TOYO TIMES

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TOYO ENGINEERING

Striving to Change Corporate Culture and Quickly Recover Performance

TOYO's new President Kiyoshi Nakao on business strategies for the recovery of financial performance

The deterioration in profitability of several ongoing projects and substantial losses by our equity method affiliates in Brazil have led to extremely disappointing business results for fiscal 2014, the year ended March 31, 2015.
To overcome this crisis, TOYO changed its management in April of this year.
With the new management team in place, TOYO has launched initiatives to revitalize the company.

Mission of the New Management: Solidify our business base and achieve a financial recovery

■ To begin with, would you please tell us how you came to be President and what your aspirations are as TOYO's new leader?

Up until the end of the fiscal year, I was acting as a Director and head of the Plant Project Unit. Consequently, I felt greatly responsible for the current deterioration in TOYO's performance. As such, when I was being considered for the position of President, I felt very hesitant to accept it. However, in light of my accumulated experience and knowledge gained as the head of an overseas group company and as the head of project operations—coupled with my desire to contribute to TOYO's financial recovery—I decided to accept.

TOYO had to revise its earnings forecasts downward for three consecutive years, and our consolidated performance in fiscal 2014 was down substantially, greatly decreasing our equity. Therefore, my first job as President is to establish a structure that will return the company's business operations to profitability as quickly as possible. In other words, to get TOYO back on the path to growth, we first have to solidify our business base and achieve a financial recovery. To that end, I will restructure the management system, improve the management process at the proposal stage, enhance project management capability, and change our corporate culture.

New Measures to Enhance the Risk Management System

■ How do you intend to implement each of these reforms specifically?

To restructure the management system, I will start with changing the mindset of our management team and achieve more rapid decision making. For greater transparency in corporate operations and to clarify the division of roles between management and business execution, I will increase the number of outside directors on the board from one to three. Also, I will implement reform in the Executive Committee and proceed with initiating measures to brace the group's steering structure.

The next reform is improving the management process at the proposal stage. Here I will work to improve the quality of proposals by incorporating valuable ideas to the client, not falling into price competition only. This will include improving the process of receiving orders by placing emphasis on the balance between our workload and our resources, and by conducting more effective proposal screening before we take up an opportunity.

The third reform is enhancing project management capability. We will strengthen the management system by improving the areas where our execution of multi-office projects is not yet sufficient, while making Toyo-Japan the project office for mega projects already under way. Such aspects as the development and strengthening of key project personnel and passing on technical traditions to prevent loss recurrence will also be essential.

The fourth reform, changing our corporate culture, will provide the base for all of these reform measures. As a result of the wave of project losses, openness within the company has declined. I will strengthen the organization by increasing the sense of ownership in each and every employee as well as enhancing motivation. To do so, I will push ahead with activities to promote communication so that employees can overcome the gap between organizations and their respective ranks and speak out.

Remedial Management Action Plan

▶▶▶▶ Restructuring of Management System
- ❶ Change mindset
- ❷ Executive committee reform
- ❸ Bracing group steering structure

▶▶▶▶ Improvement of Management Process at Proposal Stage
- ❹ Balanced sales activities
- ❺ Intensive approval process
- ❻ Improvement of proposal quality

▶▶▶▶ Enhancement of Project Management Capability
- ❼ Enhancing project management capability for multi-office project execution
- ❽ Enhancing project management organization for mega projects
- ❾ Reinforcement of project key personnel

▶▶▶▶ Change of Corporate Culture
- ❿ Promotion of all-around communication

Please tell us about the details of your plan to reinforce risk management.

