



**PTT LNG Company Limited.
Company Profile.
[ID 23032]**

1. Company, Plant / Factory Profile

PTT LNG Company Limited (PTTLNG) is a PTT Group subsidiary that the Thai government assigned to supply LNG in response to increasing demand, and a continual drop of natural gas in the Gulf of Thailand.

1.1 Company Detail

Official Company Name: PTT LNG Company Limited.

Official Plant Name: LNG Map Ta Phut Terminal 1 (LMPT 1)

Company Logo:



Company Objectives : TO STRENGTHEN NATIONAL ENERGY SECURITY and INCREASE CAPABILITY TO MEET GROWTH IN GAS DEMAND.

Official Company Timeline: On the path of building Thai energy stability PTTLNG from the beginning until the present.

- **August 30, 2004** - Established a company by registering under the name "PTT LNG Company Limited"
- **2008 to 2011** – Design and start construction of LNG Map Ta Phut Terminal 1 (Plant which applying for the TPM Award.)
- **September 7, 2011** - Official commercial
- **February 3, 2014** – Start construction project expansion and LNG receiving-dispensing terminal, LNG Map Ta Phut Terminal 1 phase 2
- **First Quarter, 2014** - Construction of phase 2 has been completed which can increase the LNG capacity.
- **January 9, 2018 to February 15, 2019** - The project to generate electricity (In Plant Generator) for own use within the LNG receiving-dispensing terminal area has been completed. (Power generating unit project for own use within the LMPT1 area.
- **July 1, 2018** - Undertake the construction of LNG Map Ta Phut Terminal 2 (LMPT 2) at Map Ta Phut area (about 15 minutes from the LMPT1),
- **First Quarter, 2022** - The construction of LNG Map Ta Phut Terminal 2 (LMPT 2) has been completed.
- **Present** – PTTLNG has 2 areas of LNG Terminal for Re-Gas Capacity totally 19 (MTPA/MMSCFD) TO STRENGTHEN NATIONAL ENERGY SECURITY

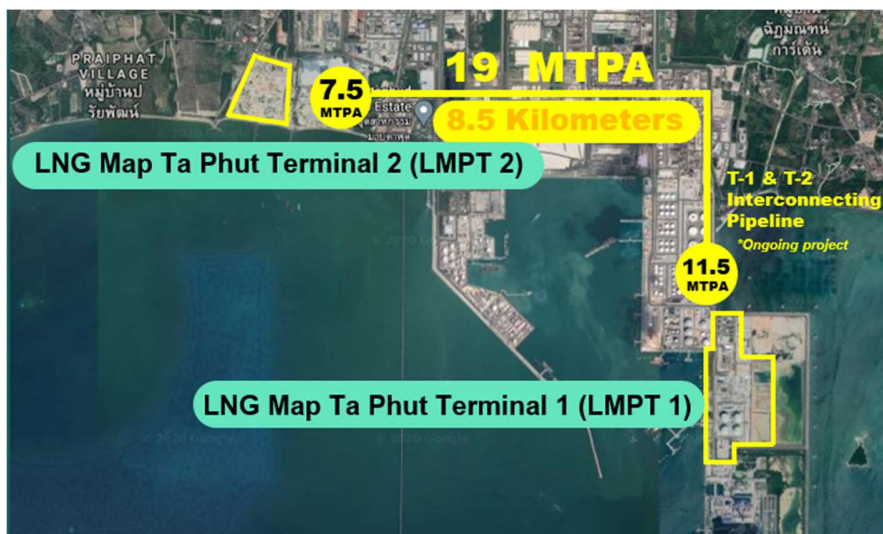


Figure 1: PTT LNG 2 Plants Location

Plant Address

- **LMPT1** (Plant which applying for the TPM Award.) - PTT LNG Company Limited. Map Ta Phut Office, No. 8/1, I-Eight Road, Map Ta Phut Industrial Estate, Map Ta Phut Subdistrict, Mueang Rayong District, Rayong Province 21150

LMPT1 Terminal Area

- LNG Map Ta Phut Terminal 1 had 734,400 m² in Map Ta Phut industrial estate area, Map Ta Phut Subdistrict, Mueang Rayong District, Rayong Province

1.2 Infrastructure and Operational information

Infrastructure

- 4 LNG Storage Tanks (Size 160,000 m³ per each) & 3 Berths.
- 11.5 MTPA regasification & 500 ton/day of LNG by truck loading.

