



Contributing to the world with environmental technologies

**TSK ENGINEERING (THAILAND) CO., LTD.**

TSK ENGINEERING (THAILAND) CO., LTD. was established in 1993 by Tsukishima Holdings Co., Ltd. (formerly Tsukishima Kikai Co., Ltd.), the leading company in environment and energy fields in Japan.

Since then, as a unique Japanese origin Thai EPC contractor, we have been serving engineering, procurement and construction (EPC) and maintenance / after-sales services for chemical and foodstuffs plants in Thailand and the other Southeast Asian countries.

We aim to contribute to support development of our clients' business and to build recycling-based societies utilizing our technologies based on the concept of "local production for local consumption."

We will continue to advance our technologies still further in line with our corporate purpose: "Building a Better Tomorrow with Environmental Technologies"

## Group Corporate Policy

1. To make contribution to the society, the company will dedicate to the industry development and environmental protection by making advantage of its leading edge technology.
1. Primarily targeting satisfaction of market demand, the company will provide best products and services possible to customers.
1. While adhering to originality and vitality-based sustainable development, the company is proud to be a profitable enterprise that deserves the loyalty of its staff.



TSUKISHIMA HOLDINGS R&D Center



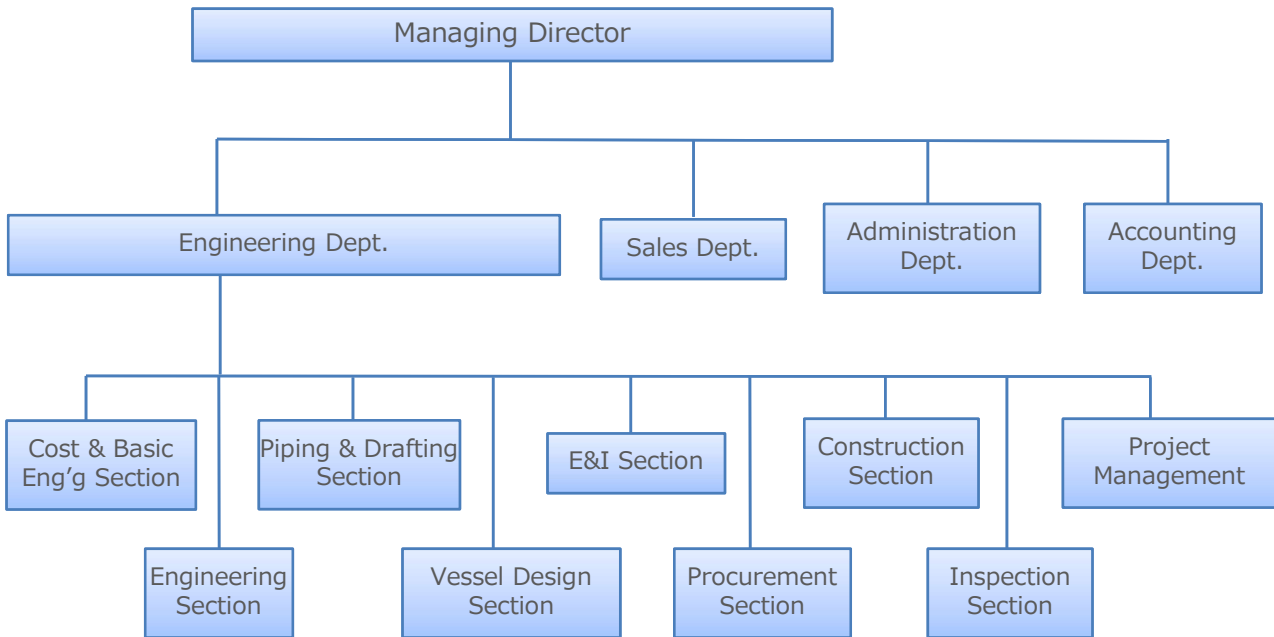
## Profile

- Company name : TSK ENGINEERING (THAILAND) CO., LTD.
- Address : United Center Building, 14<sup>th</sup> Floor, Room 1404, 12<sup>th</sup> Floor, Room C, 323 Silom Road, Silom, Bangrak, Bangkok 10500
- Telephone : +66-2-231-1726-30
- Website : URL: <http://www.tsk.co.th>
- Established : 1993
- Capital : THB 20,000,000
- Industrial details : Plant engineering, procurement, construction (EPC), Design and construction of buildings, Design and manufacture of equipment for plant, After service, Handling of Tsukishima Holdings Group's product
- Employees : Total 72 persons (Japanese 11/ Thai 61 )



Office Entrance

# Organization



## Japanese staff

Managing Director 1,

Basic Design 1, Project / Design /Construction 6 (Class-1 Architect 1),  
Sales 2, Accounting/Administration/HR 1 Total 11







## *Business*

We offer full packages for engineering, procurement, and construction (EPC) services as well as building design and construction, supplying plant equipment, and maintenance services.