As a new management strategy for reinforcing risk management, I will reform the Executive Committee and establish a Business Strategic Committee to confirm management objectives for all proposals and projects from an overall company perspective. Moreover, I will set up a Sales and Project Management Committee that will fully discuss the main issues and risks of individual projects and, without delay, decide and provide instructions on the necessary measures to address those issues and risks. Next, I will enhance the role of the strategy meeting in each proposal, fostering greater risk awareness from various perspectives right from the start of the proposal stage. I will also introduce an approval process that ensures transparency and a checks and balances function in the final offer. To improve project risk management, in addition to the quarterly performance management reviews, we will be looking at monthly performance for core projects. In addition, to strengthen the risk management system for group companies, I will set up a Corporate Strategy Unit and, under the Executive Committee, a Group Operation Committee. Through these bodies, we will enhance the project execution capabilities of group companies and carry out thorough performance target management for consolidated profits.

Looking back once again, what do you think is the cause for the downward revisions in TOYO's forecasts for three consecutive years?

Overall, I have broken it down into four root causes that have negatively affected project budgets. First, during times when we had a lack of orders under a severe business environment, we took on some orders with consequently difficult conditions. In other words, the number of new orders was increasing at one point, and there wasn't enough staff to assign to them. As a result, acceptance of proposals was being restrained. We fell into a "negative cycle," where orders declined and the company repeatedly took on such orders. Second, underestimating risks at the proposal stage, as in the Indonesian fertilizer plant project, led to large losses. In addition, regionally, I regret to say that our risk analysis for projects in new regions, such as Nigeria and Canada, was insufficient. The third cause was insufficient manpower resources for projects. Finally, the fourth cause was a problem with management of multi-office project execution on which we collaborated with our overseas group companies. It is my understanding that management's response was delayed because of an insufficient or slow grasp of the project's status, resulting in even larger losses.

Please explain the reasons for the substantial losses of the Brazilian equity method affiliates and how these issues are being addressed going forward.

The losses of the Brazilian equity method affiliates totaled ¥23 billion. Of that amount, the loss on the P-74 FPSO topsides project was ¥16.7 billion and fixed asset impairment losses on the yard were ¥5.5 billion. Looking back, as a parent company, we overestimated the project management capability for our affiliates, and did not accurately confirm the effectiveness of the governance at our equity method companies. The yard losses were the result of a revision of the yard business in consideration of the trend in investments by Petróleo Brasileiro S.A. (PETROBRAS).

That brings us to how we are going to address these issues. To start with, we are going to complete the projects in hand at our affiliates, working to minimize losses. For that purpose, we have set up a Brazil Task Team that reports directly to me. We also are going to substantially increase the number of expatriates from the head office to strengthen local management systems. We will reinforce risk management and make efforts to recover losses with the assistance of the client. We also will keep a careful eye on market conditions in Brazil, including PETROBRAS' investment plans, and cautiously respond to any changes in the market.

Three Strengths that Differentiate TOYO from the Competition

What is your perception of present market conditions in the global engineering industry?

The industry is facing a serious business environment globally. We are seeing the fizzling out of projects in oil producing countries and the impact of the sharp drop in oil prices. In addition, there is still heightened geopolitical risk in the Middle East and the region around Russia. Even in Brazil, both political and economic conditions remain unclear. Furthermore, the competition faced by TOYO from Korean, Chinese, and other contractors is fiercer than ever.

On the other hand, I think the market environment in Asia, including India, is favorable. Substantial investments are expected to continue to flow into the petrochemical and fertilizer industries. There are also many infrastructure-related projects emerging, especially in developing countries. We can expect stable growth in the social infrastructure market. This market is particularly active because the Japanese government has designated a policy to promote infrastructure project exports, which is favorable for the market. I also am expecting that the future holds some promise for the energy business, which consists mostly of engineering and project services, in the medium- to long-term. TOYO needs to carefully consider what regions and fields will grow in the future, and concentrate its business resources accordingly.

In your opinion, what are TOYO's unique strengths or advantages that will drive its success in this competitive marketplace?

I see TOYO as having three strengths. First, it has an abundant product and services lineup. From oil & gas development, to petrochemicals, chemicals, infrastructure and more, TOYO operates in businesses throughout a wide range of domains. We are therefore in a good position to take advantage of diverse business opportunities and convert them into earnings sources.

