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Expanding the Horizons of Infrastructure Business to Create an Affluent Society

Completion of Several Infrastructure Projects in Japan and Overseas

Established in 2013, the Infrastructure Business Unit plays an important role in TOYO's business. With "TOYO Is Infrastructure" as its slogan, the Unit develops proactive strategies for securing orders and is raising its profile. In this issue of TOYO TIMES, we asked Haruo Nagamatsu, Unit Director of the Infrastructure Business Unit, about the current status and future direction of the infrastructure business.



Haruo Nagamatsu
Senior Executive Officer
Unit Director, Infrastructure Business Unit

Increasing Client and Industry Recognition Through Successful Projects

■ Recently, TOYO's infrastructure business has been drawing attention globally. What do you think about this growing recognition?

In the few years that TOYO has been actively involved in the infrastructure business field, we have been gradually recognized as we accumulate a track record of successfully completed projects. And, I feel this has been a big driving force for the industry as a whole. In 2010, TOYO was awarded an EPC* contract for a 400 MW gas combined cycle power plant in Azerbaijan. In Thailand, TOYO carried out a complicated project consisting of the simultaneous construction of seven natural gas-fired cogeneration power plants. And we've also been active in fields other than power generation. The first stage of a wide-area non-revenue water reduction project was completed in 2015, and the project is currently continuing on to its second stage in Yangon City, Myanmar, in partnership with TSS Tokyo Water Co., Ltd. (TSS). And in Japan, construction has been carried out on large-scale photovoltaic power plants. This record of achievements has been highly praised by clients and the industry, and has boosted TOYO's presence in the infrastructure business.

*EPC: Engineering, Procurement and Construction

■ When did TOYO become actively involved in the infrastructure business?

TOYO's involvement in the infrastructure field is not a recent development. TOYO's business has been centered on EPC for fertilizer and petrochemical plants, where power generation, water treatment and steam generation are indispensable. Based on this experience, TOYO worked on gas-fired thermal power plants in Brunei and Australia in the 1980s, and on a large-scale coal-fired power plant in Indonesia in the 90s. However, it was really from the 2000s onward that infrastructure grew to be part of TOYO's main business. I believe that TOYO's current growth in this field is built upon our inconspicuous efforts in polishing skills and know-how through the years.

Working to Receive Domestic Large-scale Power Generation Projects by Collaborations with Major U.S. Manufacturers

■ Could you tell us about some ongoing projects?

First, in Thailand, TOYO was awarded construction projects in 2014 for a total of twelve natural gas-

fired cogeneration power plants, and work is on schedule for the completion of all twelve by July 2019. In Indonesia, TOYO was awarded a project for the country's first subway line from Mass Rapid Transit Jakarta in 2015, which involves integrated railway systems and track work for the North-South Line. In Japan, TOYO has worked on the construction of large-scale photovoltaic power plant projects in five locations and the construction of three projects has been completed. Currently, we are executing the Setouchi Project (Japan's largest output class at 230 MW) and the Hosoe Project (96 MW output).

■ Going forward, will power generation projects remain the core of TOYO's infrastructure business?

Please tell us about growth strategies in the power generation field.

Yes, I see the power generation field driving TOYO's infrastructure business forward. With the worldwide population increasing and economic growth centered in emerging countries, there is no doubt that demand for electricity will increase. In Japan, electricity retail liberalization occurred in April 2016, and it is increasingly common for TOYO's clients to enter into the power generation business. In cooperation with General Electric, U.S., we are aiming to surely secure orders for power plant projects ranging in several tens of billions of yen. I hope this will contribute to the expansion of TOYO's business performance.

If we have success with the strategy of increasing competitiveness through cooperation with our partners, there will be an expansion of TOYO's product list of power plants into coal-fired and biomass power. In particular, biomass power shows great promise in Japan for complementing the solar power market, which seems to have passed the peak of the rush of new projects. Regionally speaking, in addition to Japan, TOYO is focusing on Indonesia and the Philippines.