### Engineering, Procurement, Construction (EPC)

Our main business is a engineering, procurement, and construction (EPC) services for the various kind of industries, such as, chemical, foodstuffs, cosmetics, and biotechnology and so on. We are the specialist of EPC projects and provide full range of services including project management, civil, equipment, piping, electrical, and instrumentation, from feasibility study phase to plant start-up.

Based on more than 30 years of experience in Thailand and other Southeast Asian countries, we provide consulting services to support our clients' company set-up, market survey, feasibility studies, etc. for companies that are not familiar with plant construction projects in this region.

Throughout every process of projects, Japanese and Thai experts provide professional services to ensure the quality of deliverables. We promise to convey satisfaction and excitement to our clients. It is of great benefit to clients to save their resources to execute EPC projects within budget, with high quality and on schedule.

Our motto is "*To provide excellent quality services at competitive prices in Thailand*".

We also provide basic design and engineering services. Based on the clients' very simple basic design information, we can develop the basic design packages and budgetary quotations for feasibility studies of the clients.



### Work Record

- Specialty Chemicals - Electronic materials - Cosmetics
- Pesticides - Plating/Coating - Adhesive
- Functional Resin - Surfactant - Resin additive
- Resin compound - Biochemistry - Foodstuffs - Etc.

### Plant design by using AutoCAD® Plant 3D

We started to use 3D CAD software (AutoCAD® Plant 3D)(\*AutoCAD is a registered trademark of Autodesk Inc.) in plant design since 2010, and we apply it to all EPC projects now.

As we can import the data of drawings of equipment and buildings into the CAD program, we develop 3D models with high precision in a short time. In the Feasibility Study phase, we can share the overall image of the plant that is “visualized” by a 3D model. The image will consist of buildings and equipment.

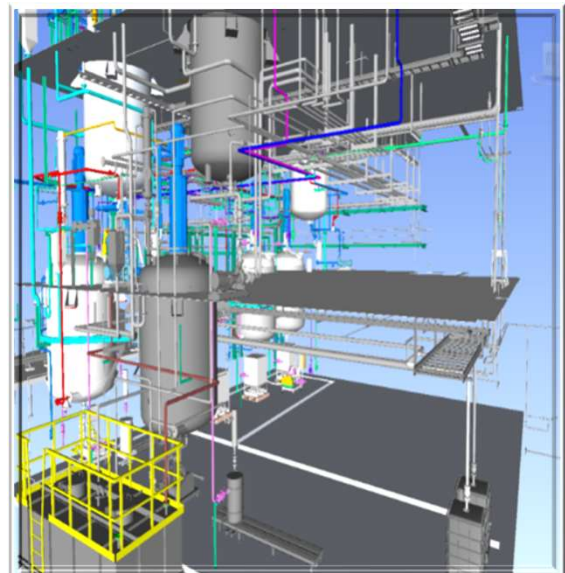
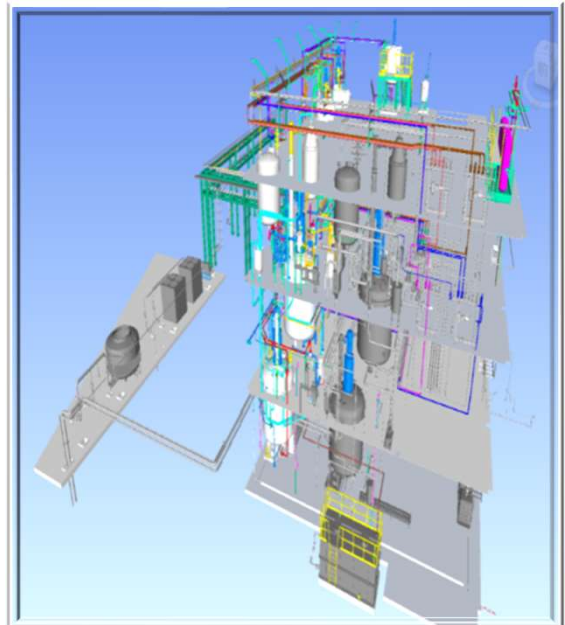
Space design in the project execution phase which includes equipment layout, piping layout, E&I layout is designed in 3D CAD directly. Therefore, we can provide a “visualized” comprehensive 3D model to all clients.

