

**Smart thinking. Safe hands.**



## **Extraordinary Heritage, Uncompromising Expertise**

Rotary Engineering is one of the region's largest Engineering, Procurement, Construction (EPC) and Maintenance partner to the oil and gas, petrochemical, petroleum and pharmaceutical industries. When it comes to oil and gas bulk liquid storage projects, there are few established operators in Asia who can match the rich heritage or the global experience, expertise and sheer capacity of our organisation.

Since 1972, we have been delivering trademark services from our headquarters in Singapore and our reputation for timely project execution has grown with us over the years. We have expanded from our roots in Singapore to a regional operation with a global outreach. With such expertise comes the capability to plan and deliver the most complex storage solutions for the industry. And with each new project, our goal is always to outdo ourselves.

With our extensive experience in undertaking various scale of projects regionally and having built more than 60% of independent storage tanks on Jurong Island, we are proud to contribute in our way to Singapore's status as the third largest petrochemical hub in Asia. Our proven track record is clear: we have the industry connections, the passion and drive, the resources and skills to make projects happen on time, on budget and to exacting standards. And this is what brings our clients back to us time and again.

Our impressive portfolio of completed projects is testament to our clients' confidence both in us as an organisation that can deliver and in our all-encompassing EPC solutions – from tank construction and engineering of pipes to building electrical and temperature control systems. At Rotary, it is clear that our clients come first. We seek to partner them in their success, and this comes through in the unique way that we work. We primarily use our own in-house construction teams of Rotary employees so as to maintain complete control and responsibility over our work. Our team is fully employed by us and we have expertly trained staff across the world. For us, quality and control are paramount and we can only achieve these if we know each and every team member. And by harnessing traditional knowledge and combining this with innovative alternatives, our solutions utilise technology, tried and tested systems and economically priced materials. Material wastage is reduced, space and land usage is optimised, and costs are kept in check.

Today, we have about 6,000 employees and we operate in Singapore, Malaysia, Thailand, Indonesia, India, China, Vietnam, Saudi Arabia, the United Arab Emirates, Myanmar and Slovenia. With pride and dedication, we will continue to provide unrivalled project management, intelligent solution implementation and extensive support to all our clients worldwide.

Our new logo says it simply and clearly – Smart Thinking, Safe Hands equate to solutions that are intelligent, innovative and reliable. Rotary stands for outstanding services and safe construction. Our clients know that they are in the right hands.

# Our Advantages

## Global Workforce

Ready, Anytime, Anywhere

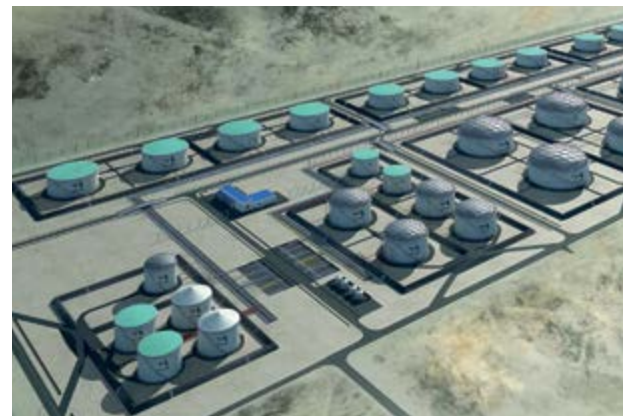


Our projects take place around the world so we have to be able to mobilise the right people where they are needed with greatest speed and highest efficiency level. Our Global Work Force (GWF) and Global Maintenance & Turnaround Team (GMTT) allow us to do just that. Through GWF and GMTT, we have grown our own team of engineers and craftsmen who are readily deployed anywhere in the world and attuned to the Rotary Brand of Service Delivery. Our Overseas Training and Test Centres in India and Bangladesh serve to strengthen our workers' language and technical skill sets. To date, we have trained over 1,000 employees to levels of high skills proficiency and it's our clients who are benefiting from this growing workforce of technical experts.

