Preface

Highly Reliable Hitachi Railway Systems Supplied Globally

In addition to attracting attention for providing a mode of transportation with a low burden on the environment, railways around the world are expected to play an important role in society, even while the reasons for this may vary from place to place. Examples include the replacement of aging rolling stock in the UK, the birthplace of the railway industry, and mitigation of the increasingly severe traffic congestion that affects emerging economies as they continue their development. Building on its success with its Class 395 trains, Hitachi was awarded a major contract for the Intercity Express Programme (IEP) in the UK. As a total systems integrator capable of supplying both rolling stock and operational systems, Hitachi aims to deploy the technologies it has built up in Japan to the rest of the world, and in doing so to make a global contribution through the supply of highly reliable railway systems.

Hiroshi Nakayama

Vice President and Executive Officer
President & CEO, Rail Systems Company
Hitachi, Ltd.

Success with Class 395 Leads to Major IEP Contract

— In July 2012, Hitachi was awarded a major contract for the Intercity Express Programme (IEP) in the UK. Please tell us about the lead-up to this contract.

Nakayama: The IEP contract involves the production of nearly 600 vehicles and the supply of maintenance services over a period of nearly 30 years. While the UK has been a major focus of the Rail Systems Company, having first entered the market more than 10 years ago, the acknowledged success of the Class 395, which entered full commercial operation in December 2009, was a major factor in our being awarded this new contract. Winning a large overseas order is never easy, and a lot of time went into this one before we finally signed the formal agreement, with the IEP being influenced by factors such as the global financial crisis and the change of government in the UK.

The Class 395 rolling stock that preceded the IEP contract have been operating successfully for three years now, on both conventional line and the High Speed 1 line that runs from London to Ashford. Our involvement went beyond merely supplying the rolling stock and included responsibility for their routine maintenance. The new IEP contract can be seen as a continuation of our work on the Class 395. When I visited the UK Secretary of State for Transport in September 2012, they expressed their high regard for the success of the Class 395 and also left me with an appreciation of the considerable expectations they have for the monozukuri (manufacturing) capabilities that we will be deploying at the UK rolling stock production plant we will be establishing to serve the IEP project.

— What are your future plans for the UK?

Nakayama: As winning the IEP contract means we will be producing rolling stock for two of the UK's major rail corridors, the East Coast Main Line and Great Western Main Line, as well as supplying maintenance services for 30 years, our plans include establishing a production facility at Newton Aycliffe in County Durham and setting up a maintenance business based at 11 rolling stock maintenance depots located around the country, four of which will be newly constructed. Away from the IEP, we have also won an order for a prototype railway traffic management system for the UK. We also hope to be able to contribute in areas such as traffic management systems and information systems in the future.

Global Activities of Railway Systems Business

— Please tell us about the future activities and objectives of the railway systems business.

Nakayama: While our railway systems business was focused on Japan in the past, it is anticipated that the market in Japan will shrink over time with the drop in population brought about by the aging of society and falling birthrate. Meanwhile, electric power consumption at railway stations has been growing recently for reasons such as the ongoing construction of commercial space inside stations. This has created a growing need to find ways of minimizing power use throughout the railway system, not just that consumed by the rolling stock. We also expect growth in businesses with an environmental connection, such as energy conservation, and we have work ongoing in these areas.

Outside Japan, the UK has further plans for rolling stock upgrades. There are also numerous railway infrastructure projects in emerging economies where Hitachi products and systems could play an active role.

— Outside the UK, in what other countries would you like to see Hitachi having an active involvement in railway transportation?

Nakayama: While our overseas business is mainly in the UK, I also believe that Hitachi products such as signalling systems and electrical components for traction drive systems have a market in China where demand is expected to remain vigorous. We established a joint venture company for electrical components in Xi'an back in 2003 that is engaged in the volume production of electrical parts for Chinese rolling stock manufacturers.

Elsewhere, we are seeking to expand our business into places like Brazil, India, and Southeast Asia. Brazil is faced with the challenge of building urban transportation systems, with monorail projects planned in a number of cities. We have extensive experience with straddle-type monorails,

Hitachi Rail Europe Ltd. (UK)

The conclusion of the UK's Intercity Express Programme contract in July 2012 was the culmination of over five years of work bidding for the largest ever rail contract in the UK. This contract follows a new business model requiring the manufacturer to build and secure finance for almost 600 vehicles, and provide all maintenance and servicing (including cleaning) of the trains for 27.5 years. Hitachi Rail Europe Ltd. developed a private equity consortium, raising finance through a consortium of Japanese and European banks as well as Japan Bank for International Cooperation and the European Investment Bank. This complex transaction took almost 3.5 years to conclude but has resulted in a new model for financing major infrastructure projects in the UK.

The public announcement that the deal was closed was made by the then UK Secretary of State for Transport, Justine Greening, at Newton Aycliffe in the Northeast of England, where Hitachi Rail Europe is planning to manufacture the trains.