Expanding the Infrastructure Business Field in Line with the Needs of Society

■ What sort of growth scenarios are you planning in the transportation and water fields?

In the transportation field, I expect that market expansion will continue. The phenomenon where the efficiency of economic activities is significantly disrupted due to factors such as traffic congestion has become very much a reality in many major cities around the world, especially in Asia. TOYO plans to take these sorts of social issues as

opportunities for business expansion. In the water field, I feel it is important that TOYO focuses on service work from the perspective of clients. The strategy is—as in the case of the Myanmar project—to optimize our synergy with TSS while expanding the sphere of business into other cities in Myanmar and around Asia.



Jakarta Mass Rapid Transit signing ceremony

■ **Are there other business areas you are focusing on in addition to the areas of power generation, transportation and water?**

I think there are certain needs in the nuclear power generation field. TOYO has been involved in this field since the 1970s and has supplied electric power companies with auxiliary boilers (electric boilers) and spent fuel casks in nuclear power plants. Recently, TOYO has been providing services related to the new regulatory standards of the Nuclear Regulation Authority, Japan. I am looking forward to exploring new possibilities in reactor decommissioning based on TOYO's previous experience.

■ **Can you tell us about the future prospects for the infrastructure business as a whole?**

In the recent few years, the presence of the infrastructure business has gradually been growing within TOYO. In the future, I want to see us put maximum effort into expanding new orders and net sales from the infrastructure business. In quantitative terms, I hope orders and sales for infrastructure will increase to where it accounts for fifty percent of the group.

In terms of our business model, we will not only work with the traditional model of EPC, but also proactively participate in business investment and O&M.* The Setouchi Mega Solar Power Plant Project scheduled for construction completion in 2019 is a first for TOYO. We have been involved in project planning as an investor,

in addition to our role as contractor. This means that electricity sales revenue can be obtained for twenty years after commercial operation begins.

*O&M: Operations and Maintenance

Growing Importance of Overseas Group Companies—From Provision of Local Know-how to On-site Construction

■ **To further develop the infrastructure business, personnel and structural systems must be well organized.**

What kind of organizational structure is used to develop business in the Infrastructure Business Unit?

The Infrastructure Business Unit has over 110 staff members. Besides the sections for sales and projects, it has a group to manage the quality assurance required for nuclear-related markets. About 40 skilled engineers specialized in power generation belong not to the Unit, but to the engineering division serving the entire Company, making their expertise available also to utility projects for hydrocarbon plants.

■ **TOYO is also proactively expanding its infrastructure business overseas. Please tell us about the roles of overseas group companies.**

As is the case with petrochemical, oil refining and fertilizer plants, the functions and roles of overseas group companies in the area of infrastructure are very important. In addition to collecting local information and know-how on their countries and providing them to Toyo-Japan, they are also expected to fulfill the tasks of local procurement, local construction and work related to approval and authorization. For example, in Indonesia, a railway project is being executed in collaboration with group company PT. Inti Karya Persada Teknik (IKPT). By using this collaborative work with an overseas group company and expanding it horizontally into other group companies, we expect a strengthening of each one's engineering and EPC skills as well as the further enhancing of our framework for progressing with global business.

Building a Resilient Business Portfolio by Developing the Infrastructure Business

- **At the Infrastructure Business Unit, the slogan is “TOYO Is Infrastructure.” Please tell us about this slogan and its purpose.**

The people with whom TOYO works think of the oil refining, petrochemicals and fertilizers plant businesses when they hear the name “Toyo Engineering.” While construction of such plants is TOYO’s mainstay business, there can be large fluctuations in the volume of work available due to changes in the market and geopolitical factors. However, because infrastructure represents a business that is closely related to national goals of improving social capital, it is characterized to be relatively stable in proposal numbers and scale. Without certain growth in the infrastructure business, we cannot establish a business portfolio that is not influenced by external changes. Thus, we are moving forward with the simply worded slogan “TOYO Is Infrastructure.” Under this slogan, all staff members can focus their minds in the same direction. I hope we will soon reach a point where clients immediately think of TOYO when they hear the word “infrastructure.”