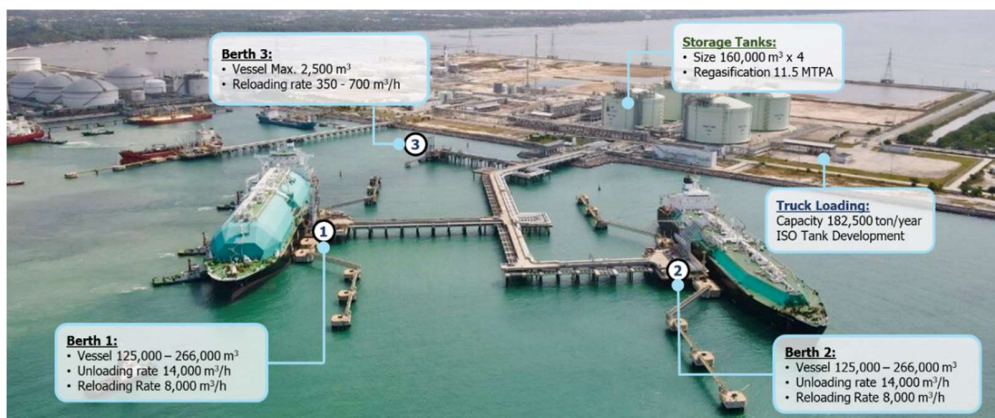


Figure 2: LMPT1 Infrastructure

Operational information

LNG Map Ta Phut Terminal 1 (LMPT 1)				
Information	Phase 1	Phase 2	1.5 MTPA Expansion	Total
Jetty :	1	2	-	3
Ship Vessel Size (m ³) :	125,000 - 264,000	125,000 - 264,000	-	125,000 - 264,000
LNG Tank (m ³) :	160,000 x 2	160,000 x 2	-	160,000 x 4
Re-Gas Capacity (MTPA/MMSCFD) :	5 / 700	5 / 700	1.5 / 210	11.5
Truck Loading (ton/day) :	500	-	-	-
Project Completion :	6 Sep 2011	2017	Feb 2018	2018

Figure 3: LMPT1 Operational information

Production Systems

Overall process, LNG is transferred by pumps under cryogenic conditions from the carrier to the storage tanks. LNG is stored in full containment tanks at near atmospheric pressure. In-tank pumps send LNG to the HP pumps and then to the open rack vaporisers (ORV) to convert the LNG into gas phase for send-out to the pipeline. For Truck loading mode: LNG is loaded to LNG trucks through truck loading arms.