**We build smart teams.**

## Information Technology

Smart Tools, Smart Designs



When it comes to harnessing technology in our processes, we use the best there is because we believe in working smart. One such technology is the SmartPlant suite of products for EDMS, 3D modelling and other design works. We can bring our designs to life in 3D right from the drawing board, so you can visualise exactly what the finished site will look like. Our integrated procurement system, SmartPlant Materials, is used to track and manage materials from requisition to receipt to installation on site. Integrated into the software is a barcode system that allows us to better track our materials at site. We also harness SAP solutions for effective management and financial processes – we can remain responsive to changes in project scope, costs, risks and schedules.

**Working smart is our business.**

## Expertise

We Know What Works

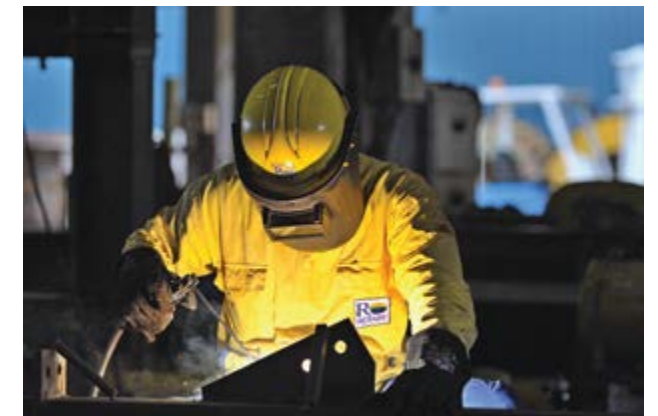


We understand that in your industry, time is money. This is where our decades of experience in designing and constructing bulk liquid and gas storage facilities differentiates us. Rotary's expertise builds from planning, construction work instruction (CWI), layout optimization & tank configuration, practical & effective solutions to your operational needs, execution and deployment of customized construction techniques for local regulatory and climatic conditions, helping you to save time.

**It's all down to smart planning.**

## Safety & Quality

It's Always People First



At Rotary, we take care of our people. That's why we insist on the most stringent of safety processes at every stage of production, on and off site. Through direct employment and regular safety training courses, we are better able to control quality and work in a safe working environment. We commit to the highest standards of regulatory practices, because protecting our stakeholders and assets are our top priority.

**Our people know that it's smart to work safe.**





## Featured Projects



## It's Never Too Big a Challenge

Satorp Jubail Export Refinery Package 6  
Jubail, Kingdom of Saudi Arabia



Saudi Aramco Total Refining and Petrochemical Company (SATORP) is a joint venture between Saudi Arabian Oil Company (Saudi Aramco) and French petroleum company Total S.A. The 400,000 barrels per day SATORP Jubail Export Refinery is one of the most advanced in the world and refines Arabian heavy crude oil into high specification products for local Arabian and international markets.

### Project:

Main EPC contractor for Package 6 refinery tank farm, off-site & utilities.

- 62 atmospheric storage tanks
- 8 bullet tanks – Rotary holds the record for constructing one of the largest bullet tanks in the world at 5,153 cbm & weighing 1,293 tonnes
- Total storage capacity: 1.6 million cbm
- Products stored include: regular gasoline, RBOB gasoline, jet A1, diesel, benzene, paraxylene, propylene, C3 and/or C4, fuel oil, crude oil and naphtha

## Delivering Under Pressure

Universal Terminal  
Jurong Island, Singapore



Universal Terminal is one of the largest independent petroleum storage terminals in Asia Pacific with 2.3 million cbm storage capacity and the ability to berth 2 fully-laden VLCCs simultaneously for cargo operations.

### Project:

To complete a single phase EPC project within 22 months and optimise land area by accommodating a large capacity within a small land area in accordance with customer requirements & local regulations. It includes optimized impounding basin design for 6 numbers of 100,000 cbm tanks.

- 73 custom-built tanks
- 2.3 million cbm onto an area of 56 hectares
- 12 berths for concurrent operations, including 2 berths for VLCCs
- 620,000 diameter-inch of piping works
- 6 inner basin berths for bunkering



## Bigger, Better, More Refined

Map Ta Phut Olefins Chemical Complex  
Rayong, Thailand



Map Ta Phut Olefins Chemical Complex tank farm unit is used for the storage and distribution of various chemical products such as naphtha, HP ethylene, HP propylene, raw/mixed C4, cracker bottom, gasoline and aromatics.

