SUMITOMO ELECTRIC
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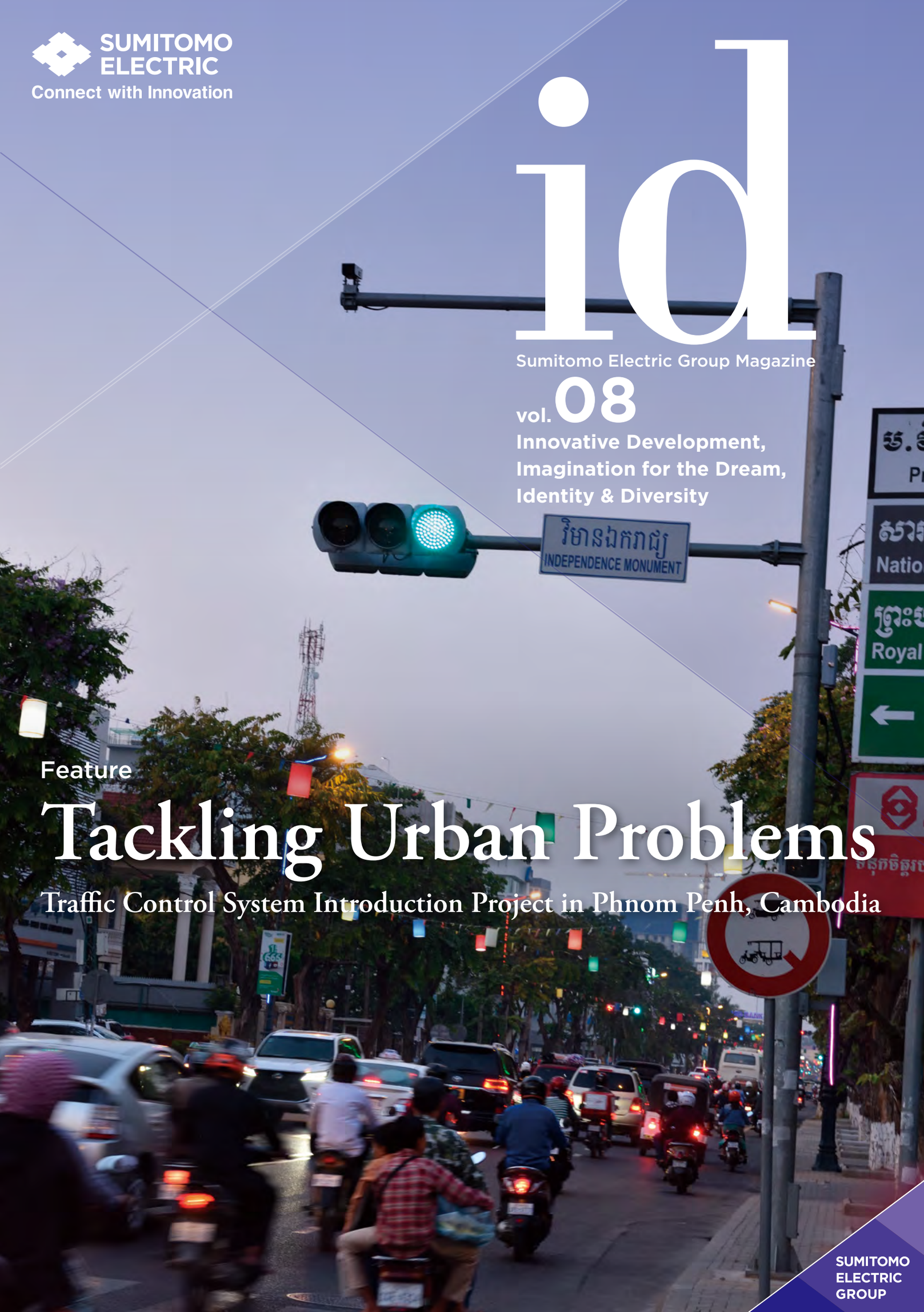
Sumitomo Electric Group Magazine

vol.08

Innovative Development, Imagination for the Dream, Identity & Diversity



Feature

Tackling Urban Problems

Traffic Control System Introduction Project in Phnom Penh, Cambodia

SUMITOMO ELECTRIC GROUP

Ease Traffic Congestion in Emerging Countries.

–Urban problems behind economic growth–

Southeast Asian economies are growing rapidly, leading the global economy. This also causes urban problems, and various initiatives are being taken accordingly. In particular, traffic congestion due to the concentration of population in large cities is one of the major problems in these countries. One such area is Phnom Penh, the capital city of the Kingdom of Cambodia. Phnom Penh is the center of Cambodian politics and economy with a population of about 1.85 million. Buoyed by rapid economic growth since 2010 (with a GDP growth rate of 6.5%), the number of vehicles registered has increased more than four-fold from 61,000 in 2000 to 268,000 in 2012, and is still growing at an accelerating pace.* At the same time, traffic congestion is worsening. To solve this problem, the Cambodian government asked the Japanese government for grant aid for the introduction of traffic control and other systems. The Japan International Cooperation Agency (JICA) launched a project, and the Sumitomo Electric Group formed a consortium with Mitsubishi Corporation to win an order for the project. The Sumitomo Electric Group strove hard for more than three years in introducing a traffic control system to improve traffic congestion and safety in Phnom Penh. This feature story focuses on their great efforts onsite.