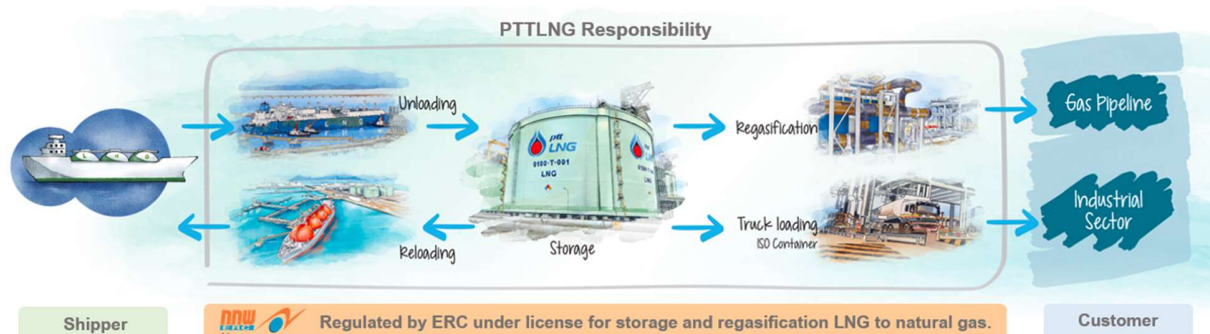


Figure 4: PTTLNG Operation system and Responsibility

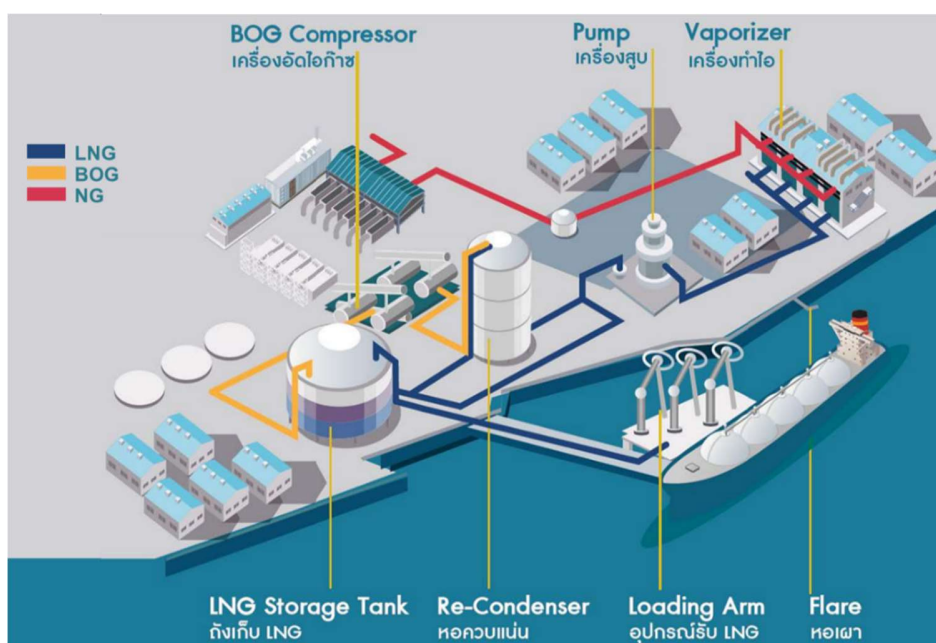


Figure 5 : Operations of LNG Receiving Terminal

Scope of Service:

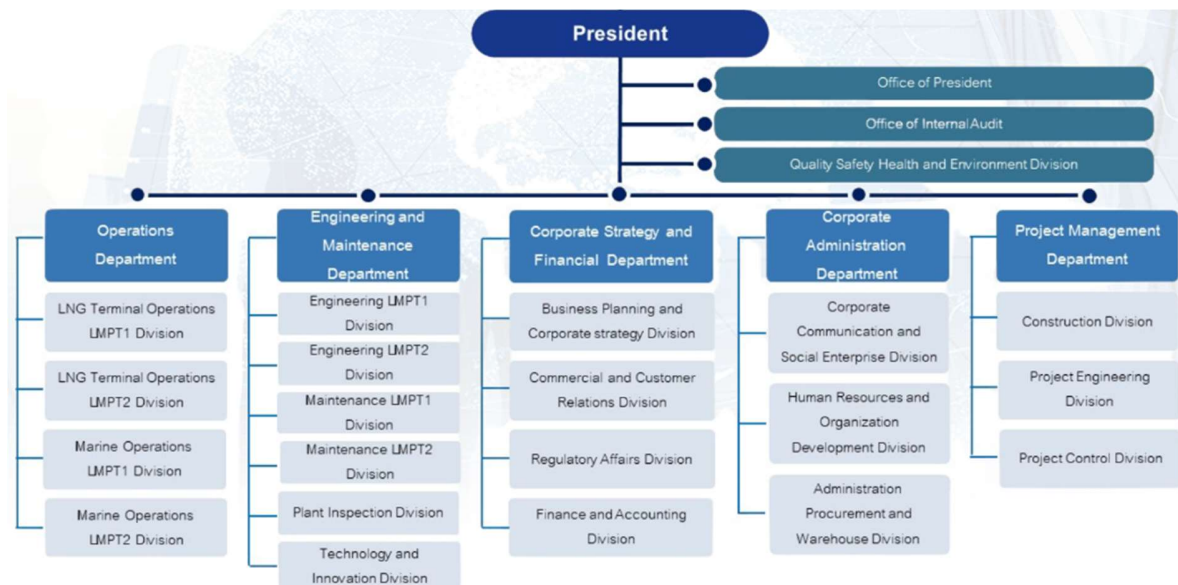
- Unloading, Reloading, Storage and Regasification of Liquefied Natural Gas (LNG) and Sending Regasified LNG (RLNG) to the Transmission Pipeline System.
- Loading Liquefied Natural Gas (LNG) to Truck Tanker