### Project:

To deliver the full scope of EPC services for the tank farm unit – a process plant off-site facility. The design of the structurally superior spherical tank was based on ASME Div II, which posed a greater fabrication challenge, but resulted in significant material cost saving.

- Consisting of 9 spherical and 11 atmospheric tanks with a total volumetric capacity of some 190,000 cbm – It includes our largest spherical tanks constructed at volumetric capacity of around 10,000 cbm

## Mechanical Precision

CCD (Singapore), AAL and VAM Plant  
Jurong Island, Singapore



Chang Chun Dairen Singapore Pte Ltd (CCD) is a joint venture between Taiwan Chang Chun Group (CCG) and Dairen Chemical Co. Ltd (DCC) where the company invested S\$500 million for a project on Jurong Island, Singapore.

### Project:

To set up three manufacturing plants for the production of Vinyl Acetate Monomer (VAM), Allyl Alcohol (AAL) and Cumene. The project includes detailed engineering works for tankage, civil, equipment selection, piping, electrical & instrumentation.

- 250,000 diameter-inch of piping fabrication & erection works
- 4,000 tonnes of steel structure fabrication & erection and 11 stainless steel tanks
- 4,800 tonnes of equipment installation including towers & columns



## Cryogenic Technology

PTTLNG Receiving Terminal Expansion Project - Phase II  
Rayong, Thailand



PTTLNG was formed to execute the jetty development and LNG Receiving Terminal Project with its key mission to receive and store LNG. The terminal is located at Map Tha Phut petrochemical hub. With this expansion, the terminal's capacity is being increased to 10 MTPA.

### Project:

Rotary achieved a breakthrough into the LNG space by securing contract to provide tankage works for the PTTLNG Receiving Terminal Expansion Project – Phase II. With this track record, we are now well positioned to participate in the development of the new LNG terminals in Singapore, Asia and the Middle East. Our works consisting of:

- 2 LNG full-containment tanks (80 meter diameter) for - 175°C (-283°F) storing temperature
- Double-walled - reinforced concrete outer wall, 9% Nickel carbon steel inner wall
- Total storage capacity: 160,000 cbm
- Products stored include: ammonia and ethylene

## Building on Water

Port of Fujairah VLCC Jetty No. 1  
Fujairah, UAE



The Port of Fujairah has built the first jetty that can berth Very Large Crude Carriers (VLCCs) on the Indian Ocean as part of its expansion plans. This expanded its capacity for handling liquid bulk to serve the growing number of independent oil storage terminal companies operating in the Fujairah Oil Industry Zone.

### Project:

Rotary was the consortium leader who was awarded the contract to design and construct a VLCC jetty at the port.

The jetty capacity is designed to allow customers to load/discharge up to 2 million barrels of crude oil within 24 hours and can facilitate tankers up to 344 meters long and up to a dead weight tonnage of 363,000 tonnes. The contract awarded on lump sum turnkey basis included:

- 2.6km twin crude line with pipes diameter of 40"
- Marine & jetty topside works
- Fire-fighting, utilities & marine loading arms
- 65,000 diameter-inch piping works





## Our Services

We don't do things just because it's the way it's always been done. We constantly look for innovative solutions so we can deliver better, faster, smarter. No project is too big, too small, too simple or too complex. And because we offer the complete range of services as your EPC partner, we are adept at supplying the complete turnkey solution, on time and within budget. This is what we are known for.





## Engineering

Perfection Is In The Details

At Rotary, we believe that a firm foundation is key. And in our scope of services, that foundation is laid at the design phase. Here we have it planned and drawn to perfection. Thanks to our elite team of multi-disciplined engineers. Disciplines include: process/chemical, civil and structural, mechanical, piping, tankage, electrical and instrumentation engineering.

With the support of our design centre in India as well as engineering team in Singapore lays the foundation for each outstanding project that bears the Rotary mark of quality.