Second, TOYO has overseas group companies around the globe that can execute EPC* projects. Those companies are still going through a learning curve, but I am confident that in the future they will develop into superior, leading operations.

TOYO's third strength is its advanced technology. We have accumulated many in-house proprietary technologies that enable TOYO to get involved in discussions with clients at the project start-up stage. They include ACES21® urea process technology and urea granulation, our MRF-Z® methanol synthesis reactor, and *SUPERHIDIC*® energy saving distillation system technologies. These advanced technological capabilities enable us to participate in the earliest planning and design stages of clients' projects.
I plan to further improve these three strengths and utilize them as the driving force behind the revitalization of TOYO.

*EPC: Engineering, Procurement and Construction

Targeting Earnings Growth Through Mega Projects

Please tell us about TOYO's performance targets for fiscal 2015 and beyond.

In fiscal 2015, our performance forecast is for sales of ¥340.0 billion and net income of ¥3.0 billion. 80% or more of fiscal 2015 sales are expected to come from projects already in hand. The group will aim to meet its earnings goals through steadfast execution of projects, reducing expenses, and other measures. Our goal for orders in fiscal 2015 is ¥330.0 billion. However, due to the award of the U.S. ethylene plant and the Indonesian railway system projects, we have already achieved about half of that figure. In addition, we are anticipating project orders for cogeneration power plants in Thailand, a petrochemical plant in Indonesia, a mega solar power plant in Japan and others. Keeping in mind the profitability of orders, we intend to strategically build our order book.

Currently, TOYO has particularly large-scale projects under way that we have classified as "mega projects." These are a large-scale ethylene complex project in Malaysia, a large gas chemical complex in Turkmenistan, and a large solar power project in Setouchi City, Japan. All of them got fully under way in 2014 and are proceeding as scheduled, including project budget

Short-Term Targets

(Billion Yen)

	FY2015	FY2016	FY2017
New Orders	330	350	350
Net Sales	340	490	450
Gross Profit	27	34	33
Gross Profit Rate	7.9%	6.9%	7.3%
Operating Income	2.5	10	8
Operating Income Rate	0.7%	2.0%	1.8%
Ordinary Income	4.5	11	9
Net Income	3	7	6

outlook. In addition to these projects, the U.S. ethylene plant has started. When progress with these four mega projects reaches its peak in fiscal 2016, we are expecting annual net sales of ¥490.0 billion. Gross profit will also increase, and our forecast for net income is ¥7.0 billion. It is difficult to predict orders for fiscal 2016 and beyond, but TOYO has set the new order target for ¥350.0 billion annually. Maintaining a balance in the workload between ongoing projects and new orders, we will endeavor to achieve stable order levels.

Developing Close Communications and Rapid Decision-making Ability

In conclusion, do you have a message for our stakeholders?

To begin with, I would like to express my sincere regrets for the concern TOYO has caused its stakeholders from repeated downward earnings forecast revisions and the deterioration in business results. Under the new management, TOYO is undergoing a change aimed at restructuring its business base and achieving an early recovery in performance. During the first fiscal year under the new management, we will get a new operating framework up and running—and I am especially confident that I will be able to report positive progress toward a recovery in profitability in each of our initiatives.

I will be expending the greatest efforts on transforming TOYO's corporate culture, making it possible to discuss issues thoroughly and make decisions rapidly. I intend to revitalize TOYO by removing divisions between management, employees, and business sections. We will maintain close communications between our individual departments and achieve sound profitability. With these tasks ahead, I ask our shareholders for their continued support and encouragement.

President Nakao delivers his general policy speech to employees on April 1, 2015.