Customer

- PTT Public Company Ltd.
- PTT Global LNG
- BG Group Ltd

Human Resources

- 227 staffs (as of December 7, 2023)



2. Milestone on the Journey of Manufacturing Excellence

2.1 Company Policy



Announcement: PTT LNG Company Limited
PTTLNG's Quality, Security, Safety, Health, and Environment Policy

Quality, Security, Safety, Health, and Environment (QSHE) are vital elements of PTT LNG business. PTT LNG is committed to prioritizing our operations, planning, setting goals, directing, controlling work processes, and managing risks and capture opportunities. PTT LNG shall focus on efficient operations to achieve zero accidents and zero environmental impacts arising from the work process of the organization toward the operational excellence and comply with the Sustainable Development Goals by enhancing the value of stakeholders. PTT LNG shall promote QSHE culture and knowledge management in order to achieve learning organization and create awareness of employees and contractors in managing QSHE risks, as well as create opportunities to improve and reduce negative impacts from operations which is one of the most important elements in business and continuous improvement of operations.

Practice,

1. PTT LNG aims to operate Liquefied Natural Gas Receiving Terminal, to comply with the international standards, agreements, and contract to create customers satisfaction.
2. PTT LNG shall comply with all applicable QSHE laws and regulations, internal requirements, international standards, and compliance obligations, as a minimum performance achievement level.
3. Prevent, eliminate hazards, and reduce risks that may cause accidents, injuries, occupational illnesses, and safety outside the workplace along with promoting occupational health and a good working environment for employees and stakeholders. Protect all employees and the organization from pandemic outbreak, natural disasters, security threats and other factors with respect to the Universal Declaration of Human Rights.
4. PTT LNG shall manage and prevent minimize impact to the environment and community by applying pollution prevention at its source. PTT LNG shall improve efficient use of resources and energy and manage greenhouse gas emissions to achieve a low carbon society.

/5. PTT LNG shall focus...

-2-

5. PTT LNG shall focus on quality management system by using the appropriate tools, such as 5s, TPM, Productivity, and TQA etc. PTT LNG shall promote knowledge management which leads to continuous improvement and developing the knowledge and capabilities of employees. PTT LNG shall promote research and development in innovation and technology, provide quality products and services which are safe and environmentally friendly throughout the life cycle.

6. PTT LNG shall engage and communicate QSHE programs and performances with transparency and integrity to the employees and stakeholders along with the collection of feedback and expectation from the employees and contractors to review and continually improve PTT LNG operations.

All managements, employees, contractors, and stakeholders shall acknowledge, understand, and comply with this policy to align with the intent of the organization. All levels of management shall be good role models, consult, provide adequate resources and are accountable for the policy alignment.

Announced on 10 March 2023



(Mr. Rattikool Piyavongwanich)

President

We have 6 policies such as safety, environment, energy and work improvement. We also have a policy to focus on productivity by implementing TPM as the content below.

“5. PTTLNG shall focus on quality management system by using the appropriate tools, such as 5s, TPM, Productivity, and TQA etc. PTTLNG shall promote knowledge management which leads to continuous improvement and developing the knowledge and capabilities of employees. PTTLNG shall promote research and development in innovation and technology, provide quality products and services which are safe and environmentally friendly throughout the life cycle.”

According to PTTLNG’s Policy that focus on TPM. PTTLNG set **TPM Objective** for deployed to all pillar and set KMI/KPI/KAI and Linkage to carry out all activities of the company according to the set goals as follows,

- Zero breakdown
- Zero defect
- Increase overall skill
- Zero lost time accident
- Zero loss
- Zero pollution emission

2.2 PTTLNG's Total Productive Maintenance Committee (TPMC)

For Implement TPM activity, We have a president as a chairman and had top management with every department as a member in carrying out activities In addition to that, we have 27 Small groups to carry out Cross Functional Productivity Improvement Project.