### 3D model design review

Utilizing comprehensible 3D model and reviewing the design with the client several times enable us to investigate the plant space design from various angles before the project starts, such as equipment layout, maintenance access, VE/cost reduction, working plan, measure for plant expansion in the future, etc.

Our drawings such as equipment layout, piping layout, piping isometric drawing, piping BOQ, etc., are prepared automatically from 3D CAD data. The project will proceed with drawings and materials that are exactly the same as the 3D model. Design mistakes such as interference etc. are checked by 3D CAD. Therefore, we can construct the high-quality plant in a short period with very little rework at the construction site.

After plant construction completes, we will provide the as-built 3D model and drawings to the client. The client can use the as-built 3D model to consider operation, maintenance, plant expansion or modification. If the client requests us to modify or expand the plant at the next project, we will use this as-built data of 3D CAD to plan, consider and design, so we will be able to execute modification and expansion work in a short time.





## Utilize 3D Scanning

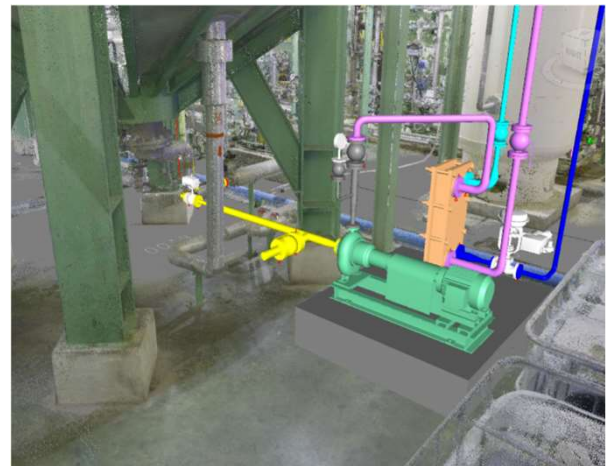
Production plant consists of many objects such as buildings, structures, equipment, piping, cable trays, cable conduits, etc. However, in many cases, there are no drawings that accurately show upgrades and changes in the shape and location of all these objects. Therefore, accurate site surveys are the key to the success of plant modifications or expansions to avoid scheduling problems that delay projects.

We used to spend a lot of time and effort on site surveys to have precise measurements of existing plants. Even so, we often faced interference problems during the site work.

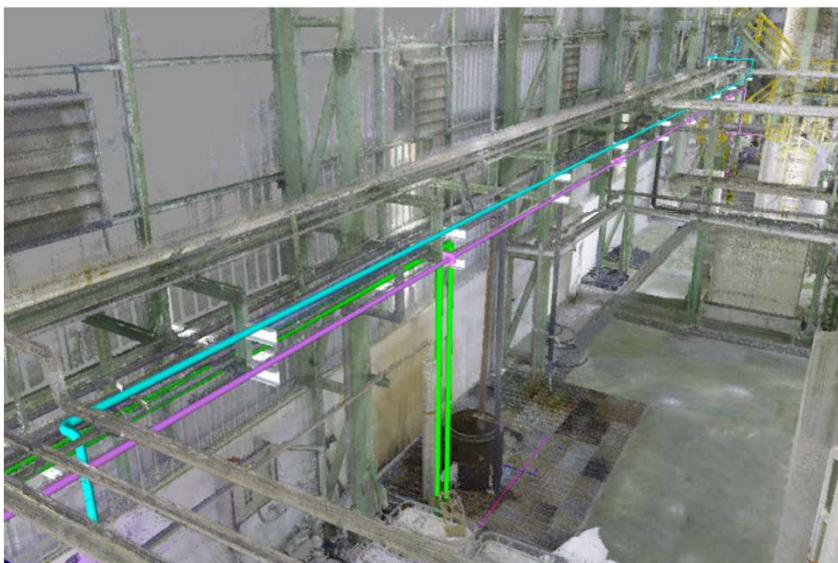
To counteract the problems caused by time-consuming and imprecise site surveys, TSK adopt 3D laser scanning.

### Advantages to use 3D scanner

- To reduce the time for site surveys.
- To dramatically increase the accuracy of site surveys.
- High locations can be scanned without scaffoldings.
- To replicate the site survey data as 3D capture in digital 3D space
- To design by 3D CAD utilizing the 3D capture and considerably decreases the risk of interference.
- To study transportation routing of large equipment in the existing plant.
- Clients can review the 3D design in the 3D capture to easily have the image of the completed work.