PROFILE

Kiyoshi Nakao
President and Chief Executive Officer

Kiyoshi Nakao joined Toyo Engineering Corporation in 1977. He gained experience as a mechanical engineer working in Overseas Projects / Proposals. During the latter half of the 1990s, he was the project engineering manager on a large-scale ethylene plant project with a capacity of one million tons in Taiwan, which was successfully completed—at the time one of the largest ethylene plants in the world.

In the technology development field, Mr. Nakao contributed to the development and commercialization of MRF-Z®, one of TOYO's proprietary technologies. MRF-Z® is a reactor with a multi-stage and indirect cooling type configuration and a radial flow feature. It is capable of methanol production on the scale of 5,000 to 6,000 tons per day using a single reactor vessel.

In 1999, Mr. Nakao became head of the Mechanical Engineering Department, using his technical expertise to drive TOYO's technology departments. He was appointed an Executive Officer in 2004 and contributed to acquiring many projects as the General Manager of the Proposal Division. In 2006, as General Manager of the Procurement Division, Mr. Nakao worked to globalize TOYO's procurement operations through overseas group companies. He became a Senior Executive Officer in 2008, and was appointed President of Toyo-China in 2009. In the sharply growing Chinese market, he transformed TOYO's business from providing primarily "soft" services projects, such as feasibility studies, to taking on entire projects on an EPC basis. In April 2013, Mr. Nakao returned to Japan, becoming the parent company's Senior Executive Officer and taking over responsibility for project execution as Unit Director of the Plant Project Unit. In June of the same year, he joined the Board of Directors.

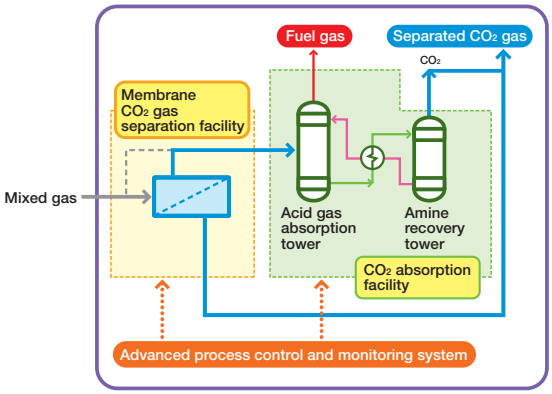
In April 2015, Mr. Nakao became Toyo Engineering's President and Chief Executive Officer. In his first address to all employees on becoming President, Mr. Nakao expressed his wish to turn TOYO into a company that will heighten its unique value by providing attentive services.

New Initiatives in the Energy Development Business

【Feasibility Study for Energy Conservation and Environment-friendly Oil Field Infrastructure System】

TOYO, jointly with Marubeni Corporation, will conduct a feasibility study of an energy conservation system for oil field infrastructure in Jatibarang Field, Java, Indonesia. This study is a program of the "International Demonstration Project for Energy Conservation and Environment-Friendly Oil Field Infrastructure," commissioned by the New Energy and Industrial Technology Development Organization (NEDO), Japan.

TOYO will employ a Dynamic Hybrid Gas Separation System with a membrane unit and a chemical absorption unit to extract CO_2 from hydrocarbon flow. The integrated units will reduce the energy consumption of the gas separation system. The incorporated dynamic simulator will analyze past production trends and optimize future operations by predicting a variety of physical properties through reservoir model analysis of the oil field (i.e. gas pressure, volume and composition). This system will utilize associated gas for power generation, contributing to a reduction in gas flaring and total energy consumption in the entire oil field operation.



Process flow chart for the Dynamic Hybrid Gas Separation System

【Upstream Business Collaboration Agreement】

In January 2015, Baker Hughes (BH) and TOYO signed a collaboration agreement for oil & gas development to provide clients with seamless engineering services from subsurface to surface.

BH and TOYO aim to jointly support clients to maximize oil production from existing fields with less investment than new field development through IOR*1 and EOR*2, which need highly advanced and integrated technologies for subsurface and surface engineering services.