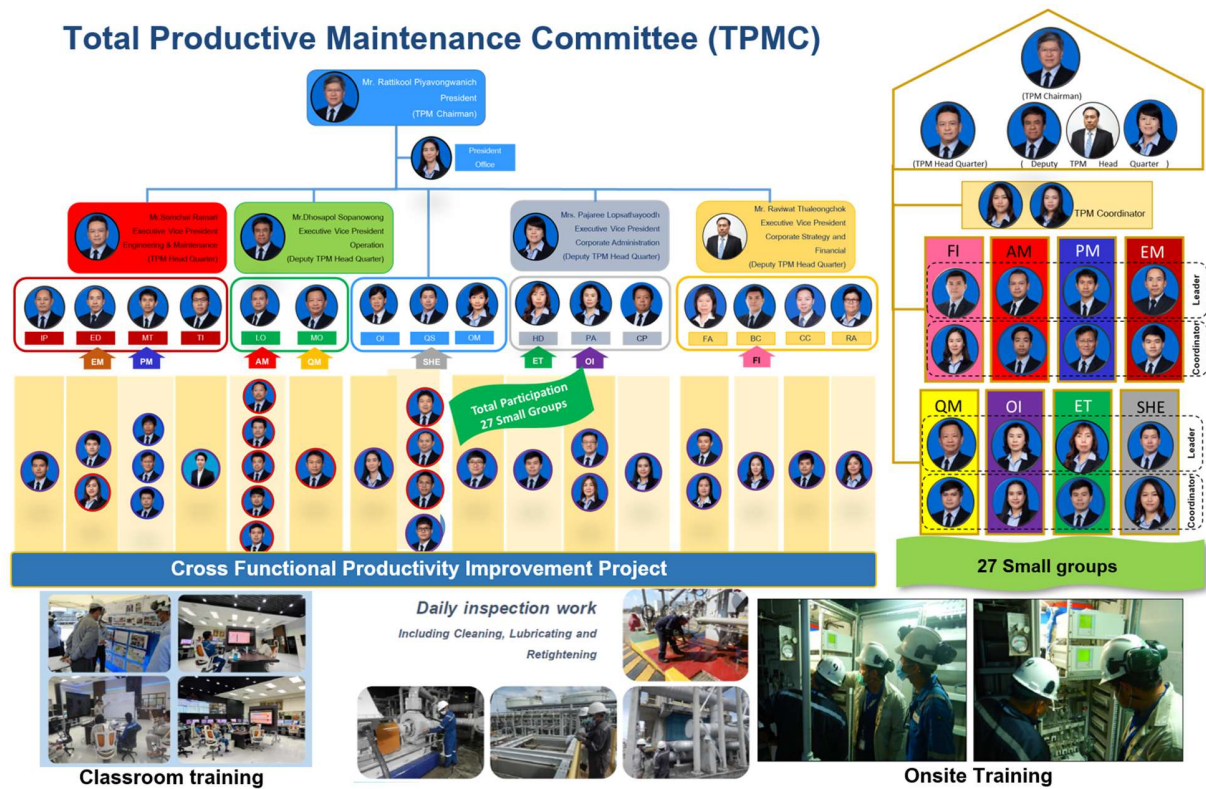


Figure 7 : PTTLNG's Total Productive Maintenance Committee (TPMC)

2.3 TPM Journey

PTTLNG adopted TPM to sustainable improve the operation and management system and TPM kick-off ceremony was held on December, 2014. First, we implement 5 pillar in 2015. Then start fully implementation 8 pillar in 2016 . After that we also continue to conducted TPM Activity and got a consult by JMA Consultant Thailand Company and Japanese Consultant Mr. Kenji Ono.

After conducting TPM activities for 4 years in 2019. PTTLNG has applied for TPM Excellence Award Category A certification. We have been assessed by the Japan Institute of Plant Maintenance (JIPM) twice on June 21, 2019 and on January 9, 2020. Finally, on 28th January 2020. JIPM has given the final approval of the result. of “2019 TPM Excellence Awards outside Japan” and PTTLNG was officially announced as receiving TPM Excellence Award Category A.

**TPM Implementation Journey since Kick off in 2014
to Achieved TPM Excellence Award Category A**



Figure 8 : Milestone on the TPM Journey form Kick off to Achieved TPM Excellence Award Category A 2020

After being awarded the TPM Excellence Award Category A, we have continued our TPM activities and also maintain TPM Excellence Category A to all area in LMPT1. Moreover we Implement & apply Excellence in Consistent TPM Commitment Level's assessment criteria.

We hold an event Productivity Day in every year to communicate the policies, goals and activities that TPM head quarter and pillars will undertake each year for all employees in the organization are informed and jointly take action

In addition, we have organized activities for employees to participate in TPM activities. We have organized a new slogan and logo contest.