- **Please tell us about the Business Unit’s strategies for fiscal 2017 (the year ending March 31, 2018).**

In fiscal 2017, in the power generation field, we aim to guarantee receiving large-scale combined cycle power plant projects, and will be making it a top priority to raise awareness that “TOYO Is Infrastructure.” We

will develop the power plant business overseas in the high demand areas of Indonesia and the Philippines. Domestically, we will be aiming at the acquisition of projects particularly in the power generation business, including renewable energy and nuclear-related business.

As such, I am aware that it is critical to create a corporate culture of openness among the personnel of the Business Unit and to share TOYO’s goals and ideals with all members. Our objectives are to promote two-way communication and to encourage a thorough awareness of profitability.

Taking Encouragement from Clients’ High Level of Trust

- **Lastly, please tell us about the operational objectives of the Infrastructure Business Unit going forward and about your aspirations for the future as Unit Director.**

On a company-wide base, the business environment that surrounds our operations certainly cannot be viewed optimistically. However, I want to see TOYO pursuing sustainable growth through the expansion of the infrastructure business. Through global business development over many years, TOYO has acquired a deep trust from our clients, and this trust is an extremely valuable asset and the irreplaceable DNA of the Company that will allow us to move into the future. While continuing to hold firmly onto this DNA in the future, we are determined to concentrate our efforts on the rapid development of the infrastructure business.

PROFILE

Haruo Nagamatsu

Haruo Nagamatsu joined TOYO in April of 1981. He has participated in overseas gas plant projects as a mechanical engineer, and also gained experience in non-mainstream projects such as industrial facilities and monorails in South East Asia and the United States. For four years from 2000, he was President of Toyo-Malaysia. After returning to Japan, he was involved in the business development of power generation and transportation in the division that was the predecessor of the Infrastructure Business Unit. After this, in 2009, he became the project manager of FPSO* topside projects and worked at overseas collaborators’ offices in Singapore and other countries. In total, he has over twenty years’ experience in working overseas. In 2013, he was appointed to Executive Officer and contributed to project success as the General Manager of the Infrastructure Project Unit. In April 2016, he was appointed Unit Director of the Infrastructure Business Unit and Senior Executive Officer, and is scheduled to join the Board of Directors in June 2017. His motto is “make work fun.” He directs the Infrastructure Business Unit with his natural leadership.

*FPSO: Floating Production Storage and Offloading



Expanding TOYO's Infrastructure Business

The infrastructure industry, such as power generation, transportation systems and municipal water, contributes directly to the lives of people in every country and region. Ever since TOYO was founded in 1961, it has worked on power generating facilities and water treatment facilities related to the construction of oil and chemical plant projects. Based on those experiences, the Company has also built a record of achievements in the field of infrastructure through power plant projects and water treatment and distribution facilities.

With power plant projects, in addition to coal and gas-fired thermal power—where TOYO has a wealth of project experience—the Company has also been building a record of achievements within photovoltaic power generation in recent years. Moving forward, TOYO is also aiming to receive projects related to nuclear decommissioning and biomass power plants. Regarding water provision, there are still many regions and even large cities that lack a twenty-four-hour supply. TOYO is working together with municipalities to improve this situation. And in transportation, TOYO is entering the field of public transportation, working on solutions for easing traffic congestion.

The infrastructure business is unaffected by the outside influence of market movements and geopolitics, and is a core area that can stabilize TOYO's business performance. Therefore, TOYO will not be limited to the EPC* business, and its sphere of activity will expand to include operation and maintenance as well as investment in projects themselves.

*EPC: Engineering, Procurement and Construction



Power Generation

Thermal Power Seven SPP*

In 2010, TOYO was awarded projects for seven (790 MW total) natural gas-fired combined cycle cogeneration power plants near Bangkok, Thailand. The Company pursued efficiency through management by a single project team, and completed projects for all seven plants on schedule.