The big challenge for Hitachi Rail Europe is now to put everything in place to deliver this contract. This includes building a rail manufacturing plant in the UK and employing around 700 workers, building further maintenance facilities throughout the UK, and ensuring that the delivery of the trains, which is set to start in 2016, runs smoothly. At the same time, the Hitachi Rail Europe team is bidding for its first rail contract in Germany, and for Crossrail, a major infrastructure investment in the London area.

The public announcement of the Intercity Express Programme contract [Justine Greening, UK Secretary of State for Transport (left) and Alistair Dormer, Chairman and CEO, Hitachi Rail Europe Ltd. (right)].

Conceptual drawing of maintenance depot at Newton Aycliffe, Northeast of England.

and I believe that our past success, which includes not only monorails in Japan but also overseas projects in Singapore and Dubai, demonstrates our ability to be involved in these monorail and other projects in Brazil. We are planning to establish a joint venture with IESA, a Brazilian heavy engineering company, and I hope that we will be able to introduce our monozukuri manufacturing practices there in the future.

India is a major nation in the railway field, with numerous projects in the pipeline, including high-speed trains as well as metros, monorails, and other urban railway systems, and also the Indian Railways modernization project. In addition to rolling stock and electromechanical traction drive components, we are also working toward establishing businesses in areas like signalling and traffic management systems. Southeast Asia in turn is experiencing vigorous demand for urban railway construction, including new metros and monorails, and I hope that we can develop businesses there that will utilize our extensive product range and engineering capabilities. We are also taking steps to make our business operations more local, not only to minimize risks such as exchange rate fluctuations but also to ensure that work proceeds more smoothly by establishing local manufacturing facilities.

Other countries where Hitachi products are in use include South Korea and Australia. A monorail is currently under construction at Daegu in South Korea, and we hope to use this project as a showcase that will help us expand our involvement to other cities. We are also supplying electrical components for traction drives to the railway system in Sydney, and we are keeping an eye on other possible projects in Australia, including high-speed railways.

— What specific initiatives are you taking to expand overseas business?

Nakayama: In addition to manufacturing throughout the world, I believe it is important for Hitachi that we establish a range of standard models. Accordingly, we are planning

Hitachi (China) Ltd.

As the railway market in China develops further in the 21st century, Hitachi is looking forward to a period of business growth based on its diverse range of products that includes rolling stock electrical components, monorails, signalling systems, rolling stock air conditioning, ventilation equipment, and the system storing regenerative electric power in wayside storage batteries utilizing regenerative power.

For the urban transportation market, we have supplied rolling stock electrical components to Beijing, Shanghai, Chongqing, and Xi'an. The electrical components supplied to the Beijing Subway made a major contribution to improving the convenience of transportation during the Beijing 2008 Olympic Games, while the monorail supplied to Chongqing has been providing the people of that city with comfortable transportation services since September 2004, when it became the first monorail to commence operation in China.

In the high-speed railway market, we have supplied rolling stock, rolling stock electrical components, rolling stock air conditioning, and ventilation equipment to CSR Corporation Limited, and rolling stock electrical components for use in 380-km/h high-speed trains and 250-km/h intercity express trains to China CNR Corporation Limited.

In signalling systems, we have approximately 70% of the market for onboard signalling equipment for medium-speed trains, and we have earned a strong reputation for the reliability of the signalling system used on the high-speed railway between Guangzhou and Shenzhen that commenced operation in December 2011.

Working with six sales offices located across the country (in Beijing, Shanghai, Guangzhou, Xi'an, Chongqing, and Qingdao), we intend to strive to expand our business in the Chinese transportation market by drawing on the comprehensive capabilities of Hitachi.

Hitachi (China) Ltd. workplace and staff.


Chongqing monorail.

a series of Hitachi commuter trains, suburban trains, high-speed trains, and monorails. The adoption of these common platforms will allow us to supply rolling stock that satisfies customers' requirements quickly and at low cost.

I also believe that our rolling stock maintenance business is essential to expanding our overseas operations. Whereas maintenance is performed by railway companies in Japan, internationally it is becoming increasingly common for this work to be done by the manufacturer. Also important is how we operate our signalling, traffic management, and other systems business. As a vendor, Hitachi can supply all aspects of a railway system other than the actual operation and civil engineering. This includes not only the rolling stock but also maintenance, signalling, traffic management, and substation systems. Finance is another increasingly important factor in large overseas projects and our aim is to establish the capacity to deliver comprehensive solutions that incorporate this and other associated services.

Drawing on Comprehensive Capabilities of Hitachi to Deliver Japanese Railway Technology to the World

— Please tell us about the organizational initiatives you are taking to expand overseas business.

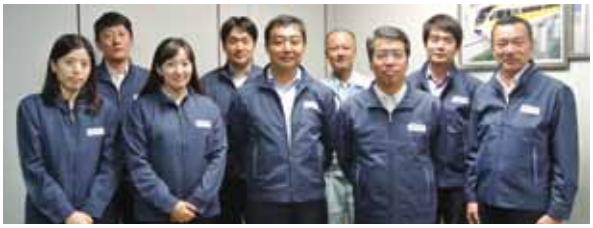
Nakayama: We have already established Hitachi Rail Europe Ltd. (HRE) in the UK, and we will also be setting up a production facility and operation centers as part of the IEP contract. In organizational terms, we will establish companies near these facilities that will have primary responsibility for their management. In addition to its activities in the UK and other parts of Europe, it is also possible that HRE will, in the future, act as a base for business in countries with historical ties to the UK, such as India and Australia. When thinking in terms of a global market, it is becoming increasingly important that we approach business from a perspective other than what comes out of Japan.