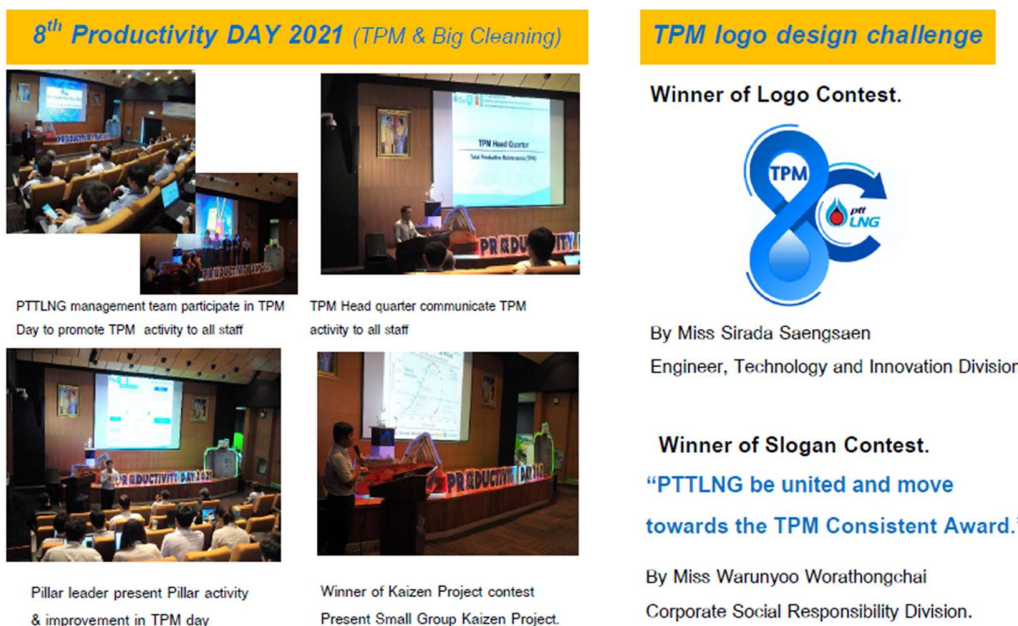


Figure 9: Example of TPM Activity

In 2022 And We have consulting and assessment from JMA Consultant Thailand and Mr. Atsushi Terada, Japanese consultant.

And in 2023 we plan to apply for the Award for Excellence in Consistent TPM Commitment accreditation. We also plan to extend our TPM activities to LMPT2 (Our new terminal).

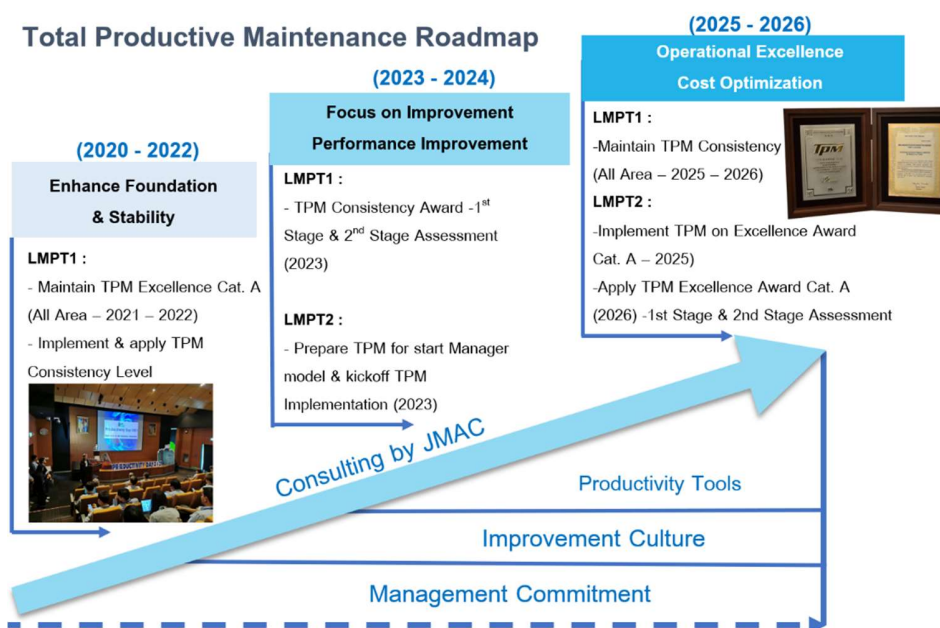


Figure 10 : TPM Roadmap

3. Benefits Achieved

3.1 Benefits Achieved

TPM implementation helped us to make sustainable improvements our existing management system of quality, safety, health and environment. This excellence integrated management system has led our company achieved high level of stakeholders satisfaction, outstanding safety records, improved company’s competitiveness.