Checking interference by using 3D design



Applied Pipe Rack design on the scanned existing plant data

3D laser scanning is quite valuable for planning modification, expansion, and maintenance work. You can get it with TSK.





## Project Management for multiple remote locations with IT

To work on projects in the Southeast Asian region, it is important to have smooth communication between multiple parties, for example, the client in Japan, our Bangkok office, our subcontractors, the construction site, etc.

We utilize IT such as cloud database, web meeting system, web camera, etc. for Project Management. This enables the client to keep track of the real-time project condition while they are in Japan.

### Cloud database system to share large size data and drawings

We use a cloud database system to store and handle the project documents and drawings such as datasheets, design drawings, monthly reports, weekly reports, etc. Because of that, the client becomes free from controlling the document by themselves, for example; keeping track of the latest version, checking the return status, and so on. storage limitations of the e-mail system.

The screenshot shows a Kintone mobile application interface. At the top, there is a yellow header with the Kintone logo and navigation icons. Below the header, the page title is 'TSK - JOB Management'. The main content area displays a 'RENUMBER SHEET' form with various input fields. The form includes sections for Job Status, Job Name, Client, End User, Sales Person, Technical Person 1, Technical Person 2, Due date of Estimation, Due date of Quotation, Expected Order Date, Expected Delivery date, Delivery Terms, Job Category, Job Field, Job Possibility, Relation with TSK, Project Category, and PJ Category Code. The form is currently in a 'Completed' state.

With the cloud database system, e-mails with large size attachments are not necessary anymore. It is not necessary for the clients to be worried about the size limitations and the storage limitations of the e-mail system.

### Real-time on site monitoring by web camera

At the construction sites, we set up all-weather outdoor web cameras. Therefore, the client can check the real-time site conditions and work progress from anywhere via the internet. Of course, the access to the site cameras is secured by limited to the client and us only.

### Remote supervising

We have many experience and know-how in remote supervising. The supervisors of Tsukishima Kikai, or any companies outside Thailand, provided supervising service to our site work in Thailand utilizing IT systems and devices for remote supervising.

Whenever it is difficult to dispatch supervisors to the construction sites because of any limitation of travel, cost, or schedule, we can support remote supervising to solve all these problems.



## Design and construction of buildings

We provide many kinds of construction work, including the design and construction of buildings for industrial factories, food and pharmaceutical factories, and large logistics facilities, etc. that include special facilities such as clean rooms. We also handle renovations of offices, canteens, toilets, etc., and a wide variety of maintenance.

In addition, we are able to design spaces with a future in mind by Japanese expert engineers. In all processes of investigation, planning, design, procurement, and construction, we provide customer satisfaction and excitement with our outstanding technology and quality control.

- Renovation of offices, etc.
- Utility equipment
- Foundations of equipment
- Wastewater treatment equipment,
- Fire fighting systems
- Clean room
- Special high voltage transformer
- Elevators
- Solar power generation equipment
- Crane, dock leveler, etc.



Renovation design of main entrance

In order to visualize the customer's image, we create 3D models for architectural design and provide functional and beautiful spaces.

We design and propose comfortable spaces that are highly functional and equipped with the latest environmentally friendly equipment, placing importance on movement lanes for both production and management areas.



Example: Inside of a factory

In particular, the visitor area is an area that connects customers and their future customers. We value designs that give form to our customers' will.

Regarding quality, we provide Japanese quality buildings that our customers can use with peace of mind for a long time.



*Aerial Photography of ARAKAWA CHEMICAL VIETNAM CO., LTD.*

*Sample construction progress pictures*







### Design and manufacture of equipment for plant

In addition to EPC work, we are also good at designing and manufacturing equipment, which has been our main business since Tsukishima Holdings was established. We not only deliver equipment to the our construction site, but also supply them to our customers in Thailand and other countries.

We manufacture them at our partner fabrication company in Thailand under the quality control of our inspection section. We have been delivered our high-quality equipment at low cost for many years.

- Various tank / reactor
- Agitator • Mixer / grinder
- Dryer • Filter
- Heat exchanger
- Various pump
- Electric/Instrumentation device
- Piping materials
- Utility equipment, etc.



Rotary leaf filter for a sugar company

### Manufacturing and selling Fully Automatic Batch Type Centrifuges

We manufacture and selling fully automatic batch type centrifuges. To date, we have produced centrifuges for more than 1,500 units around the world, including approx.400 units in Thailand, for the production of raw sugar, refined sugar, hydrated glucose, anhydrous glucose, fructose, and sugar alcohols (xylitol, mannitol) to countries around the world, mainly in Southeast Asia.