*SPP: Small Power Producers



Thermal Power Twelve SPP

The successful project management high praise, and in 2014, TOYO was awarded projects for twelve (1,470 MW total). Work for each project was completed at a two-month interval, and presently all



Left: Construction is proceeding on the 2nd stage. Right: Equipment installation work is starting. (Left and right pictures, as of Feb. 2014)

Thermal Power Coal-fired Cogeneration

A coal-fired cogeneration power plant (116 MW) is under construction in Japan in collaboration with Mitsubishi Hitachi Power Systems, Ltd.



116 MW Cogeneration Power Plant (Thailand)

77 MW Cogeneration Power Plant (Thailand)

2010

Monorail Transportation System (Malaysia)

2x670 MW Coal-fired Power Plant (Indonesia)

2000

1990

1980

32 MW Combined Cycle Power Plant (Australia)

192 MW Cogeneration Power Plant (India)

147 MW Cogeneration Power Plant (Brunei)



Transportation

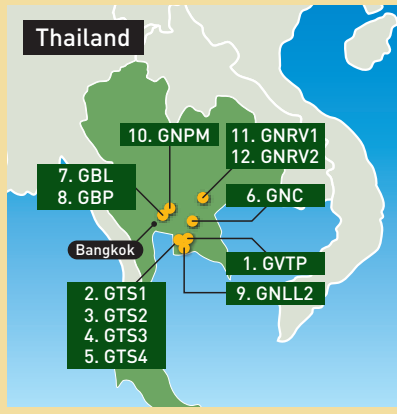


Pre-shipping inspections at the turnout system factory in Japan

of seven SPP projects received awarded twelve SPP projects. One project has been started with a twelve projects are ongoing.



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Power

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Renewable Energy Large-scale Photovoltaic Power

In Japan, TOYO was awarded five large-scale photovoltaic power plants (approximately 460 MW total), and three have been completed. TOYO is also involved in the Setouchi Mega Solar Project (230 MW; Japan's largest class) not only as an EPC contractor, but also as an operating company. The project is scheduled for completion in 2019.

Site	Capacity	Year Awarded
Okayama	230 MW	2014
Okayama	32 MW	2014
Okayama	42 MW	2014
Miyazaki	96 MW	2015
Miyagi	56 MW	2015



Current Initiatives

Thermal Power Large-scale Thermal Power

In collaboration with major power generation equipment manufacturers, TOYO is working on large-scale gas combined cycle power plants and supercritical / ultra-supercritical coal-fired power plants. TOYO is also proactive in areas related to clean coal technologies and facilities related to the environment.

Renewable Energy Biomass Power

TOYO is expanding its involvement in biomass power generation, a field that, in addition to solar power, shows great promise. The Company aims to not only provide EPC, but to also expand its area of operations in the fuel supply chain. Furthermore, TOYO is also expanding its sphere of activities to include areas related to renewable energy such as geothermal and wind power, based on collaboration with its overseas group companies.

2020

2013

The Infrastructure Business Unit was established.

MW Combined Cycle Power Plant (Azerbaijan)
City Center for Large-scale Petrochemical Complex (Brazil)

Through a consortium formed with Mitsui & Co., Ltd., Kobe Steel, Ltd., and IKPT, TOYO was awarded a project in April 2015 that involves the infrastructure export of advanced Japanese railway technology for the North-South Line of the Jakarta Mass Rapid Transit System (for integrated railway systems and track work). Full construction work began in February 2017, and the opening is scheduled for the first half of 2019. TOYO is also aiming to increase orders received for rail projects in other cities to ease traffic congestion and to take environmentally responsible actions.



Water



TOYO is currently working with TSS Tokyo Water Co., Ltd., a supervisory body under the jurisdiction of the Bureau of Waterworks, Tokyo Metropolitan Government, in a public-private cooperative arrangement in Yangon City, Myanmar. The municipality's

high level of operational know-how with waterworks is being leveraged to execute a project under official development assistance funding from the Japanese government for non-revenue water reduction.