* Sourced from the JICA document "Preparatory Survey Report: Preparatory Survey for Project of Development of Traffic Management System in Phnom Penh"

Traffic conditions in Phnom Penh displayed on the monitor of the newly established traffic control center

National Project Starting with Grant Aid

–Solving urban traffic problems with ITS technology–

Tackling Urban Problems

Traffic Control System Introduction Project in Phnom Penh, Cambodia

Public transportations are being introduced to ease the traffic congestions

An intersection with increased traffic volume

Sudden increase in the number of motorcycles indicates the country's rapid economic growth

Introduction of ITS was promoted as the priority project with JICA assistance

The move to solve urban traffic problems held by Phnom Penh Capital City, Cambodia, dates back to 2001. JICA began the development plan study "Phnom Penh City Urban Transport Plan,"* supporting the development of the Urban Transport Master Plan (2001M/P) toward 2015. After that, due to an increased number of vehicles registered and a flow of vehicles from surrounding large cities into Phnom Penh, traffic congestion and the number of accidents worsened. Against this backdrop, Phnom Penh Capital City asked JICA to support the creation of an action plan. JICA launched the Project for Comprehensive Urban Transport Plan in Phnom Penh Capital City in 2012, and is working on the creation of the Transport Master Plan (2014M/P) together with Phnom Penh Capital City. We interviewed Hideaki Iwase of JICA in charge of the project onsite.

"The 2014M/P specified a long-term plan toward 2035 and a short- and medium-term plan, including the expansion of the urban road network and the introduction of public transportation and ITS or Intelligent Transport Systems. One of the high priority projects was the introduction of ITS, including traffic lights and a traffic control system. In those days, Phnom Penh had 69 intersections with traffic lights, but many of them were independently operated. The traffic lights strewn throughout the city were not connected by a control system, causing heavy traffic congestion. Under these circumstances, the Cambodian government asked the Japanese government for grant aid for the installation of traffic lights at intersections and a traffic control system. The funding was approved to launch the ITS project." (Iwase)

Phnom Penh, once known as the "Paris of the East"

Construction is underway everywhere in Phnom Penh Capital City

* Changed from "Phnom Penh City" to "Phnom Penh Capital City" in 2010

The road to completion of the national project with grant aid Tacking urban traffic problems with technical expertise accumulated in Japan

The exchange of notes concerning grant aid was signed in March 2015. In response to an offer from Mitsubishi Corporation, the Sumitomo Electric Group began examining the establishment of a consortium. Since then, we had been involved in the introduction of a traffic control system and traffic lights at intersections for three-and-a-half years. First of all, let's clarify what the traffic control system is. The traffic control system has been introduced to each prefecture of Japan. Vehicle detecting devices and surveillance cameras installed at intersections are used to assess traffic conditions. The information is centrally managed to control traffic lights appropriately, thereby facilitating safe and smooth road traffic. (Currently, detailed information is provided for advanced system control.) The Sumitomo Electric Group moved into the ITS field in the late 1960s. Since then, the Group has accumulated achievements, maintaining its position in the top manufacturers in Japan. One of the projects carried out by the Sumitomo Electric Group is the traffic control system in the Tokyo metropolitan area. In recent years, however, a large problem has surfaced.

Hideaki Iwase
Project Formulation Advisor, Cambodia Office, Japan International Cooperation Agency (JICA)

"Since ITS is ordered by police departments in respective prefectures, the market is limited. We noticed the ceiling to expansion of the business share. ITS business originally targeted at the Japanese domestic market, but we thought it was essential to develop overseas markets for the future. Therefore, we started working on the control of traffic lights in Thailand and Myanmar through projects such as JICA's social experiments and investigations. However, these projects were to introduce traffic lights rather than traffic control systems. The project in Phnom Penh was for the introduction of a traffic control system. We thought that introducing the traffic control system with Japanese technology could give us the momentum to expand our ITS business globally. We were determined to install ITS to Phnom Penh to ease the city's traffic congestion. With this will and determination, we engaged in the ITS project." (General Manager Koichi Washimi, Systems & Electronics Division)