Features include,

- Design of discharge section that prevents contamination of products
- Simple structure with a small number of parts for easy maintenance
- Simple operation system using a touch panel
- Energy-saving system that regenerates electricity during deceleration



Fully automatic batch type centrifuges

Many of these centrifuges are still in operation at customer factories.



## Maintenance Work

We place emphasis on after-sales service after delivery of plants or facilities. We support our customers to maintain stable production and expand their business by providing prompt responses. As well as annual inspections and other maintenance inspections and repairs, we provide emergency maintenance. We can handle small-scale maintenance work as well. We support our customers in all aspects, including procurement and inspection of mechanical equipment and electric and Instrumentation device.

- Expansion,
- Modification
- Repair (emergency maintenance)
- Inspection (annual inspection, etc.)
- Parts supply



Repainting on a roof



Cleaning inside tank



Cleaning inside tank



Checking the fire alarm system



Repairing foundation

## Handling of Tsukishima Holdings Group's product

As the Tsukishima Holdings Group's subsidiaries in Southeast Asia, we serve as a sales point for equipment and processes owned by the Tsukishima Holdings Group.

### Tsukishima Kikai Co., Ltd.

Tsukishima Kikai Co., Ltd. design and construct plants such as the food, chemical, and electronic material manufacturing industries, and provide a wide variety of equipment such as dryers, filters, and centrifuges.

#### Equipment:

- **Crystallizer** (DP crystallizer, Vortex flow crystallizer, Calandria type crystallizer)
- **Filter** (BoCross filter, Horizontal belt filter)
- **Centrifuge** (Fully Automatic batch type centrifuges, Escher Wyss push type centrifuge)
- **Dryer** (Steam tube dryer, Inclined disk dryer)
- **Mixer/pulverizer** (MTI/Universal mixer, cyclone mill)
- **Powder handling system** (TSK container), etc.



TSK Container

**TSK**  
TSUKISHIMA  
KIKAI



Steam tube dryer



## Tsukishima Kankyo Engineering Ltd.

Tsukishima Kankyo Engineering Ltd. have industry-leading technology and experience in the business of processing exhaust gas, waste liquid, and industrial waste from manufacturing processes, and we offer optimal solutions tailored to the diverse needs of our customers.

Business:

Design, manufacture, and sales of environmental improvement and various chemical and industrial equipment (waste liquid combustion, solid waste incineration, hydrochloric acid recovery, fluorocarbon destruction, ammonia recovery, etc.).

- **Waste liquid/wastewater treatment:** Submerged combustion
- **Solid waste incineration:** Kiln gasification, Melting kiln, fluidized-bed incineration, Dioxins decomposition catalyst
- **Gas/acid recovery/processing:** Exhaust gas combustion, TSA type solvent recovery, PSA type solvent recovery, Hydrochloric acid recovery/concentration, ammonia recovery, ammonia separation/decomposition
- **Fluorocarbon destruction, manufacturing plants, special packed towers:** Fluorine-based waste liquids and exhaust gases, Processing, manufacturing plants, special packed towers
- **Filling materials/trays:** SPIRAX, Tower Internal, etc.

# TSKE



Submerged combustion (China)





## Primix Corporation

As a pioneer in high-speed agitators, PRIMIX manufactures equipment from laboratory size to production size machines that emulsify, pulverizing, dispersing and kneading fluids that are essential to manufacturing processes from pharmaceuticals and cosmetics to foods, paints, adhesives, and secondary batteries.

### Application example

- Cosmetics (basic cosmetics, hair care, hair color, makeup)
- Chemical (ink, toner, resin, ceramic, metal, IT-related, etc.)
- Pharmaceutical (creams, ointments, suppositories, eye ointments, gel ointments, jelly preparations, plaster, fat emulsion, syrup, etc.)
- Food (ice cream, dressings, sauces, seasonings, flower paste, functional foods, etc.)
- Electronics (ceramic materials, metal materials, IT-related materials, displays, etc.)
- Energy and environment (lithium ion batteries, fuel cells, solid state batteries, etc.)



Agi Homo mixer



Labolution

In May 2021, TSK Engineering (Thailand) Co., Ltd (TET) signed a distributorship agreement with Primix, the member of same Tsukishima Holdings Group, and became an official distributor in Thailand. We handles Primix's laboratory size and production size mixers in Thailand.

We can also provide a wide range of services for production equipment, including installation work, as well as equipment and peripheral equipment work. We also provide after-sales services such as supplying parts, repairing and maintenance for Primix products. If you have any problems or inquiries, please feel free to contact us.