Furthermore, in Vietnam, TOYO collaborated with the Osaka City Waterworks Bureau in exploring the feasibility of a PPP* for improving Ho Chi Minh City's water supply through the construction of water distribution reservoirs.

*PPP: Public Private Partnership

TOYO Awarded Two Projects in Indonesia

Toyo-Korea has been awarded a FEED*¹ contract for a new polyethylene project of PT Chandra Asri Petrochemical Tbk (CAP). This project is to construct a swing plant for HDPE, LLDPE and mLLDPE, with total capacity of 400,000 tons per year, at CAP's existing petrochemical complex in Cilegon, Banten, on the western tip of Java, Indonesia.

Earlier this year in January, Toyo-Korea and IKPT were also awarded an EPC*² contract for a butadiene expansion project from PT Petrokimia Butadiene Indonesia, a subsidiary of CAP. This project is to increase total production capacity for butadiene from 100,000 tons per year to 137,000 tons per year, and is scheduled for completion in 2018.

Based on the long-term relationship from the original ethylene plant in the 1990s and the butadiene plant as well as ethylene expansion in the last half decade, TOYO is now executing a project to construct a synthetic rubber plant for PT. Synthetic Rubber Indonesia, a joint venture of Michelin and PT Styrimdo Mono Indonesia, a subsidiary of CAP.

*1. FEED: Front End Engineering Design

*2. EPC: Engineering, Procurement and Construction



Signing ceremony

TOYO Awarded Natural Gas Compression Project in Indonesia

IKPT, along with Indonesian engineering company PT. Timas Suplindo, has been awarded a gas compression facility project being planned by ConocoPhillips (Grissik) Ltd. The project is located in the Suban Field at Corridor Block PSC, South Sumatra in Indonesia. The facility will be comprised of five gas turbine compressors, one gas turbine generator, and the auxiliary and supporting systems. It is scheduled for completion in 2019, and IKPT, together with Timas, will execute the EPC for the project under a lump-sum turnkey contract.



Signing ceremony

LNG Regasification Facility Capacity Expansion Completed

TOYO has completed a regasification facility project to expand the LNG processing capacity from 10 million to 15 million tons per year for the LNG receiving terminal at Dahej in the state of Gujarat, India, owned by Petronet LNG Limited (PLL).



The completed plant

Toyo-India took the lead in EPC work on a turnkey basis, from engineering to construction and commissioning. There were no lost time incidents throughout the total of approximately eight million hours of work, and the project was completed ahead of the contractual delivery time. Commissioning also progressed smoothly, and the plant was able to begin commercial operations earlier than the original schedule.

TOYO has implemented all phases of the regasification plant for PLL, from initial plant construction (from 2000), the first capacity expansion (from 2005), to this second capacity expansion (from 2014). In addition to projects for PPL, TOYO is also executing a regasification project for GSPC LNG Limited (GLL) at Mundra in the state of Gujarat. In India, about 10 additional LNG import terminals are planned in response to growing local demand for electric power, fertilizer and other resources. As the leading company for regasification facility projects in India, TOYO will continue to contribute to social and economic development in the future.

Module Lifting Work for Toppides on P-74 FPSO Completed



Modules onto the hull

Estaleiros do Brasil Ltda. (EBR), TOYO's Brazilian affiliate, is carrying out a topsides construction project on the P-74 FPSO* for the Brazilian national oil company Petrobras. Lifting began after the hull arrived at the EBR yard in August 2016, and lifting of all modules was completed in December 2016. It was the largest lifting work executed in South America with a total module weight of 31,000 tons, which includes the heaviest 2,700-ton module. For this work, the world's largest land-based 5,000-ton-class crane was used. Integration work is now underway.

*FPSO: Floating Production Storage and Offloading

Ethylene and Polyethylene Plants Start Production in Egypt

Production has begun in Alexandria at a 460,000 ton per year ethylene plant, a 20,000 ton per year butadiene extraction plant, and a 400,000 ton per year polyethylene plant planned by ETHYDCO, a company under the Egyptian Ministry of Petroleum that manufactures and sells ethylene-related products.