Koichi Washimi
General Manager, Systems & Electronics Division

Tackling Urban Problems

Traffic Control System Introduction Project in Phnom Penh, Cambodia

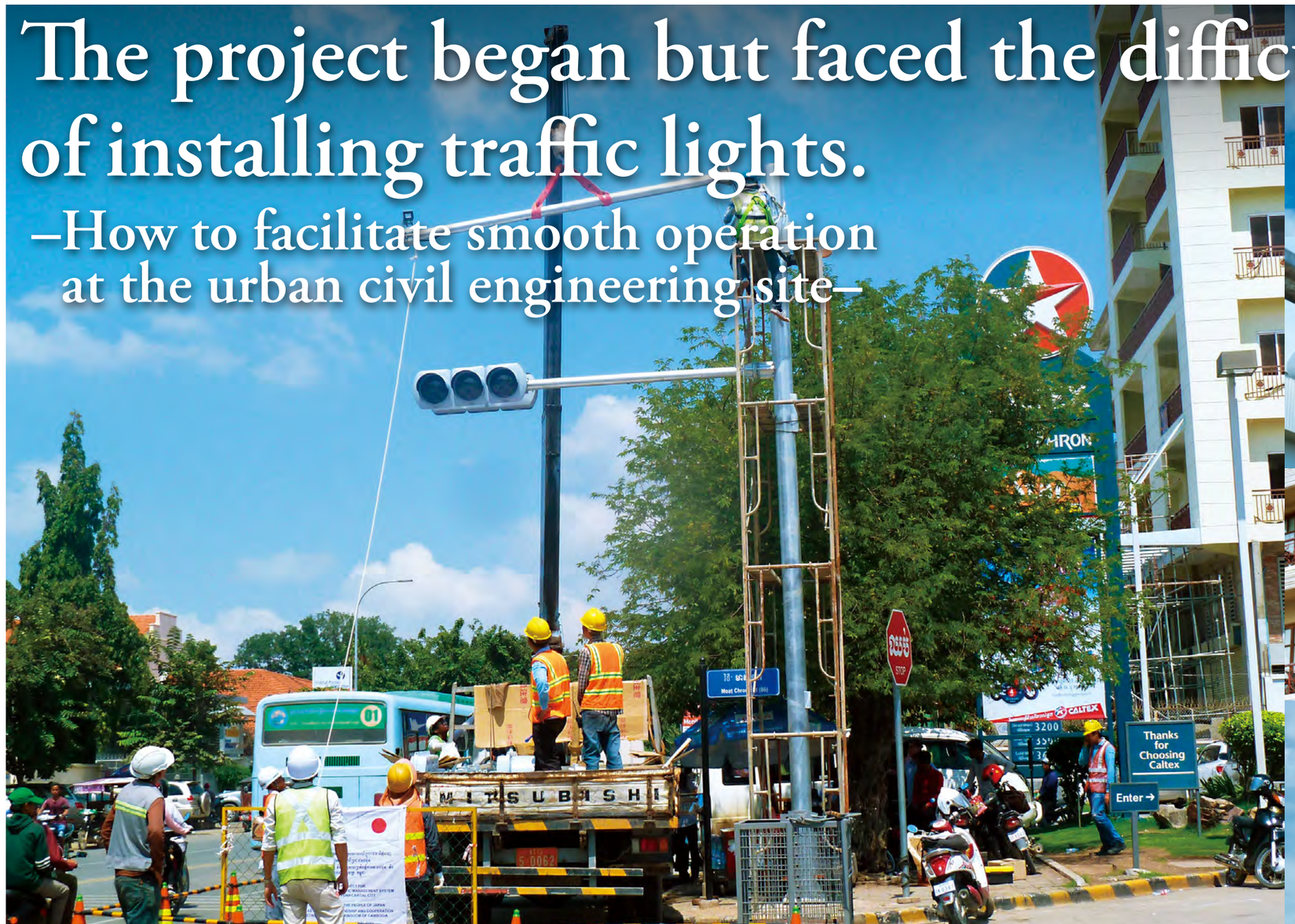
Masazumi Horie
Manager, Overseas ITS Project

Koichi Marutani
Business Promotion Department, Road Information Systems Division, Public Systems Business Unit, Sumitomo Electric System Solutions, Co., Ltd.

▲ Construction was proceeded by unraveling tangled electric cables

▼ Traffic signal installation work was conducted with the cooperation of local staff to a meet tight schedule

The project began but faced the difficulty of installing traffic lights.
–How to facilitate smooth operation at the urban civil engineering site–



Making a new history for ourselves with an increased awareness and responsibility

This project was to install traffic lights at 100 intersections (including 64 intersections with existing traffic lights), connect them to a traffic control center with optical cables, thereby controlling and facilitating traffic in Phnom Penh Capital City. The Sumitomo Electric Group started onsite investigation in May 2015 prior to a bid scheduled for December in the same year. The investigation members included Masazumi Horie, who eventually became the project leader, and Koichi Marutani, in charge of civil engineering works. They had experienced projects in Thailand and Myanmar, but the content and scale of this project were completely different.

"This project included not only the introduction of a traffic control system but also the civil engineering work of installing traffic lights at 100 intersections. When touring Phnom Penh for the first time, we wondered if about 400 signal posts could be installed smoothly amid traffic congestion," recollects Masazumi Horie, Manager of Overseas ITS Project, Systems & Electronics Division, Sumitomo Electric.

Koichi Marutani, Senior Manager of Business Promotion Department, Road Information Systems Division, Sumitomo Electric System Solutions, Co., Ltd., had the same impression. "The existing infrastructures, including roads, were underdeveloped. In this situation, could we complete the construction? I was particularly surprised to see various kinds of cables running throughout the city in a random manner. Judging by the fact that even public cables were handled that way, we expected to face many hurdles."

They were anxious about the future course while working with Mitsubishi Corporation on the price and technical proposals to bid for the project. In December 2015, the consortium won the bid and the project went into full-scale operation.

"This project was to make a new history by introducing our products and technology on our own to an overseas capital. We rejoiced at the moment of winning the bid, but we were filled with a sense of responsibility and a feeling of tension in three minutes," Horie recalls.

Traffic light installation in the urban city was driven by good communication

In February 2016, the installation of traffic lights at 100 intersections (including the replacement of the existing traffic lights at 64 intersections with new ones) began. The quality and process of traffic light installation were driven by a general contractor that actually carried out the works. Our partner company Mitsubishi Corporation, which has experience in many official development assistance (ODA) projects and is well versed with general contractors in Cambodia, introduced the general contractor in charge of this project, which had experience in ODA projects and working with Japanese people. "Without efforts by this general contractor, this project would not have been completed," Horie says.

Horizontal drilling method enabled road work without disturbing traffic

The project started with drilling intersections, burying conduit lines, installing hand holes and laying cables for communication and power supply to traffic controllers. Then it moved into foundation work, the construction of signal posts, the installation of signal lights and the operation of traffic lights. At this phase, the traffic lights were not connected to the control center but went into operation upon request from Phnom Penh Capital City, which wished to unveil the new traffic lights to the citizens as soon as possible.

Even the competent local general contractor faced many difficulties. "All the cables laid at intersections had to be buried in the ground. In response to a request from Phnom Penh Capital City for conducting the works without disturbing traffic, the horizontal drilling method was adopted at most intersections. However, Phnom Penh Capital City revised the design by expanding roads and adding burial plans, so we had to respond to it quickly. At the phase of installing traffic lights, the residents frequently complained about the works being conducted in front of their houses and stores. In addition, we faced another issue with onsite construction workers in terms of their quality of work and low awareness of safe operation," says Marutani, who managed the entire project works.

Marutani visited the construction sites in Phnom Penh Capital City every day, closely communicating with subcontractor engineers and onsite leaders and workers. By doing so, Marutani gave instructions and checked the progress to proceed with the project. His efforts also worked as a driving force in the early stage of the project.