- More than 200 multi-disciplined design engineers



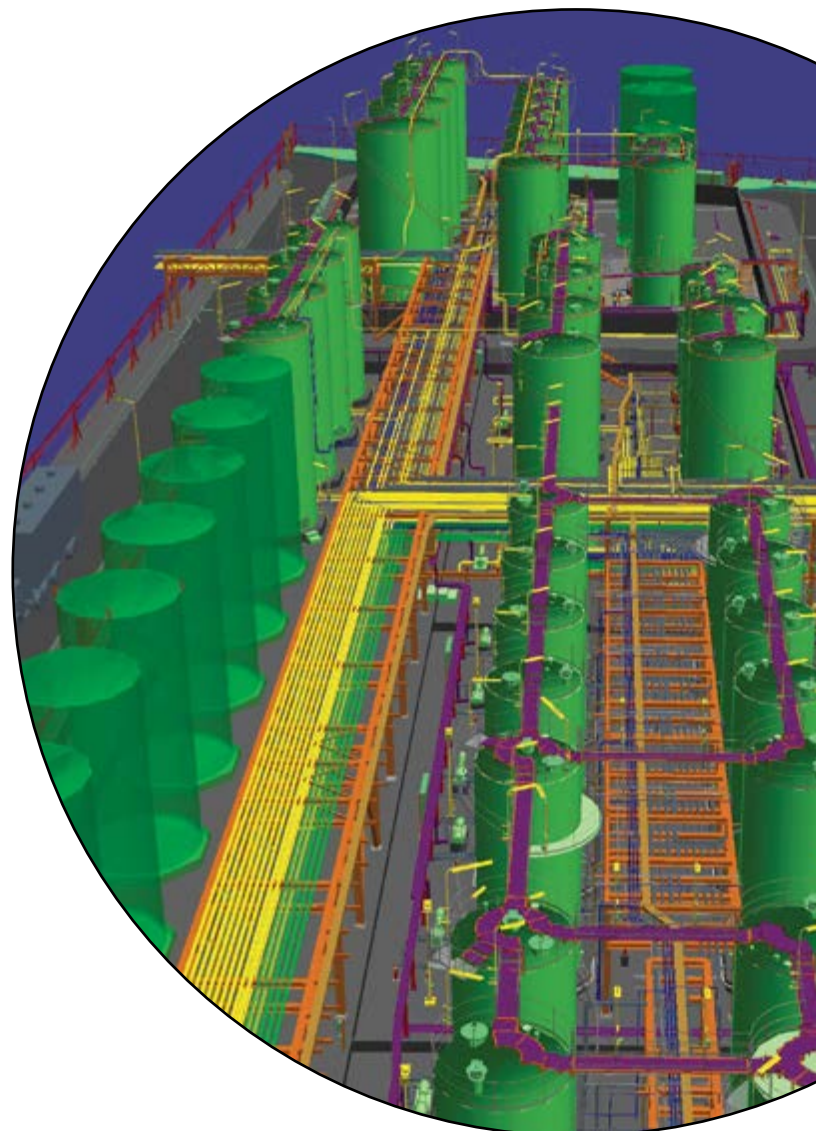
## Procurement & Logistics

We're Well Connected

Our depth of presence in the industry over the years has meant that we have built up a vast network of trusted suppliers with reliable products. As a result, you benefit from the cost savings we enjoy through bulk procurement. And because our expeditors keep a very tight watch on schedules, you can be assured that materials will arrive on time. With Rotary by your side, gone are the days when late delivery of supplies delay completion of your projects. It is often our clients who set their own budgets, brief us on the brand and quality of materials preferred. We ensure we stick to specifications and keep things within parameters – because we can.

Because we are connected, you are too.

- Our one-stop solution provides 3rd-party logistics and warehouse management for bulk materials, engineered equipment and spares



## Project Management

On Time Within Budget

With over 40 years of experiences in the oil and gas industry, Rotary is fully geared to provide top-notch project management services that give our customers the peace of mind. With experiences collated through EPC projects and equipped with the industry 'know-how', we are able to ensure that all projects will be executed seamlessly and completed within the stipulated time frame, if not earlier.