TOYO carried out the projects in conjunction with Egyptian engineering company ENNPI. Despite a negative impact on the projects from the turmoil of the Arab democratization, which started in 2011, and the military regime change in 2013, the difficulties were overcome and the project was completed.

Based on the technology of Lummus Technology for ethylene and of Univation Technologies for polyethylene, TOYO took the lead in forming a consortium with ENNPI and took responsibility for all EPCC,* from engineering through to construction and commissioning. Construction work was subcontracted to PETROJET, another company under the Ministry of Petroleum.

*EPCC: Engineering, Procurement, Construction and Commissioning



Ethylene and polyethylene plant

FPSO (MV27) for Brazil Begins Oil Production

MODEC and TOYO Offshore Production Systems Pte. Ltd. (MTOPS), a joint company of TOYO and MODEC, Inc., in Singapore, constructed topsides on FPSO Cidade de Caraguatatuba MV27 for MODEC, and it started oil production in December 2016 off the coast of Brazil. The FPSO is capable of processing 100,000 barrels of oil and 177 million cubic feet of gas per day. It is used to develop the Lapa Oilfield (formerly the Carioca Oilfield), which is operated by the Brazilian national oil company PETROBRAS.

The Lapa Oilfield is located approximately 300 km south of Rio de Janeiro, in the pre-salt layer about 5,000 meters beneath the seabed. This is the eleventh project in Brazil for MODEC, and the fourth MTOPS project for PETROBRAS, following on from FPSO Cidade de Itaguaí MV26, which began oil production in 2015.



FPSO MV27

Large-scale Photovoltaic Power Plant Completed in Japan

TOYO has completed construction for a large-scale photovoltaic power plant with a power generating capacity of 42.0084 MW (DC) for Pacifico Energy Mimasaka Musashi G.K. in Mimasaka, Okayama Prefecture, Japan. Work on the plant began in December 2014, and sales of electricity to the Chugoku Electric Power Co., Inc., commenced at the beginning of July 2016. Construction has also been completed for another large-scale photovoltaic plant in Japan, with a power generating capacity of 56.87 MW (DC), for Pacifico Energy Furukawa G.K. in Osaki, Miyagi Prefecture. This project launched in June 2015, and sales of electricity to the Tohoku Electric Power Co., Inc., began in December 2016. In addition, TOYO is currently executing other large-scale photovoltaic power plant construction projects: a 230 MW plant in Setouchi, Okayama Prefecture, and a 96 MW plant in Miyazaki, Miyazaki Prefecture.

Operations management, maintenance and inspections services at the Furukawa Mega Solar Plant will be carried out by TAG O&M Services K.K. over the next 20 years. In order to provide those services to solar power plants, the company was formed in February 2016 through a joint investment by three companies: TOYO's group company TEC Project Services Corporation (TPS), building maintenance industry pioneer GLOBESHIP Corporation, and ATOX Co., Ltd., a company with a proven track record in nuclear power plant maintenance.



Mimasaka Musashi Mega Solar Power Plant completion ceremony



Furukawa Mega Solar Plant

First Commercialized *SUPERHIDIC*[®] Operational



SUPERHIDIC[®] distillation tower

TOYO has completed construction for a *SUPERHIDIC*[®] energy saving distillation system project awarded from Maruzen Petrochemical Co., Ltd. This system has achieved an energy saving of over 50% compared with conventional distillation. It was designed with the aim of providing large energy savings for the MEK production plant of Maruzen Petrochemical in Chiba Prefecture, Japan, and is the first commercialized *SUPERHIDIC*[®] system.