Sumitomo Electric Group's Enthusiasm To Support The Project

–Close cooperation with the project partner Mitsubishi Corporation–

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Steadily clearing many hurdles in selecting devices and aerially wiring

In parallel to the installation of traffic lights, other devices, including the central unit in the control center, traffic controllers, lighting fixtures, vehicle detecting devices, CCTV (closed-circuit television) surveillance cameras and a device-to-device transmitting system, were also selected and examined. The person in charge was Kosuke Setoyama from Sumitomo Electric System Solutions Co., Ltd. Soon after winning the bid, he visited the city more than 10 times. Setoyama as an engineer engaged in a wide range of tasks, especially focusing on smooth operation after the launch.

"We deliver the system, so it is essential to maintain it after the launch. After selecting and installing the devices onsite, individual adjustment and check are necessary, but if we Japanese do everything, system maintenance techniques can't be established onsite. To that end, we invited onsite key persons of the contractor and subcontractors to Japan to learn about the outline of operations through lectures on the system and study tours. We also prepared manuals and provided training onsite repeatedly," says Setoyama.

The traffic lights are controlled through connection to the control center with optical cables. Kazuo Shimomura, who was in the Systems & Electronics Division of Sumitomo Electric Industries, Ltd., engaged in building the optical cable network. Shimomura had experience in

Kosuke Setoyama
Manager, Traffic Control Engineering Section, Traffic Control Equipment Engineering Department, Traffic Management Systems Division, Public Systems Business Unit, Sumitomo Electric System Solutions Co., Ltd.

Kazuo Shimomura
Assistant General Manager, Internal Auditing Department

◀ ❶ Installed traffic lights and vehicle detecting devices ❷ CCTV surveillance camera to monitor traffic conditions at the control center ❸ ITS roadside radio unit that transmits and receives data to/from in-vehicle units and other roadside radio units ❹ Smooth traffic was achieved at intersections ❺ Traffic signal controller, connected with traffic control center via optical fiber cable, was tested carefully

communication cable and system works in Japan, the Philippines, Thailand and other countries. However, the situation in Phnom Penh was different.

"The optical cables were planned to be wired aerially, but the design was changed along the path, requiring some sections to be buried in the ground. We had to address this. Furthermore, the climate and natural features unique to Cambodia frequently had no small impact on the communication devices. Challenges that were not expected in Japan occurred and had to be overcome one by one," Shimomura explains.

Frequent design changes were addressed with collaborative and trustful relationships

What made this project significant was the many requests received after the start of the works, including for the burial of optical cables in the ground. They obviously incur design changes and additional costs. The project leader Horie negotiated while clarifying what could be done and what could not be done. He was strongly supported by Yim Siphon, who is a Cambodian and the manager of the Phnom Penh Representative Office from Mitsubishi Corporation. He carried out all the cumbersome tax-exemption procedures for importing devices (ODA projects are exempt from customs) and also tenaciously conducted negotiations with Phnom Penh Capital City to gain their understanding and consent.

"This project benefits the economic growth of Cambodia and improvement of the lives of the citizens of Phnom Penh Capital City. The Sumitomo Electric Group had high technological skills and sincerely addressed various challenges. I was impressed by their professional attitude. The population and traffic volume in Phnom Penh Capital City are expected to continue increasing. I hope that this project will help the Sumitomo Electric Group to engage in Cambodia more widely and deeply," Says Siphon.

On Mitsubishi Corporation side, the International Economic Cooperation Department was in charge of this project. The department also took on an ODA project for city bus supply in Phnom Penh Capital City during the same period, which was led by Miyuki Nomura, Assistant General Manager of

Tackling Urban Problems

Traffic Control System Introduction Project in Phnom Penh, Cambodia

Close communication between Mitsubishi Corporation and Sumitomo Electric has made the project success

Asia and Latin America Team, and her team. Ms. Nomura had also experienced an ODA project of supplying medical equipment to hospitals in Phnom Penh.

"I visited Phnom Penh on business several times. Each time I visited the city, the number of traffic lights increased. This significantly

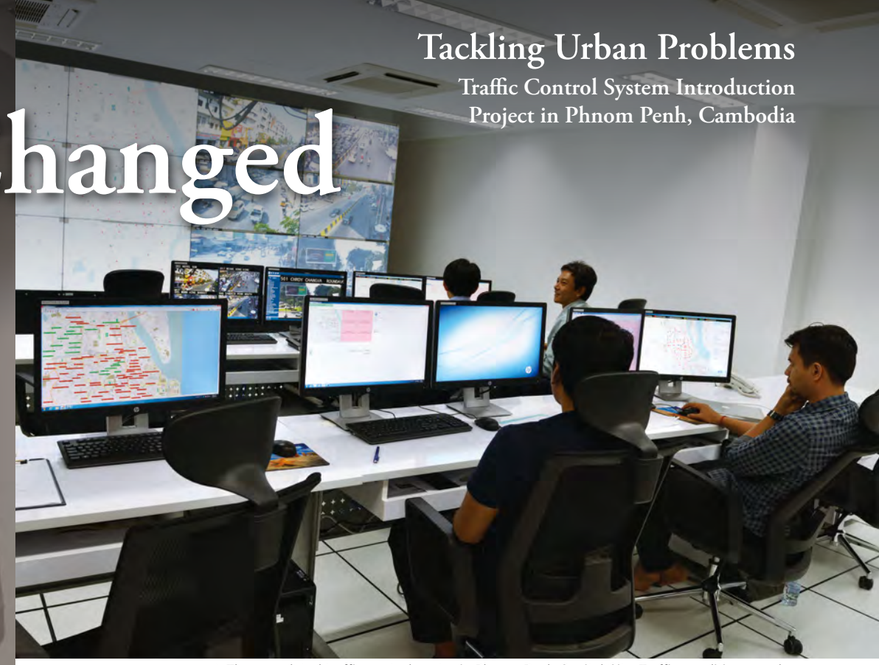
Yim Siphon
Manager, Mitsubishi Corporation Phnom Penh Representative Office

Miyuki Nomura
Leader, Asian and Latin American Team, International Economic Cooperation Department, Mitsubishi Corporation

contributed not only to easing traffic congestion but also to improving traffic safety, thereby bringing a sense of security to the citizens. This achievement is considerable. We were able to proceed with this project based on a strong relationship of mutual trust with the Sumitomo Electric Group, with both of us being in the same boat. I hope that this project will mark the beginning of our cooperation for future projects," says Nomura.