*1. IOR: Improved Oil Recovery *2. EOR: Enhanced Oil Recovery

Integrated Railway Systems and Track Work Contract in Indonesia

Signing ceremony

A consortium comprised of TOYO, Mitsui & Co., Ltd., Kobe Steel, Ltd. (KOBELCO), and PT. Inti Karya Persada Tehnik (IKPT) have been awarded a project by PT Mass Rapid Transit Jakarta (MRT Jakarta), a company founded by the Jakarta Provincial Government. The approximately ¥25 billion contract involves constructing and installing an integrated railway system and track work for the Jakarta MRT North-South Line. The signing ceremony was held recently.

Mitsui will act as the consortium leader, with TOYO responsible for project management. TOYO will also design and supply the substation system, power distribution system, overhead contact system, track work, escalators and elevators. KOBELCO's role will be system integration and the design and supply of the signaling, telecommunication, automatic fare collection and platform screen doors systems. IKPT will be responsible for the installation of all the systems and the supply of local equipment.

One of the purposes of Jakarta MRT is to mitigate the severe traffic congestion in the country's capital that has occurred along with the rapid economic growth in recent years. The project is also targeted to enhance basic infrastructure development to improve the environment for further investment in the country. Joko Widodo, President of Indonesia, has actively promoted this project since his former tenure as Governor of Jakarta. The Japanese government has extended an ODA*1 loan to the project through the STEP*2 program, which provides aid while promoting Japanese technology. An extension of the North-South Line and construction of an East-West Line are also planned for the future.

*1. ODA: Official Development Assistance *2. STEP: Special Terms for Economic Partnership

Outline of the Jakarta MRT North-South Line

Length	15.7 km (9.2 km elevated rail, 6.5 subway rail)
Stations	13 stations (7 elevated stations, 6 subway stations)
Estimated passengers	410,000 per day (in 2020)

Large-Scale Ethylene Complex Project in Malaysia

In the summer of 2014, TOYO was awarded a lump-sum turnkey contract for a Steam Cracker Complex (SCC) in Malaysia. The SCC is the core facility of a RAPID* project being built in southern Malaysia by Malaysia's national oil and gas company PETRONAS to realize integrated production from crude refining to petrochemicals. The SCC project covers construction of an ethylene production plant, pyrolysis gasoline plant, butadiene extraction plant, benzene extraction plant, and utility and offsite facilities. The project is scheduled for completion in mid-2019.

RAPID is part of the PETRONAS Pengerang Integrated Complex development, which plans to be an international oil and gas trade hub. RAPID is a mega project consisting of a refinery with a production capacity of 300,000 barrels per stream day and a petrochemical complex with a combined capacity of producing 7.7 million metric tons per annum of various petrochemical products, such as synthetic rubbers and high-grade polymers.

Under the management of Toyo-Japan, four TOYO group companies are collaborating on the SCC project. The engineering and procurement of major equipment are proceeding smoothly. TOYO has a proven track record of more than 30 projects from the PETRONAS group. In addition, TOYO has constructed more than 40 greenfield ethylene plants around the world.

Signing ceremony

*RAPID: Refinery and Petrochemicals Integrated Development

Natural Gas-fired Cogeneration Power Plant Projects in Thailand

Signing ceremony

At the end of November 2014, TOYO and TEC Project Services Corporation individually entered into the construction and supply contracts for natural gas-fired combined cycle cogeneration power plants with twelve special purpose companies jointly owned by Mitsui & Co., Ltd., and Gulf Energy Development Company Limited. Based on the contracts, twelve power plants are to be constructed at sites located in the suburbs of Bangkok (nine 120 MW and three 130 MW, total generation capacity 1,470 MW).

From February 2015, construction of the first power plant began, and all twelve power plants are scheduled for completion by July 2019. As of April this year, the project is proceeding smoothly, receiving a notice to proceed with the second power plant on schedule.

