we live, travel, and work has been far-reaching. While it has been challenging, I have been proud of the way we have seen our teams around the globe adapt the way we operate to protect our staff, customers, and suppliers.

Andrew Barr
Vice President and Executive Officer, and CEO of Railway Systems Business Unit, Hitachi, Ltd.

Our operational sites and factories have done an incredible job of adjusting. Consequently, essential travel, along with manufacturing and project delivery, has been able to continue for passengers and our customers with only limited disruption. And, while transport ridership may take time to recover, the fundamentals of Hitachi Rail's business remain strong.

The business' strategy of strengthening in our core markets and expanding into new regions where the demand for new transport solutions is strong is advancing well, with large contract wins in the USA and Europe. The successes in North and South America are particularly pleasing, given the growth in the footprint and capability. Upgrading signalling in San Francisco and building trains for Washington Metro, including establishing a new factory, will make Hitachi the second-largest player in North America. These important references mean we are well-positioned for further expansion across rolling stock, signalling, and turnkey in the Americas and in growth areas like the Middle East and Asia Pacific.

Across our global business of 12,000 employees in 38 countries, the emphasis on integration of our business divisions continues. This allows us to offer our partners the full range of mobility services, as well as driving cost reduction and product simplification to enhance Hitachi Rail's central offer of high-quality, reliable solutions. This is an important business fundamental for the Rail division as we see an increasingly competitive, consolidated global market.

We foresee a rebalancing of our current split of 40% rolling stock, 40% signalling solutions, and 20% operations,

service, and maintenance (OS&M) in the coming years. There are opportunities to grow our OS&M offer, particularly in operations, as our market-leading expertise means we are well-placed to run transport systems, as well as build and maintain them.

In many areas, the adjustments we foresaw taking place in the global mobility market – and opportunities they create – are materialising earlier than expected. The pandemic has been an accelerator of the future. Just as on a personal level, people have acted on the things that they had been thinking about for a while, but never got around to – like moving house, getting a dog, or learning the guitar – we have seen the same trend on a macro level. The drive to digitise, adopt new technology, and improve sustainability – already important aspects of Hitachi's strategy – has accelerated for transport providers and governments around the world. As such, Hitachi has renewed its focus on pioneering sustainable, digital connectivity so Hitachi can provide customers with the solutions they need to succeed now, and in the future.

Hitachi has a powerful ability to drive a green recovery around the world through solutions that integrate decarbonisation, the Internet of Things (IoT), and mobility products. The company has set itself the following three goals.

The first is to become a leader in digital rail – through infrastructure-light products, manufacturing automation and artificial intelligence (AI) in maintenance. The second is to be a pioneer in sustainable mobility – through battery rail products and alternatives to air and automotive travel. The third is to be a driver of COVID recovery – through COVID-secure travel and people flow management.

In many areas, innovations and the development of new technologies come from the existing rail business units, in other areas targeted mergers and acquisitions (M&A), partnerships, and adjacencies with other Hitachi Group companies can support us. The acquisition of GlobalLogic Inc. – a business that aligns closely with Hitachi Lumada's Digital Innovation Platform – is a fantastic opportunity to co-create new solutions and synergies with mobility customers.

On a smaller scale, the purchase of digital tech firm, Perpetuum Ltd. – with its solution for wireless, self-powering sensors – working alongside the established OS&M operations of Hitachi Rail, can be a powerful combination to improve the safety, availability, and reliability of our customers' fleets.

The advancement of Hitachi's decarbonising solutions has been an area of strong interest in 2021, and its principal sponsorship of mobility at the 26th UN Climate Change Conference of the Parties (COP26) is a statement of leadership and intent from its business. Our battery trains have run in Japan since 2016, but trials of battery trams and tri-mode battery hybrid trains in Italy are great new developments. These have been augmented by a partnership to fit batteries on a service between London and the southwest of England. Furthermore, the acquisition of Hitachi ABB Power Grids Ltd. means that our combined businesses can offer customers integrated charging and battery solutions. Finally, in Japan, collaboration with East Japan Railway Company and Toyota Motor Corporation to develop hybrid (fuel cell) test vehicles provides another alternative fuel solution with no carbon dioxide (CO_2) emissions.

The biggest driver of carbon reduction that Hitachi offers passengers remains the modal shift to railways from air and automotive travel. Aligned with this effort, is our drive to support post-COVID recovery by encouraging passengers to use existing and new rail services. We are

Train for delivery to Washington Metro

doing this by pioneering innovative solutions – like using intelligent people flow management and smart passenger information systems – to reduce crowding and boosting the confidence of travellers.

While the world has been through a turbulent 18 months, we can look ahead with excitement about what's to come. The desire from our partners to embrace digitally connected, sustainable transport has never been greater. This growing demand presents a golden opportunity to advance Hitachi's ongoing mission to "contribute to society through the development of the superior, original technology and products." And, as a result of this vision's guiding principle, the business adjustments are already well underway and Hitachi looks to the future with confidence.

New Value for the New Normal: Hitachi's Building Systems Business

Hitachi's involvement in the building systems business, primarily elevators and escalators, dates back to the 1920s when it first began the research and development of elevators. As well as drawing on its product development capabilities to drive the market forward, such as in 1968 when it supplied high-speed elevators (rated speed: 300 m/min) to the Kasumigaseki Building, Japan's first ultra-high-rise building, Hitachi has also supported the progress of urbanization around the world, having commenced exporting in the 1950s. In 2010, Hitachi went on to complete construction of what at the time was the world's highest elevator research tower, the G1TOWER at Mito Works with a height of 213.5 m. In 2019, it supplied the world's fastest* ultra-high-speed elevators (rated speed: 1,260 m/min) to Guangzhou CTF Finance Centre, a skyscraper complex building in China.