Traffic Control System That Has Changed The City and Lifestyle

–The advancement of ITS can solve urban traffic problems–



▲ The completed traffic control center in Phnom Penh Capital City. Traffic conditions can be monitored on multiple screens with maps and videos

▲ All the operational know-how was transferred from Sumitomo Electric to local staff

The end of the project is the beginning of accelerating globalization.

In spring 2017, all brand-new traffic lights were completely installed at 100 intersections. In parallel, the optical cable network was being built to connect the traffic lights to the control center. In the following year of 2018, Shimomura was replaced with Mitsunobu Hattori from Global ITS Business due to a personnel reshuffle. The control center was physically connected to traffic lights, but the communication quality was still unstable. The achievement of a stable connection was Hattori's mission.

Mitsunobu Hattori
Senior Assistant Manager, Global ITS Business, Systems & Electronics Division

"The connection locations couldn't be connected. We clarified the causes to improve the situation again and again. But then, this action needed to be taken not by me but by the local staff, otherwise they wouldn't be able acquire the necessary skills. I prepared documents, went to the site to check the situation together with the local staff, and tenaciously gave them instructions. Furthermore, some optical cables were severed due to the urban beautification plan promoted by Phnom Penh Capital City, and other contingencies occurred. By various means, we moved around Phnom Penh aiming to achieve stable connection. Our wish to realize good products for the people of this country sustained our project," recollected Hattori.

After efforts by many staff members, the traffic control system was delivered to Phnom Penh Capital City in December 2018. However, Horie and Hattori did not think that the project had been completed. They rather felt they were barely at the starting line.

"The traffic control system went into operation, which is one completion, but traffic is dynamic in nature. Responding to changes in the traffic situation, the system needs to be changed, improved and advanced. We hope to take this opportunity to create new business. We don't want to make this project a thing of the past. I realize that my mission is to accelerate the globalization of ITS to create new business," says Horie.

Easing traffic congestion and spreading awareness of traffic rules play key role in solving urban traffic problems in emerging countries

The introduction of the traffic control system is steadily changing the traffic environment in Phnom Penh. The fact is proved by Sam Piseth, the Director of the Department of Public Works and Transport of Phnom Penh Capital City.

Sam Piseth
Director, Department of Public Works and Transport, Phnom Penh Capital City

"Traffic congestion has been significantly eased since the introduction of the traffic control system. More importantly, the introduction of the traffic control system has raised the awareness of citizens about obedience to traffic rules. The Sumitomo Electric Group provided high-quality devices and works and also addressed many problems quickly. I realize the value of Japanese high-quality technology and service. I hope Sumitomo Electric will continue its cooperation in controlling traffic lights and building transportation infrastructures," says Piseth.

Sumitomo Electric's aspirations for the globalization of ITS business are passed on to the next generation

The Sumitomo Electric Group intends to further accelerate the globalization of ITS business. The Company has already begun the project of introducing a traffic control system to Thailand. Its focus is not only on ITS but also links to the evolution of automobiles.

"The traffic light control is indispensable to urban traffic and definitely demanded in emerging countries. On the other hand, the automobile industry is facing a big wave of changes, including electrification and connectivity. These changes are compatible with ITS (sensor control, etc.), creating new business opportunities. The Sumitomo Electric Group supplies wire harnesses and other key components for automobiles globally, so the Group as a whole aims to produce new traffic infrastructures around the world," says Washimi.

The Sumitomo Electric Group engaged in the project of introducing the traffic control system to Phnom Penh to solve urban traffic problems, which directly contributed to stimulating the economy and improving the quality of life. The participating members felt a good response to their social contribution through the project. Gaining a foothold from this project, the Sumitomo Electric Group is beginning a new evolution of ITS business to solve urban traffic problems in emerging countries.

Sumitomo Electric
The Professionals

Professionalism is of prime importance. Being a professional for customers, toward products and in knowledge is the foundation to developing a relationship built on trust with both customers and internal members.

Always try to seize the chance for innovation. Avoid doing the same things as others. Rather, make the most of our personality and strengths to tackle novel challenges for innovative achievements.

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Featured people

Ming Ng

Assistant General Manager
HR Business Partner
Sumitomo Electric Interconnect Products (Hong Kong), Ltd.

2000 Joined Sumitomo Electric Interconnect Products (Hong Kong), Ltd.
2002 Assistant Manager, Sales Division Sumitomo Electric Interconnect Products (Suzhou) Ltd.
2005 Manager, Sales Division Sumitomo Electric Interconnect Products (Hong Kong) Ltd.
2012 Manager, Sales Division Techno Associe Hong Kong Co., Ltd.
2014 Senior Manager, Sales & Marketing Sumitomo Electric Interconnect Products (Hong Kong) Ltd.
2019 Present post

Tony Wu

Vice President
Mobile Device Sales General Manager and
Market Development General Manager
Sumitomo Electric (Shanghai) Electronics, Ltd.