We strongly believe that Project Management is the key in determining the success of a project. As such, a team of carefully selected project management specialists; Project Manager, Construction Manager, Engineers, Planner, Safety Personnel, as well as Quality Assurance & Quality Control Personnel are put together from the start of the project at the planning phase right through the execution phase, up till the project completion. With the relentless support of our senior management, our Project Management Team is able exert control in project planning, monitoring, progress and evaluation upon project closure.



## Tankage

Customised Storage, Specialised Solutions

Rotary has a long history of providing multi-disciplinary, turnkey EPC solutions in the fields of bulk liquid storage terminals, tank farms, offsite and utilities for refineries and petrochemical plants. In short, we know precisely what it takes when it comes to designing and constructing tanks for bulk liquid storage. Our tankage capabilities include full EPC tankage solutions, prefabrication of tank plates, spiral staircases, tank bridges, accessories and appurtenances.

Our capabilities extend to all tank types including spherical, double wall low temperature, horizontal vessels/bullets, cone roof, dome roof and floating roof tanks.

To be time and cost effective during the construction process, Rotary also utilises mechanisation and automation such as automated vertical and horizontal welding machines to enhance productivity. We are also tank erection specialists of API 650 & API 620 standards and hold ISO 9001, ISO 14001, OHSAS 18001 certifications; ASME "U", "S", "PP", "U2" and "R" stamps for pressure vessel fabrication and an approved vendor for Saudi Aramco.







## Mechanical

Connecting The Dots

We love the design engineering phase, but get an extra kick out of seeing it all come together. Leveraging on our pool of skilled craftsmen and specialists supported by a strong management team, the team is able to deliver high quality yet cost effective results on time and safely to the satisfaction of our clients from start to finish.

As a one-stop solution service provider, we are capable of providing mechanical construction services such as fabrication and installation works for structural steel & piping, and installation of rotating, static & package equipment either independently or as part of a multi-disciplined approach.

Safety is of utmost importance to us. We have dedicated team of safety professionals to manage the various activities both onsite and offsite.



## Electrical and Instrumentation

We're All Powered Up

The electrical & instrumentation systems power your plant so their design and installation are not something we should leave to chance. Rotary provides a full spectrum of electrical & instrumentation services required by the multinational companies in the various industries. Being a renowned specialist in the electrical & instrumentation fields for more than 45 years, we offer full pledge EPC services; engineering & design, product procurement & installation, system integration services and testing & commissioning services for Process Control Systems, Extra-low Voltage (ELV) Systems, Analyser Houses, Fire Fight Systems, Heating, Ventilation & Air-Conditioning (HVAC) Systems and Prefabricated Substations.

Having had an excellent track record of delivering projects on cost & on schedule, through Rotary's team of dedicated engineers, specialised in delivering exceptional quality safe works, including testing and commissioning. This is all in addition to any customised design and build of modularised Power Control Rooms and analyser enclosures.



## Civil

Your Foundation to Success

Our creative approach to civil infrastructure projects sets us apart from our competition. Our engineers are used to thinking outside the box, exploring every possible solution until we find the best one for you.

Rotary has a reputation for delivering cost-effective civil construction services for industrial structures that meet or exceed our clients' safety and quality standards. With the right equipment and expert team on hand at every project, it's simply expected that we will deliver within budget and on time.

Our civil capabilities include providing soil improvement, deep excavation, tank and equipment foundations, piping support, drainage and sewerage systems and plant and utility buildings.



## Integrated Maintenance Turn-around and Shutdown

Even If It's Completed, We Carry On

Whether it is ongoing support for a complete turnaround project or a retrofit project for an existing plant, Rotary is equally committed to delivering dependable maintenance solutions to keep your structures in operational order, thereby extending the lifespan of your investment.

Our expert team will oversee maintenance planning and scheduling that meets the needs of your individual requirements. This includes regular scheduled maintenance or predictive and preventive maintenance to extend the life of your plant; turnaround and shutdown maintenance as required; and even daily and facilities maintenance.