Hitachi Korea Ltd.

South Korea's history of urban railways dates back to 1974 when Seoul Metro Line 1 started operation, and the supply of the first 60 metro cars to South Korea for this milestone also marked the birth of Hitachi's railway business in the country.

Now, nearly 40 years later, South Korea boasts world-class railway infrastructure and has large projects in the pipeline. These include a major upgrade of aging rolling stock for medium- to long-distance conventional lines to quasi-high-speed electric multiple units (EMUs) with a distributed traction system in anticipation of the PyeongChang 2018 Winter Olympics, and also the staged construction of urban railways with low cost and a low impact on the environment in the major cities where populations continue to concentrate. As a provider of the precision solutions required for these projects, we are working on the production and delivery of a number of orders, including the Nooriro, South Korea's first quasi-high-speed EMU for conventional lines based on the A-train concept and EMU technology built up over many years, a straddle-type monorail for Line 3 of the Daegu Metropolitan Transit, and systems storing regenerative electric power in wayside storage batteries for various lines in the Seoul Metro subway.

In addition to supplying reliable products to the strong market in South Korea, we also recognize that South Korea's geographical proximity and the similarity of its railway operating practices make it an increasingly attractive option for expanding our business into the railway markets of other Asian countries. Accordingly, we are working to expand our business by strengthening our sales and engineering capabilities at our South Korean operations, and also our relationships with high-quality partners.



Hitachi Korea Ltd. staff involved in project management and system engineering work at Daegu.

Monorail car for Line 3 of the Daegu Metropolitan Transit featuring latest unattended operation and safety equipment.

Three years after first entering service, the Korail Nooriro has become a popular train for conventional lines. It is also used for express access to the Yeosu Expo.

As we expand our business throughout the world, human resources become particularly important. Naturally we need to recruit people from the countries where we operate and also adopt other measures to hire talented people who can take a global perspective. These staff will have an important role in globalizing our business. We also want to play a part in encouraging economic growth in the countries where we operate. We need to take note of these issues as we globalize the company.

— How can you contribute to the world through your railway systems business?

Nakayama: I would like to see not only Hitachi rolling stock but also Japanese railway technology recognized internationally. I hope that the IEP project will lead to more people wanting to ride on trains made by Hitachi and that this will enhance the reputation of Japanese railway technology.

While Hitachi trains are known for their comfortable ride, with low vibration and noise, I believe that minimizing the number of faults is even more important. This keeps the trains running on time. This is more likely to be achieved if maintenance is performed thoroughly and individual components are highly reliable.

While the Class 395 trains entered commercial service in December 2009, they operated a "preview service" for six months prior to that to prepare for the commencement of full operation. Our intention is to continue to emphasize this monozukuri approach to satisfying customer expectations by meeting delivery schedules and supplying reliable products.

Given our broad range of products extending from rolling stock production and maintenance through to traffic management and other information systems, I believe that the railway systems business is one that allows Hitachi to demonstrate its comprehensive capabilities. I want us to contribute globally to the future of railway systems by supplying the world with the highly reliable technology we have developed through our experience in Japan.

Hitachi Australia Pty Ltd.

Hitachi, Ltd. and Hitachi Australia Pty Ltd. (HAUL) have a long history, dating back to the late 1960s, of working with Australian partners to deliver reliable locomotives and passenger trains to each state in Australia, as listed below.

- Sydney 626 passenger trains "Waratah" (in progress)
- Melbourne 348 passenger trains
- Cairns 48 passenger trains (in progress)
- Queensland 108 locomotives

In 2006, a joint venture between HAUL and one of the biggest rail infrastructure providers in Australia, Downer Rail, was awarded a contract to deliver the main electronic equipment for 626 cars in Sydney. This was one of the largest public private partnership (PPP) projects and single procurement of trains in Australian history, equivalent to about 50% of Sydney's current suburban fleet. The project is now in the delivery phase and we have already delivered one-fifth of the trains required by the contract. HAUL is seeking to build a strong relationship with Downer, and is working with them to deliver reliable trains, on schedule.

Australia's population continues to grow, and the states are looking at modernizing or extending their rail infrastructure. Most projects have a local content requirement and require collaboration with a local company. Additionally, most rail manufacturers are shifting their focus to maintenance services rather than manufacturing trains since maintenance contracts have historically been more profitable. This means that equipment maintainability could be a key factor in expanding our business.

Hitachi delivered six cars for Tilt Train, Queensland Rail Limited.

Hitachi Australia Pty Ltd. offices and local Hitachi Australia staff involved in management, sales, and maintenance work.

Test team staff for passenger train "Waratah."