2005 Joined Sumitomo Electric Interconnect Products (Suzhou) Ltd. Sales Manager, Shanghai Office
2007 Manager Sumitomo Electric Interconnect Products (Suzhou) Ltd.
2012 Senior Manager Sumitomo Electric Interconnect Products (Shenzhen) Ltd.
2013 Senior Manager Market Development General Manager and Beijing Branch Manager Sumitomo Electric (Shanghai) Electronics, Ltd. (Unified electronics sales in Greater China)
2017 Vice President Market Development General Manager and Beijing Branch Manager Sumitomo Electric (Shanghai) Electronics, Ltd.
2019 Assigned to the current post Certified as a SEI Group Global Executive*

* The title given to personnel who are expected to excel in business operations not only for their companies but also for the entire Sumitomo Electric Group on a global basis. The Global Executives are annually selected from among the management of our overseas group companies.

Strong Teamwork is the Engine of Success.

Learn about professionals in sales through the example of cultivating a new market in China.

The Sumitomo Electric Group holds the Global Award Ceremony every five years. The latest winners of the Glorious Excellent (GE) Award* (the best award) were Tony Wu and Ming Ng. The two are representatives of the team that contributed to the winning of an order from the largest China-based drone manufacturer. They successfully expanded the sales channel for the micro flex coaxial (MFCX) harness product. The global drone market is dominated by the Chinese company Da Jiang Innovations (DJI), which is said to command a market share of more than 90%. By what approach did they succeed in persuading DJI to employ the MFCX harness? Behind the team's success were the two employees' new perspectives and plans towards marketing and their professionalism.

* The award presented to an internal team to commend its great achievements in business activity.

Responding to changing needs of the times as from cellular phones to smartphones

Ming: I worked for an agent of the Sumitomo Electric Group after I graduated from a college in Hong Kong. In 2000, I joined Sumitomo Electric Interconnect Products (Hong Kong) Ltd. My job was to expand sales of various electronic products to our largest customers in the cellular phone sector. I rushed to build a global sales network, visiting Tokyo, Shanghai, Beijing, Germany, Finland and the United States. Later, I met you when I was exploring a new market involving the largest smartphone manufacturer in the United States and local Chinese firms.

Tony: Yes, that's right. After studying at a college in Japan, I returned to my home country and worked for a Japanese manufacturer and a trading company. When I became acquainted with Ming, I was working for a Chinese sales company. At the time, the demand for cellular phones was growing explosively. Demand for hinges, which I was handling, and wiring harnesses, which Ming was handling, increased sharply for use in foldable cellular phones. We formed a team to expand their sales. It was then that Ming advised me to join the Sumitomo Electric Group. I had an interview with Vice President Yasuhiro Miyata [currently, General Manager, Electronics Sales Unit] of Sumitomo Electric Interconnect Products (Suzhou) Ltd. I passed the recruitment examination. However, I had things to consider, and six months passed before I contacted him again. The General Manager said, "The promise I made six months ago is still valid." I felt he was trustworthy and decided to join the company. What I felt was indeed the Sumitomo Spirit, which I would come to understand later.

Ming: Since you joined the company, the electronics market has changed radically. At the time, we were handling cellular phones, which were followed by the emergence of smartphones. Flexible cable assemblies and other products that met the need for folding came to an end. Instead, the need for flexible printed circuits (FPCs) grew.

Reorganization of our electronics sales operations in Greater China to embark on a new marketing mission

Tony: The most significant turning point for us salespeople was the reorganization of the sales framework in 2013 for electronics products in Greater China. Before this point, each manufacturing site had a sales department. This was replaced with a system where an integrated sales office was established in Shanghai with branches set up in each sales area. In short, we were required to sell a company-wide range of Sumitomo Electric's electronics products. Moreover, a major impact on our work was the establishment of a new department with a mission to cultivate new markets, to which we were assigned. However, it was still up in the air as to what products we should sell, and where. For some time, we groped for where to begin.

Ming: I felt assured because you were working in Shenzhen at the time, which was close to my Hong Kong office. I had a hunch that if we combined our strengths, we would be able to achieve a breakthrough. I remembered that the two of us had won the GE Award for another project.*

Tony: Yet the roles of the salespeople before that had been to furnish our customers with products made to predetermined specifications to fulfill their demand and provide necessary follow-ups; in other words, we were able to conduct sales operations with certainty. We had not had much sense of urgency. The setting up of the Market Development Division was a profound change in the situation. There would be no future without success. It was truly a desperate battle.

Ming: At the time, I was exploring new fields for the use of magnesium alloys developed within the Sumitomo Electric Group. While magnesium alloys were used as a housing material principally for PCs, I was searching for uses in other fields. Then I noted DJI's drones as a promising growth field. At the time, DJI had the Phantom series, which was a global megahit. The company was growing into an enterprise that could be viewed as a leading Shenzhen-based manufacturer. I first contacted DJI to persuade it to use the magnesium alloy to construct housings for its drones. I remember that my colleagues were not very interested in the drone, so a team of only three went into action, namely, you, Julia and me.

* In 2008, they won the GE Award for their achievements as a team for flexible printed circuit sales expansion and having their electronic products selected by European companies.

Starting a proactive approach to DJI, having proposals rejected and searching for a solution

Tony: I remember the first presentation day very well. We two had been waiting for a long time in the DJI lobby. Then we met the R&D team of DJI and exchanged business cards. During our presentation, they rejected our magnesium alloy because the metal would interfere with signals, and the plastic they were using at the time was excellent in terms of lightness and elasticity. We were not discouraged. We then noted the wiring materials used to transmit information in a drone in flight. For instance, the movable gimbal (a camera stabilizer) is a device that affects the accuracy of airborne filming. Moreover, the drone maneuvers around obstacles or locks onto a target by exchanging signals and other information. I continued discussing with Ming to find the needs or any problems in the drone's function. The proposals we presented to DJI included one on flexible printed circuits (FPCs), although FPCs were already used in the movable gimbal. Our intent was to persuade them to switch over to Sumitomo Electric products.