 *Project References*



**Adhesive Plant**

Period ; Year 2011 (2<sup>nd</sup> Phase)

Period ; Year 2020 (3<sup>rd</sup> Phase)

Location ; Rayong



**Chemical Plant**

Period ; Year 2018 (1<sup>st</sup> Phase)

Period ; Year 2019 (2<sup>nd</sup> Phase)

Location ; Chonburi



**Chemical Plant**

Period ; Year 2018 (1<sup>st</sup> Phase)

Period ; Year 2021 (2<sup>nd</sup> Phase)

Location ; Rayong



**Chemical Plant**

Period ; Year 2021 (1st Phase)

Location ; Vietnam



## *Work record at South East Asia*

### Engineering, Procurement, Construction (EPC)

We have been working on EPC including civil engineering and construction since 2014. For these projects, we carried out the design and procurement work in Thailand, and the construction and procurement work within Vietnam was carried out through the project office we established in Vietnam. By combining domestic procurement in Vietnam and procurement in Thailand, we optimize both delivery times and costs.

The project we have done through 2020 to 2021 in Vietnam was already affected by the COVID at the time the order was received. Even though we had to take measures to deal with the COVID situation from the beginning to the completion of the construction period, we were able to hand it over to the customer without delay.



*ARAKAWA CHEMICAL VIETNAM CO., LTD.*

### Malaysia

Tsukishima Holdings has a Malaysian subsidiary (Tsukishima Engineering Malaysia) that can handle EPC including civil engineering and construction. For food factory construction projects and chemical factory construction projects, we manufactured tanks and vessels in Thailand and supplied them to the sites.