TOYO and Mitsui have previously completed seven cogeneration power plant projects (five 110 MW and two 120 MW, total generation capacity 790 MW) in the suburbs of Bangkok during the period from 2010 to 2013. TOYO overcame the damage from the flooding that occurred in the Bangkok area in 2011 and completed the projects on time. The successful implementation of these projects led to the award of the new contracts.

TOYO Wins U.S. Ethylene Plant Project

TOYO has been awarded an ethylene plant project in the U.S. by Shintech Inc., a U.S. subsidiary of Shin-Etsu Chemical Co., Ltd., Japan. The plant will be built in Plaquemine, Louisiana. Utilizing production technology licensed by Lummus Technology Inc., U.S., it will have an annual production capacity of 500,000 tons. TOYO will be responsible for providing engineering and design, procurement of equipment and materials, construction, and pilot testing on a lump-sum turnkey basis. Local construction operations will be managed by Chicago Bridge & Iron Company (CB&I) under the supervision of TOYO. Scheduled for completion in the first half of 2018, the new plant's entire ethylene production will be used as feedstock for Shintech's existing polyvinyl chloride (PVC) resin production facilities.

TOYO has a long track record in this field. The Shintech project marks TOYO's 45th ethylene plant project, and it followed soon after the previous project—an ethylene plant project in Malaysia (see above article). This project is also the largest TOYO has ever won in the U.S. The client awarded this project based on their high evaluation of TOYO's performance and reliability in the field.

Japan's Largest Mega Solar Project Gets Under Way

Construction site (panels are an artistic rendering)

Setouchi Future Creations LLC, an SPC* jointly funded by TOYO, Kuni Umi Asset Management Co., Ltd., and GE Energy Financial Services, has begun implementation of a project to build a mega solar photovoltaic plant and will start up an electric power business. The plant will have a capacity of 231.44 MW and be built on the vacant site of the former Kinkai salt field in Setouchi, Okayama Prefecture. In July 2012, the SPC's proposal for utilization of the vacant site was chosen over other proposals in a public competition for use of the site. In the proposal, the SPC showed how the city would benefit from the economic ripple effect generated by the planned mega solar power generation business.

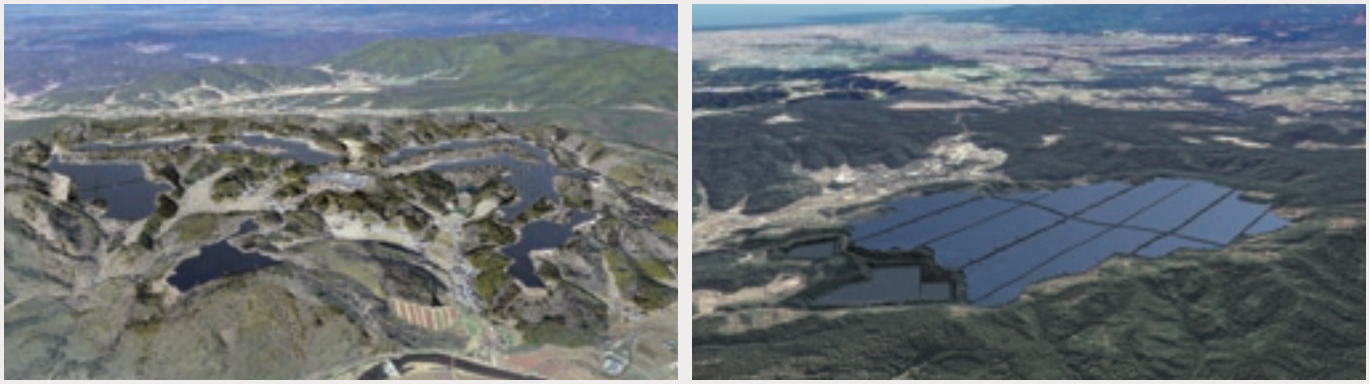
Construction commenced in November 2014. Currently, the project is in the engineering and design stage, and a total of 900,000 solar panels have been ordered. Commercial sales of electricity are scheduled to begin in spring of 2019. TOYO is collaborating with Shimizu Corporation on the construction of the mega solar photovoltaic plant and associated facilities. Total project costs are expected to be about ¥110 billion, with ¥90 billion being provided on a non-recourse project finance basis by a loan syndicate led by leading Japanese banks. The solar photovoltaic plant will offer power to the Chugoku Electric Power Company, Inc. Following start-up of the plant, operations and maintenance services are scheduled to be mainly supplied by Chudenko Corporation.