Hitachi's elevator business in China got underway in earnest from 1980, with a joint venture subsequently being established in Guangzhou in 1995 to handle manufacturing, sales, and service. Amid rapid economic growth, the Chinese market has subsequently expanded to become the world's largest, accounting for about 60% of demand for new-build elevators and escalators. Hitachi has consistently maintained a significant share of this market. Hitachi is also a market leader in terms of technology, having completed construction in 2020 of the H1 TOWER at its research and development and manufacturing facility in Guangzhou. This elevator test tower is one of the world's tallest*, with a height of 273.8 m.

2020 was also the year that Hitachi brought in Yungtay Engineering Co. Ltd., Taiwan's largest elevator and escalator company, as a consolidated subsidiary to strengthen its capabilities in China and other parts of Asia. By extracting a variety of synergies through operational integration with Yungtay Engineering, the objective is both to shore up its position as a leader in the Chinese market, the world's largest, and to expand operations in other promising markets such as Asia by leveraging the economies of scale of its Chinese operations.

Along with its work on the development and manufacture of elevators and escalators, Hitachi is also directing a

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* As of July 2021, as determined by Hitachi, Ltd.

lot of effort toward enhancing maintenance services based around remote monitoring technologies. Control centers were established at Tokyo and Osaka in 1985 and since then Hitachi has continued to enhance functionality to provide a high level of remote monitoring and maintenance services, including the launch of a remote monitoring service in 1987 that provided automatic notification of elevator or escalator faults and the addition of predictive diagnosis functions in 1994 to enable operational data to be used for preventive maintenance. Remote monitoring services were also launched for other building equipment during the 1980s and, together with elevator and escalator monitoring, these services now cover more than 400,000 such items of equipment around the world. Hitachi is also accelerating its ability to respond to demand for upgrades, with such upgrades providing the ability to deliver advanced remote monitoring and maintenance services.

Hitachi's vision is to overcome the challenges facing customers and society through the combined provision of operational technology (OT), IT, and products. As such, the building systems business is a sector where Hitachi is particularly well placed to bring its strengths to bear, combining a range of elevator, escalator, and related products with maintenance and other OT as well as the strong IT businesses that form part of the Hitachi Group. Hitachi is able to make a major contribution to improving the efficiency of building management by combining the domain knowledge (practical knowledge and experience) it has built up over many years in the business with operational data collected from elevators, escalators, and other building systems connected to the remote monitoring systems, and by analyzing this on Lumada's Digital Innovation Platform. Hitachi has long been an early adopter of digital technology in the building sector. It seeks to maximize the value it provides right along the value chain, from the installation of new elevators and escalators to their maintenance and subsequent upgrades by providing high-quality remote monitoring and maintenance services that make use of AI as well as by the development and supply of highly reliable products through the analysis and use of operational data from elevators and escalators collected via IoT devices. With the Lumada business already accounting for 20% of sales revenues, its aim is to become a market leader in building solutions through the provision of products and services that meet the new needs of customers. Examples include the Hitachi building IoT solution for improving the efficiency and quality of building management through the collection and consolidation of data, including that on the operation of building systems, and the Hitachi office worker solution that uses smartphones to offer new experience value to the people who work in these buildings.

The global spread of COVID-19 from early 2020 has brought changes in society and in how people live their lives. It has also given rise to a variety of needs and societal

H1 TOWER elevator test tower

New standard elevator

issues in the building sector that call for new ways of doing things, including ventilation to reduce infection risk, social distancing, maintaining the cleanliness of shared facilities, the ability to move about without having to touch communal equipment, and working practice reforms such as encouragement for remote working. There are also rising demands prompted by climate change, including improvements to disaster resilience and the reduction of CO_2 emissions.

Hitachi's work in the building system business has included the rapid development and supply of solutions that provide safe, secure, and comfortable transportation around urban spaces and are intended to reduce infection risk in buildings, including keeping the air in elevators clean, preventing crowding at lobbies or inside the elevators, and enabling people to enter buildings and operate elevators without physical touching. Hitachi is actively working on initiatives that will reduce the load on the environment, including by reducing CO_2 emissions across the entire life cycle of elevators and escalators.

As the current pandemic has reminded us, we live in a time of uncertainty about the future and as such can expect major changes in customer needs as well as in office and residential buildings. Hitachi underwent a major organizational restructuring in April 2021 to enable it to quickly incorporate customers' opinions into the development and supply of products and services, even more so than in the past. The new standard elevator models that recently went on sale in Japan are products that anticipate and address the needs of customers and other members of society under the banner of being a "Standard for the New Normal," not least by how they incorporate the latest infection risk mitigation solutions. Along with providing a high-quality space for traveling between floors, with a simple interior designed for functional beauty under the supervision of the internationally renowned product designer Naoto Fukasawa, the products also improve resilience to disaster and help improve working practices for building administration through integration with Lumada solutions such as BUILLINK, a dashboard for building owners and administrators from which elevators and other building equipment can be monitored and controlled using a smartphone. In the future, Hitachi intends to help bring about a sustainable society and deliver new value to people, buildings, and society in the new normal by developing and supplying products and services that address new customer needs with a sense of urgency.