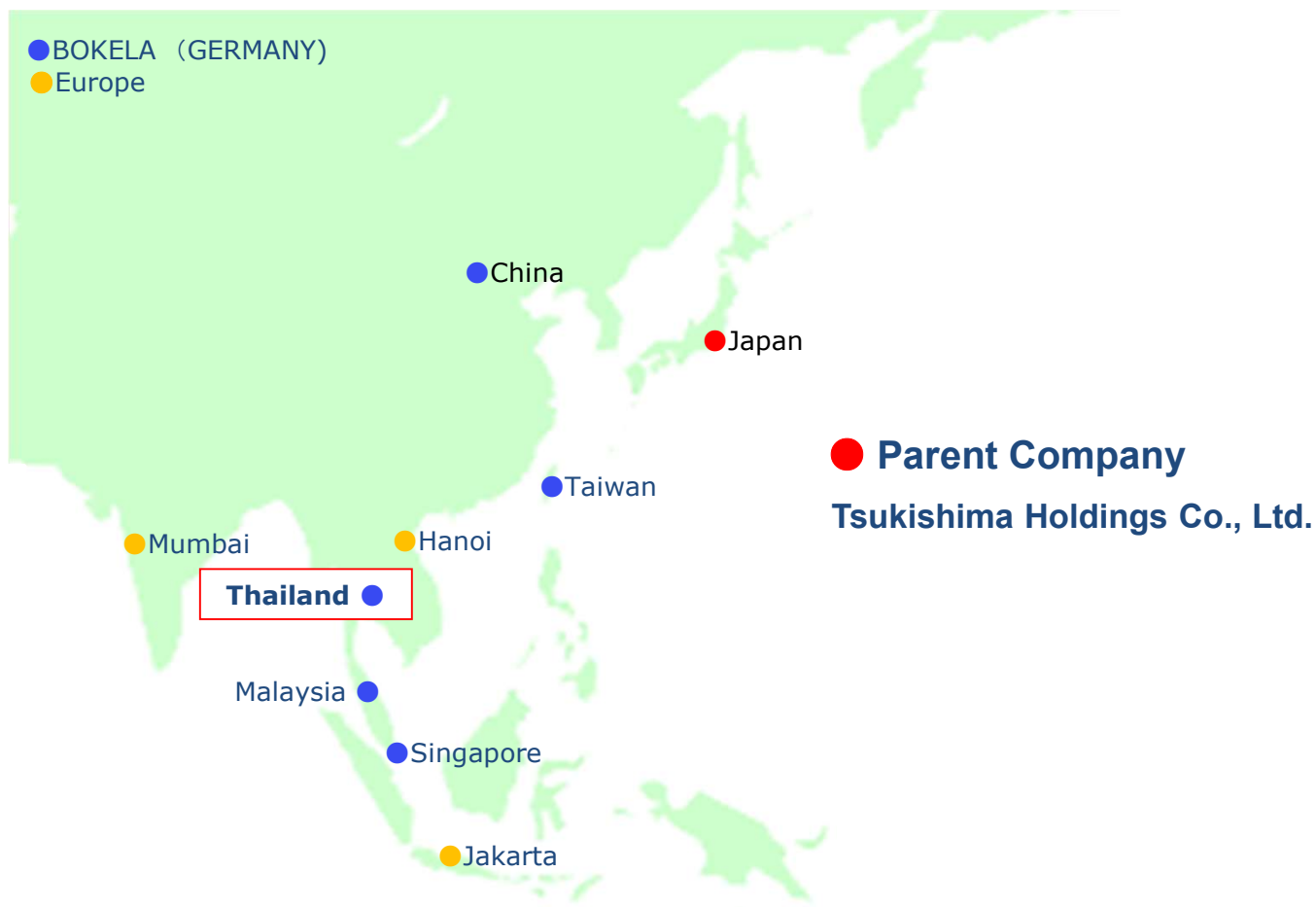
### Indonesia

We constructed a chemical factory in a consortium with local partner companies. Our company provided engineering, supplied equipment procured overseas, and provided on-site construction supervisor. Additionally, our company supplied fabrication products such as distillation column, etc, to a bioethanol plant built by Tsukishima Kikai in Indonesia.

In addition, many Indonesian food companies use our rotary filters manufactured in Thailand.

**TSK Engineering (Thailand) Co., Ltd. will continue to work on plant construction in Southeast Asia**





● **Subsidiaries in Overseas**

**TSK Engineering (Thailand) Co., Ltd.**

**Tsukishima Engineering Singapore Pte. Ltd.**

**Tsukishima Engineering Malaysia Sdn. Bhd.**

**TSK Engineering Taiwan Co., Ltd.**

**TSK Engineering China Co., Ltd.**

**BOKELA GmbH**

● **Representative Offices In Overseas**

**Jakarta Representative Office**

**Hanoi Representative Office**

**Mumbai Liaison Office**

**Europe Representative Office**

**MAJOR EPC PROJECTS by TSK ENGINEERING (THAILAND) CO., LTD.**  
(Year 2011 - )

As of October 2024

<b>Year</b>	<b>Project</b>	<b>Location</b>	<b>Project size*</b>
2011	Surfactants Plant	Chonburi	C
	Adhesives Plant	Rayong	C
2012	Functional Food Plant	Ratchaburi	C
	Phenolic Resin Plant	Rayong	B
2013	Resin Compound Plant	Rayong	C
2014	Functional Resin Plant	Rayong	C
	Bio Ethanol Plant	Saraburi	B
	Surfactants Plant	Vietnam	B
2016	Biochemical Plant	Thailand	A
	Monomer Plant	Rayong	A
2017	Polymer Compound Plant	Rayong	A
	Utility for Chemical Factory	Rayong	B
2018	Inorganic Additives Plant	Rayong	C
	Resin Compound Plant	Ayutthaya	C
	Engineering Plastic Plant	Rayong	C
	Polymer Compound Plant	Chonburi	B
2019	Monomer Plant	Rayong	B
	Adhesives Plant	Rayong	C
2020	Chemical Plant	Vietnam	B
2021	Chemical Plant	Chachoengsao	C
2022	Chemical Plant	Pathum Thani	C
2023	Pesticide Plant	Samut Prakan	C
	Cosmetics plant (under construction)	Samut Prakan	C
	Chemical plant (under construction)	Rayong	C
2024	Calibration Facility (under construction)	Rayong	C
	Chemical Plant (under construction)	Rayong	C

\*Project size in contract amount: A: THB500mil. and larger, B: THB300mil to 500mil., C: THB100mil. to 200mil.

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# Work Reference of Plants (Year 1993 - 2024)

As of October 2024

YEAR	JOB DESCRIPTION	LOCATION
1993	Chemical Plant	Map Ta Phut
1994	Chemical Plant	Ayuthaya
1995	Chemical Plant	Ayuthaya
	Waste Liquid Incinerator	Ratchaburi
	Sugar Plant	Nakhonratchasima
1996	Resin Plant	Map Ta Phut
	Chemical Plant	Bang Pakong
	Chemical Plant	Map Ta Phut
1997	Compound Plant	Map Ta Phut
2000	Starch Plant	Kalasin
	Chemical Plant	Map Ta Phut
	Waste Water Treatment Plant	Lampun
2002	Chemical Plant	Map Ta Phut
	Chemical Plant	Amata Nakorn
2003	Chemical Plant	Amata Nakorn
	Chemical Plant	Amata Nakorn
2004	Chemical Plant	Amata Nakorn
	Chemical Plant	Eastern Seaboard
	Oil Plant	Amata Nakorn
	Expansion of existing plant	Amata Nakorn
	Expansion of existing plant	Map Ta Phut
2005	Expansion of existing plant	Map Ta Phut
	Chemical Plant	Bangplee
	Chemical Plant	Bangplee
	Chemical Plant	Amata Nakorn
	Chemical Plant	Chemical Plant
2006	Ethanol Plant	Saraburi
	Chemical Plant	Eastern Seaboard
	Expansion of existing plant	Amata Nakorn