Ming: Yes, that's right. However, their structural design was predicated on the use of our competitor's FPC. DJI did not readily accept our idea. On a later day, while we were frequently visiting DJI and listening to their needs, we discovered a problem. The FPC designed to constrain the structure of the movable part was attributable to the low productivity of assembly at the customer. DJI explained that it was continuously using the FPC because it could not change the design predicated on the use of the FPC structure. This was a business opportunity for us.

Clarification of current problems with drones and specifications developed to provide solutions

Tony: There was another challenge. It was necessary to counter signal attenuation to stabilize image and video data for long-distance high-speed data transmission. If we could offer a product as a solution to these challenges, we would be able to cultivate a new market. We definitely saw the light at the end of the tunnel. Around that time, Ming had a bright idea, which was to propose a MFCX harness. MFCX was an ultrafine diameter wiring harness, 0.35 to 0.20 mm in outside diameter. It was a very effective item for solving the challenges facing FPCs. However, this product was not mass-produced and there was no structural design for a drone incorporating a MFCX harness. We were not sure whether it would be good to propose it as an alternative to an FPC. It was not an easy task. In the first place, the design was carried out in Japan. Shenzhen had no design function at the time.

Ming: It was a turning point. Conventionally, we salespeople provided Chinese customers with products with specs developed in Japan or Europe and manufactured in China. It was the first time for us to develop specifications for a MFCX harness locally in China using our ideas, engineering and strategy.

Tony: That's right. I believe it was a very significant breakthrough. To meet the need for speedy responses, we didn't consult with the Japanese side. The national staff of the Electronic Wire Division developed the specifications for the MFCX harness, completed a sample and presented it to DJI. The result was that they made a decision to employ the wiring harness upon examining the first sample. They highly appreciated the wiring harness. Subsequently, their FPC was gradually replaced with Sumitomo Electric's MFCX harness. DJI's new model Mavic Pro following the company's megahit Phantom adopted the wiring harness. Currently, our products account for about 70% of information wiring harnesses used in drones manufactured by DJI. I am proud of our success in exploring a new market and achieving sales expansion.

Teamwork is of prime importance to work as a global leader

Ming: In any project, the most important factor is teamwork, as shown in our approach toward DJI.

Tony: I totally agree with you. That is true for manufacturing departments as well as sales departments. In the rapidly changing situation in the electronics industry, what we need to achieve flexible and prompt responses to changes is none other than strong teamwork. To ensure that, what should we keep in mind?

Ming: Professionalism. Being a professional for customers, toward products, and in knowledge is the foundation to developing a relationship built on trust with both customers and internal members. I would like to foster the teamwork of a group of professionals.

Tony: I place importance on being always prepared for innovation. This is not for technical reasons. It is to avoid doing the same things as others in our daily activities. Rather, we should make the most of our personality and strengths to tackle novel challenges for innovative achievements. This mindset, I believe, will differentiate us from our competitors. Ming, you are currently in charge of personnel affairs in addition to other responsibilities. Do you aspire to be a global leader?

Ming: My current mission is to ensure that the personnel strategy is perfectly in line with the business strategy, and to achieve our business goals in cooperation with all the departments. To this end, relationships built on trust are important. I believe that the path to becoming a global leader is to overcome difficult situations through strong relationships of trust with our colleagues and to open the way for the Company toward a better future.

Tony: We have cultivated the drone market. However, we must of course explore new markets beyond the drone market. I think the major changes taking place in the automotive sector present a great opportunity. Automobiles will be increasingly electronically controlled, as exemplified by connected and electrified vehicles. I want to explore the market, while catching up with these new trends. It is my intent to grow to be a global leader by serving as an engine of the aforementioned efforts.

Verify Power Loss Reduction With Energy-saving Power Transmission Systems

–Certificate of appreciation received from Mongolia's National Power Transmission Grid –

The Japanese government has been promoting JCM (Joint Crediting Mechanism) as part of measures against global warming. JCM is a system whereby Japan contributes to sustainable development in developing countries by spreading superb low carbon technologies, products and services and implementing measures. Japan's contributions to reducing greenhouse gas emissions are quantitatively evaluated, and such reductions are utilized as credits as part of Japan's achieving its reduction targets.

Seventeen countries have signed a JCM partnership agreement. Since 2013, Sumitomo Electric has been working on a project to demonstrate and verify power loss reduction by introducing energy-saving power transmission systems in Mongolia, one of the signatories.

This project is part of an undertaking implemented by Hitachi, Ltd. under a commission from the New Energy and Industrial Technology Development Organization (NEDO). Sumitomo Electric delivered low-loss, large-capacity power cables for the power transmission line between Oyu Tolgoi Substation and Tsagaan Suvarga Substation, through which electricity was supplied to mines and areas where no electricity had been available. The transmission amount was monitored, and the effect of reducing the power transmission loss was converted into CO_2 emissions.

The one-year monitoring period is now over, and we are eligible to apply for issuance of CO_2 reduction credits.

In February 2019, Sumitomo Electric received a certificate of appreciation from Mongolia's National Power Transmission Grid for introducing advanced technologies that help reduce greenhouse gases emissions and the consequent contribution to Mongolia's economic development and electric power supply to areas without electric service.

Through the development of unique products and technologies, Sumitomo Electric continues its efforts to tackle environmental issues by stabilizing electric power supply, promoting energy saving and reducing greenhouse gases emissions in and outside Japan.