*SPC: Special Purpose Company

TOYO Awarded Two Mega Solar Power Plant Projects in Japan

TOYO has been awarded two large-scale photovoltaic power plant projects in succession by Jamieson Group subsidiary Pacifico Energy K.K. and GE Group. TOYO received the first contract for a plant in Mimasaka, Okayama Prefecture in December 2014, followed by a contract for a plant in Miyazaki, Miyazaki Prefecture in March 2015. TOYO will be responsible for engineering, procurement of equipment and materials, construction, and commissioning on both projects. The Mimasaka plant will have a power generating capacity of 42 MW and is scheduled for completion in the summer of 2016. The power generated will be sold to the Chugoku Electric Power Co., Inc. The Miyazaki plant will have a power generating capacity of 96 MW and is scheduled for completion in the spring of 2018. The power generated will be sold to the Kyushu Electric Power Co., Inc. TOYO is also currently proceeding with construction of another large-scale photovoltaic power plant with a power generating capacity of 32 MW in Kumenan City, Okayama Prefecture for Pacifico Energy K.K.

A source of renewable energy, photovoltaic power is expected to play an increasingly important role in power generation from a global environment conservation viewpoint. TOYO will continue to work on photovoltaic power plant projects as part of its infrastructure business.



Panels are an artistic rendering (Left: Okayama prefecture, Right: Miyazaki prefecture)

Gas Processing Plant Rejuvenation Project in Malaysia Completed

Modernized plant

TOYO has completed a project to modernize a gas processing plant for PETRONAS Gas Berhad (PGB), a subsidiary of the Malaysian national oil company PETRONAS. The rejuvenated and revamped facilities began production in April 2015. The purpose of the project was to add another 20 years of useful life and ensure safe, stable operations for the client's No. 4 gas processing plant. The plant has a production capacity of 250 million cubic feet per day and is located in Kerteh, state of Terengganu, in eastern Malaysia. Toyo-Japan and Toyo-Malaysia formed a consortium to cooperate on the project, providing basic design and EPCC* on a lump-sum turnkey contract basis. Toyo-Malaysia took the lead in the project following the basic design and engineering stages.

After making careful preparations to minimize down time at the plant, full-scale construction and renovation got under way in October 2014. The consortium completed the modernization and commissioning processes in just six months, including an overall renewal of the electricity facilities and the distributed control system. During the project, TOYO had to deal with the heaviest rains and flooding in forty years in Kereth. However, under the slogan, "We are One Team," the consortium worked closely with the client to make progress, and finished the project. PGB has rated TOYO very highly for completing the project.

*EPCC: Engineering, Procurement, Construction and Commissioning

Three Projects Completed in China

Completed plant for Chinese subsidiary of Daikin Industries

Last year, Toyo-China completed three projects in China. In June 2014, the company finished construction of a specialty ester manufacturing plant in Nanjing, Jiangsu Province for OXEA, a major German specialty chemicals producer. Construction of the plant took 25 months, during which Toyo-China provided EPsCm.*1 The company also achieved one million hours of incident and injury free operations during the project. The ester plant was OXEA's first production facility in Asia.

In July 2014, Toyo-China completed a project in Changzhou, Jiangsu Province. The project involved construction of a 10,000 metric ton ethylene tank, liquefier and refrigeration facilities, and a transportation pipeline for global specialty chemical leader Lanxess.