YEAR	JOB DESCRIPTION	LOCATION
	As of June 2022	Eastern Seaboard
	Expansion of existing plant	Bangplee,Bangkok
	Expansion of existing plant	Nava Nakorn
2007	Expansion of existing plant	Amata Nakorn
	Expansion of existing plant	Map Ta Phut
	Oil Plant	Amata Nakorn
2008	Expansion of existing plant	Bangplee,Bangkok
	Expansion of existing plant	Map Ta Phut
	Chemical Plant	Rayong
	Expansion of existing plant	Rayong
	Expansion of existing plant	Rayong
	Expansion of existing plant	Eastern Seaboard
2009	Chemical Plant	Rayong
	Chemical Plant	Eastern Seaboard
	Expansion of existing plant	Map Ta Phut
	Expansion of existing plant	Bankadi
2010	Expansion of existing plant	Eastern Seaboard
	Chemical Plant	Chonburi
	Expansion of existing plant	Rojana, Ayuthaya
	Expansion of existing plant	Map Ta Phut
	Expansion of existing plant	Amata Nakorn
	Expansion of existing plant	Eastern Seaboard
2011	Chemical Plant	Chonburi
	Expansion of existing plant	Bankadi
	Expansion of existing plant	Map Ta Phut
2011	Expansion of existing plant	Rayong
	Expansion of existing plant	Rayong
	Expansion of existing plant	Bangplee
	Chemical Plant	Chonburi

YEAR	JOB DESCRIPTION	LOCATION
2012	Plant Recovery Works	Ayuthaya
	Plant Recovery Works	Bangkadi
	Warehouse	Rayong
	Food Additive Plant	Ratchaburi
	Chemical Plant	Map Ta Phut
	Chemical Plant	Rayong
	Chemical Plant	Amata Nakorn
	Chemical Plant	Indonesia
	Chemical Plant	Rayong
	Food Additive Plant	Ratchaburi
	Chemical Plant	Amata Nakorn
2013	Food Additive Plant	Ratchaburi
	Chemical Plant	Amata Nakorn
	Chemical Plant	Bangplee
	Chemical Plant	Rayong
	Chemical Plant	Amata Nakorn
	Expansion of existing plant	Bangplee
	Expansion of existing plant	Eastern Seaboard
	Chemical Plant	Amata Nakorn
	Stack for Boilers	Map Ta Phut
	Chemical Plant	Map Ta Phut
	Food Plant	Malaysia
2014	Expansion of existing plant	Rayong
	Expansion of existing plant	Map Ta Phut
2014	Bio Ethanol Plant	Saraburi
	Expansion of existing plant	Rayong
	Chemical Plant	Vietnam
	Expansion of existing plant	Amatanakorn
2015	Expansion of existing plant	Eastern Seaboard

YEAR	JOB DESCRIPTION	LOCATION
	Expansion of existing plant	Eastern Seaboard
	Warehouse	Eastern Seaboard
	Expansion of existing plant	Eastern Seaboard
2016	Expansion of existing plant	Eastern Seaboard
	Chemical Plant	Eastern Seaboard
	Expansion of existing plant	Amatanakorn
	Chemical Plant	Thailand
	Chemical Plant	Rayong
	Chemical Plant	Bangkok
2017	Chemical Plant	Chonburi
	Chemical Plant	Rayong
	Chemical Plant	Mexico
	Chemical Plant	Bangplee
	Expansion of existing plant	Rayong
	Revamp of existing plant	Rayong
2018	Chemical Plant	Rayong
	Chemical Plant	Ayuthaya
	Revamp of existing plant	Rayong
	Chemical Plant	Chonburi
2019	Chemical Plant	Rayong
	Chemical Plant	Rayong
2020	Chemical Plant	Vietnam
2021	Chemical Plant	Chachoengsao
2022	Chemical Plant	Pathum Thani
2023	Pesticide Plant	Samut Prakan
	Cosmetics Plant (under construction)	Samut Prakan
	Chemical Plant (under construction)	Rayong
2024	Calibration Facility (under construction)	Rayong
	Chemical Plant (under construction)	Rayong