Certificate of appreciation awarded by Mongolia's National Power Transmission Grid

QUARTERLY **id**

Topics from the future-shaping Sumitomo Electric Group

Establishing a Company to Manufacture Rectangular Magnet Wires in China

–Meeting the growing worldwide demand for driving motors –

The demand for driving motors for electrified vehicles is expected to increase further due to the development and widespread use of hybrid vehicles and electric vehicles. To meet the global demand, Sumitomo Electric established Sumitomo Electric Wintec Magnet Wire(Changzhou) Co.,Ltd. in Changzhou, Jiangsu Province, China, on March 21, 2019. The company will go into full operation in 2022 as one of the new global manufacturing companies for in-vehicle rectangular magnet wires.

What is a rectangular magnet wire?

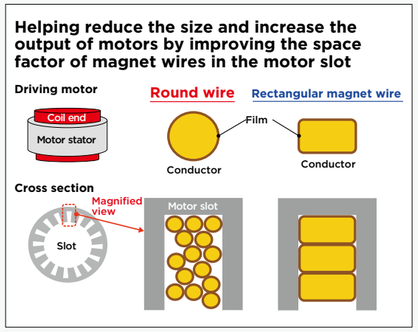
A magnet wire is an electric wire that is used to convert electrical energy into magnetic energy. It plays an important role in various aspects of our daily lives as a key part for automotive electrical components, industrial motors and electric home appliances.

Compared to a round wire, a rectangular magnet wire can be wound without gaps in the same space. This helps reduce the size and increase the output of motors.

Sumitomo Electric started manufacturing magnet wires in 1916. Thus, the magnet wire business has a history of more than 100 years. It started production outside Japan early to assist customers that launched overseas production. Sumitomo Electric Wintec (Thailand) Co., Ltd., established in 1969, was Sumitomo Electric's first manufacturing base outside Japan.

The Sumitomo Electric Group remains committed to developing and manufacturing high-value-added magnet wires of the finest quality and ensuring stable supply globally in order to support manufacturing in various industries.

Helping reduce the size and increase the output of motors by improving the space factor of magnet wires in the motor slot

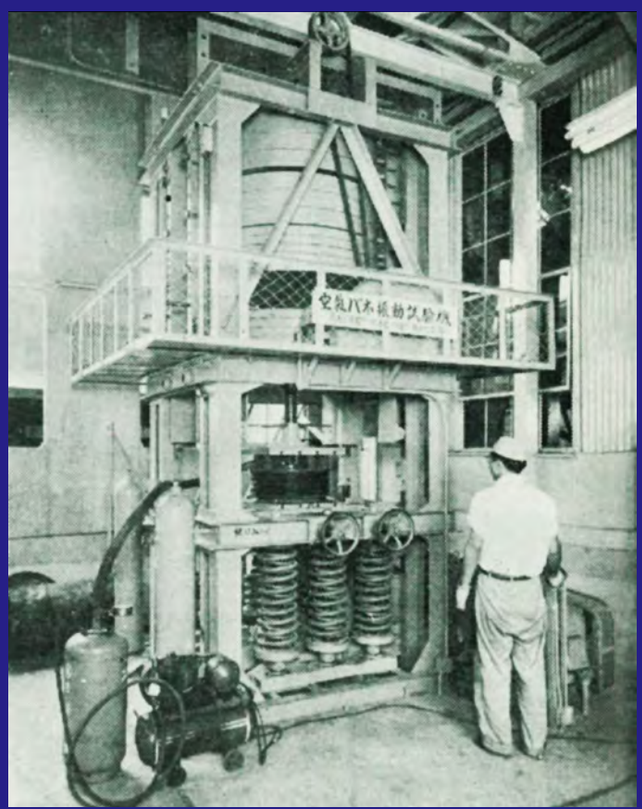


Magnet wires: https://global-sei.com/products/magnet-wire/

A Picture of Sumitomo Electric in Those Days

1958

Starting production of air springs for railcars



12-ton air spring testing equipment

Product engineering capabilities refined through electric wire development

Sumitomo Electric has been developing various new products based on its engineering capabilities in manufacturing electric wires. One such product is an air spring that consists of suspensions, rubber parts and metallic parts to suppress railcar vibration. The Company has a long track record in the electric wire business. Its rubber and plastic materials for the insulation sleeves performed well even before WWII. Electric wires and cables are exposed to sunlight and weather for long periods of time. Thus, insulation sleeves that are used under severe conditions must meet extremely high characteristics requirements. The material engineering capabilities that have made it possible to meet such requirements are utilized to manufacture important rubber parts that take advantage of air compressibility as a spring.

After the research department started studying air springs in 1955, Sumitomo Electric worked on developing air springs mainly for railcars. In 1957, the Company developed Sumipress, a new type of air spring. In 1958, the Company started production for private railways, and in 1960, it expanded the production for the Japanese National Railways (JNR, today the Japan Railways [JR] Group). Subsequently, air springs started being used for Shinkansen bullet trains. Efforts were made to develop new advanced technologies to meet the need for higher railcar speeds. Today, the air springs are used for various railcars including the N700 series Shinkansen trains, Japan's first High Speed Surface Transport system, and the New York City Subway. By 2018, Sumitomo Electric had delivered more than 530,000 units to customers in and outside Japan.

* An engineer who currently works on R&D of air springs is introduced in id Vol. 02. Please visit the following web page: https://global-sei.com/id/2017/10/styles/index.html

id vol.08

Information and videos not posted in this magazine are found on the "id" special site
https://global-sei.com/id/

Issue: Spring 2019
Publisher: Sumitomo Electric Industries, Ltd.
(Public Relations Department)
4-5-33, Kitahama, Chuo-ku, Osaka, Japan
Publisher in charge: Yuichiro Horiba
Editor: Universal Combo Inc.