SUPERHIDIC[®] is a technology that reduces the amount of energy used in distillation, a unit operation widely applied in oil refineries and petrochemical plants. It has been researched for many years by companies, universities and research institutions around the world, and TOYO is the first to commercialize it. The system reduces thermal energy consumption in heating the reboiler at the bottom of the distillation tower and cooling the condenser at the top of the tower. Consequently, CO₂ emissions are also reduced, and it enables not only to save energy but also to contribute directly to reducing emissions of greenhouse gases.

Based on the success of this project, TOYO is planning to expand the commercialization of *SUPERHIDIC*[®] and aims to contribute to saving energy at oil refineries and petrochemical plants, lowering operational expenses, and further reducing the burden on the global environment.

Declaring Safety in Construction for Pharmaceutical Plant Project



Groundbreaking

In March 2017, a ceremony was held at the Joban Factory of Yuki Gosei Kogyo Co., Ltd., Fukushima Prefecture, Japan, to pray for safety during construction of a new pharmaceutical manufacturing plant in the presence of the company President,

Mr. Ito, and other involved parties.

Under its mid-term business plan, which began in 2016, Yuki Gosei Kogyo has been focusing on its strategic policy of strengthening the development of new commodities by constructing new pharmaceutical manufacturing facilities. The company is positioning this new facility, which will be capable of manufacturing many different products, at the center of its mid- to long-term strategies.

TEC Project Services Corporation (TPS) has participated in the project since the basic engineering stage, and was awarded the construction project, including validation. Construction is scheduled to commence in April, with project completion and handover targeted for March 2018.

GE and TOYO sign MOU on Digital Collaboration

General Electric Company (GE) and TOYO signed an MOU^{*1} for a joint project to explore digital solutions for the fertilizer and petrochemicals industry. Under the MOU, GE and TOYO jointly work to evaluate, define and confirm the technical and economic feasibility of applying GE's Predix, a unique cloud-based platform built for the industry, and its APM^{*2} software, to implement specific solutions for pre-FEED, FEED, EPC^{*3}, commissioning, operation, and maintenance phases of fertilizer and petrochemicals facilities.

GE has a strong track record in providing asset reliability solutions across the oil and gas segments around the world through its advanced sensors, combination of data driven and physics based analytics, and troubleshooting expertise. TOYO provides its expertise as an EPC contractor of fertilizer and petrochemicals plants and as a licensor of urea synthesis and granulation technologies.

*1. MOU: Memorandum of Understanding

*2. APM: Asset Performance Management

*3. EPC: Engineering, Procurement and Construction

Urea Licensee Meeting 2017 in Bali, Indonesia

The Urea Licensee Meeting (ULM) 2017 was held from February 12–15, 2017, in Bali, Indonesia. ULM is held once every four years to promote technology exchanges with TOYO's urea licensees. Last convened in Kuala Lumpur, this ULM was held in collaboration with state-owned Indonesian fertilizer company PT Pupuk Sriwidjaja Palembang (Pusri)—a technology development partner in the ACES21[®] urea synthesis technology. With the support of TOYO's major business partners, over 130 clients from 33 different companies and 11 countries attended.

At the meeting, TOYO introduced examples of its success with large-scale urea plants, including projects for state-owned Indonesian fertilizer company PT Pupuk Kalimantan Timur (Kaltim) (3,500 tons per day) and for Indorama Eleme Fertilizer and Chemicals Limited, Nigeria (4,000 tons per day). There was also a presentation on future initiatives with Digital Fertilizer that uses the Industrial Internet of Things (IIoT) based on a memorandum of understanding signed by TOYO and General Electric, U.S., at the end of 2016. Also, the major business partners introduced recent initiatives in high-pressure vessels for urea and its materials. On the other hand, plant owners discussed long-term operational results, their plant situations during operation, maintenance and points for improvement, which led to active information sharing and exchanges between participants.

Following the meeting on February 16, there was an event that involved visiting the large-scale fertilizer plant in Bontang on Indonesia's Kalimantan Island. Plant owner Kaltim gave its full cooperation and provided an opportunity for participants to observe the entire flow from the manufacturing process to packaging, and to gain a deeper understanding of TOYO's urea technologies.



At the end of the meeting



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