Following that, Toyo-China completed a project in Changshu, Jiangsu Province in September 2014. The client was a local subsidiary of Daikin Industries, Ltd., the world's leading manufacturer of fluorochemical products. Toyo-China finished the plant project in the short time of 19 months while achieving 1.38 million incident and injury free operating hours. This was one of the largest EPC*2 projects Toyo-China has handled independently.

Building on its strong record with Japanese and European clients, Toyo-China will continue to concentrate its efforts on supporting customers' projects in China.

*1. EPsCm: Engineering, Procurement services and Construction management

*2. EPC: Engineering, Procurement and Construction

World's First *SUPERHIDIC*® Internal Heat Integration

TOYO has been awarded a project to implement the first commercial application of *SUPERHIDIC*®, its energy saving distillation system patented in 2011. The technology will be applied to a distillation column in a Methyl Ethyl Ketone (MEK) production plant to be constructed by Maruzen Petrochemical Co., Ltd., in Japan. At the groundbreaking ceremony held in April 2015, traditional prayers were offered for the incident and injury free completion and on-schedule delivery of the project.

The distillation operation that is generally used in oil refineries and petrochemical plants is a thermal energy intensive process. Liquid at the bottom of a distillation tower is heated using a reboiler, and the generated gas that collects at the top of the tower is cooled using a condenser.

Various technologies have been proposed to save energy in the distillation process. The announcement of the HIDiC* concept in the 1970s as a process promising ultimate energy saving performance has resulted in worldwide research on practical applications. However, a commercial application has never been achieved.

TOYO developed *SUPERHIDIC*® by further advancing the HIDiC concept and applying well-proven distillation and heat-transfer technologies. The result is a distillation system that achieves high economic efficiency while retaining the maintainability of normal distillation columns. *SUPERHIDIC*® enables 40% to 60% energy savings for many distillation processes by achieving optimal internal heat exchange.

*HIDiC: Heat Integrated Distillation Column

Groundbreaking ceremony

Vibrant Gujarat Global Summit 2015

TOYO's booth

The 7th Vibrant Gujarat Summit and Global Trade Show, hosted by the government of the State of Gujarat, India, took place in January 2015. Established in 2003 by India's Prime Minister Narendra Modi, who was then Chief Minster of Gujarat, the purpose of the event is to make the state a "Global Business Hub." This year more than 2,600 people attended the event, including such dignitaries as U.S. Secretary of State John Kerry, U.N. Secretary-General Ban Ki-moon, and World Bank President Jim Yong Kim.

Toyo-India participated in the trade show, interacting with many visitors from TOYO's core markets in the oil, petrochemical, LNG, and fertilizer fields. At the company's booth, TOYO's pharmaceutical plant engineering initiatives were introduced so as to market these services to the pharmaceutical industry, a new field for Toyo-India. Over 2,000 companies from various fields exhibited at the trade show, and two million domestic and international visitors enjoyed the many exhibits.

Toyo-India is focusing on fertilizer and energy-related project orders coming to market in line with the Indian government's measures to stimulate the economy. The company is also concentrating on orders from the pharmaceutical industry, a promising growth market for the future.

TOYO Awarded U.S. Polyethylene Plant Project

Toyo-Korea has won a contract to provide detailed engineering, procurement, module fabrication, and construction support services for an LLDPE* plant in the U.S. Its annual capacity will be 450,000 metric tons per year. The plant is being built by Sasol Limited in Lake Charles, Louisiana, and is scheduled for completion in 2017.

Sasol is planning to build a world-class ethane cracker and downstream derivatives plants at the Lake Charles site. The LLDPE plant will utilize the UNIPOL™ PE Process of Univation Technologies, LLC.

TOYO has extensive experience with constructing LLDPE plants. In addition, this contract represents TOYO's 23rd polyethylene project using the UNIPOL™ PE Process.

*LLDPE: Linear Low Density Polyethylene

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