The scope of maintenance works includes equipment installation, piping works, structural works, electrical works, instrumentation and controls, tankage maintenance, static equipment maintenance, exchanger bundle pulling and repair, rotating equipment servicing and overhauling, scaffold and insulation, and reliability engineering services. Additionally, we have perfected the implementation of the Computerised Maintenance Management System (CMMS), encouraging many of our clients to take up this technology as it allows for enhanced resource allocation, increased plant safety, an improved communication process and operational efficiency and, in turn, notable time and money savings.



• A total maintenance workforce of about 800, including the multi-skilled craftsmen





## Fabrication

Making Sure The Pieces Fit

We shop fabricate pre-assembled piping and tank structures, supplying them directly to your site for easy integration into your construction project.

Spanning over 30 hectares, our fabrication facilities in Singapore, Indonesia, Thailand, Saudi Arabia and the United Arab Emirates are strategically positioned to enable us to deliver quality, prefabricated structures to your site on time and within budget.

Rotary monitors and controls the transportation of thousands of fabricated pieces, ensuring the safe and secure arrival at project sites.

We are committed to delivering flexible and high-calibre solutions so your projects continue to run as planned and that's no fabrication.

- Total land area – more than 30 hectares
- 6 fully-equipped and strategically located workshops
- Capacity to handle 100,000 diameter-inch of fabrication per month in the vicinity of Singapore.

### Fabrication

#### (i) Piping

We have more than 30 years of experience in piping fabrication and have served a wide range of clients across Asia and Middle East.

We have the capability of handling fabrication project ranging from a few thousands diameter-inch to up to a million diameter-inch. From pipes as small as ½ an inch to 40 inch, from stainless steel to alloy steel, from cutting to painting and blasting - we have the foundation firmly planted in each area.

We are also able to spearhead production planning. With your ISO diagram, our team of highly-skilled engineers will work on required spool generation, while always keeping in mind your construction and operational requirements, thus ensuring quality outputs are always delivered on time.

Our full suites of services have been designed to give you a peace of mind when you choose us to be your partner.



### Fabrication

#### (ii) Tankage

Tanks are the heart and soul of each terminal which explains our profound expertise in this area as well.

Our shops are equipped with plate rolling machines, CNC cutters, AVW & AGW to size and shape plates as per your project requirements. We are also able to execute fabrication for different types of materials which include cryogenic, spherical, pressure vessel tanks etc.

When required, we will be able to fabricate and assemble smaller-sized tanks in the workshops, before transferring them to the worksite that will allow for swift ground installation.

### Fabrication

#### (ii) Pressure Vessel, Column, Reactor & Heat Exchanger

We have decades of experience in shop fabrication of pressure vessel, column, reactor and heat exchanger. Our Thailand subsidiary is holding the ASME “U”, U2”, “S”, “PP” and “R” certificates with average capacity of 400 tonnes a month.

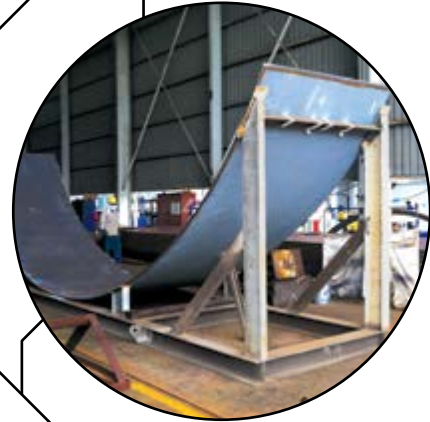
We have completed numerous fabrication projects across South East Asia and Middle East, and currently boasts to have built the largest bullet tank in the history of oil refinery. Each of the bullet is 84 meters long, with a diameter of 9 meters, and weighs close to 1,300 tonnes!

### Fabrication

#### (iv) Steel Structure

Fabrication of structures in workshop is one of the obvious ways to saving time and money. Our workshops are equipped with an array of fabrication machineries and equipment that will suit your project requirements. Each of our workshop is equipped with CNC cutters, overhead cranes, welding equipment, rolling machines etc. that will allow for swift and precise execution of each fabrication project.

We are also a specialist in modularized units that can help to save you precious time especially during compressed onsite schedule. Our team has extensive experience in the fabrication of modular units such as pipe structures, substations, buildings, walkways etc. We trust that you will meet the tightest of deadlines with our expertise.





# Global Presence



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