TPM activities are also a part that makes goals and performance in the Key Management Indicator (KMI) of the organization such as Gas demand, Financial income, Process and Personal safety index and Key Social Indicator (Social Satisfaction) achieve the goals set.

As a result, PTTLNG being able to benchmarking for operational excellence and achieved Best in Class for Internationally Benchmarked Performance by 2022 in terms of Energy Efficiency, Terminal Cost and Total recordable incident rate (TRIR). In addition, PTTLNG also received award for Enviroment, Safety and Productivity. PTTLNG also earned awards such as In 2018 and 2020 PTTLNG received “Thailand Quality Class Award (TQC)”, In 2021 PTTLNG received “Thailand Quality Class Award (TQC) Plus Innovation” and In 2022 PTTLNG received “Thailand Quality Class Award (TQC) Plus Operation” from Thailand Productivity Institute. Moreover, In 2020 PTTLNG achieved Productivity Management & Energy Management from Thailand Prime Minister Industry Award 2020 and In 2021 PTTLNG achieved Energy Management from Thailand Energy Award 2021, etc. This award is a guarantee that PTTLNG has an excellent management system and continuous improvement across the whole organization.



Figure 11 : History of Awards

3.2 Intangible Benefits

1. Create good attitude of staff to maintain basic condition of machines and have cost – loss conscious.
2. Enhance knowledge and skill of staff in terms of machine basic operation, Maintenance technique and problem solving analysis.
3. Harmonize working atmosphere among staff.
4. Create safe, efficient and good workplace for happiness working.
5. Initiate self-learning organization.
6. Encourage morale of staff to continuously participate and support each other as “PTTLNG Team” to achieve Challenge targets of Zero breakdown, Zero defect, Increase overall skill, Zero lost time accident, Zero loss and Zero pollution emission.

4. Key of our Manufacturing Excellence

1. Strong commitment and support by top management to enhance stakeholders satisfaction by improving quality, safety, health, environment and social responsibility towards operation excellence and Achieved Our vision “World Class and Competitive Service Provider Excellence in LNG Terminal Value Chain” Enabling Sustainable Engagement with Stakeholders and all company’s mission as below.
 - Delivery best-in-class Service Provider to ensure Security of Gas Supply
 - Implement industry's best practice for Safety and Environment
 - Drive to excellence by high performance team and strengthening innovation thinking for developing new business opportunity in LNG value chain
 - To provide and promote an efficient & flexibilities service
 - Sustain strong engagement with stakeholders
2. Involve people in all levels of organization
3. Collaboration among highly motivated staff to support TPM activity and productivity improvement (QC & Kaizen)
4. Issues of Present Practice and Counter-Measures To embed TPM Culture and Best practices for continuous improvement on our employee skill, equipment efficiency and work environment.
5. Visions of 21st Century and Their Implications for TPM are to sustain TPM culture to achieve Operation excellence performance and acquire next level of Award for Excellence in Consistent TPM Commitment by year 2023.
6. Measure the performance of the organization until it gets “Best in class for internationally benchmarked performance by 2023” and can be operated as LNG Hub of South East Asia.

5.Achievement Record

5.1 Objective measures should be listed for the following general headings:

- Productivity
- Quality
- Cost
- Delivery
- Safety
- Moral

Achievement record as Achievement Sheet and full record in TPM award activity report

See **TPM Award Assessment Achievement Sheet** for suggested items for inclusion.

5.2 Serious Accident Index

- No serious accident during our TPM implementation journey

2023 TPM Award -Achievement Sheet

Company	PTT LNG Company Limited
Plant name	LNG Map Ta Phut Terminal 1 (LMPT 1)
TPM Slogan/Objectives	TPM Slogan: "PTTLNG be united and move towards the TPM Consistent Award." Objective: 1.Zero breakdown (P,D) 2.Zero defect (Q) 3.Increase skill level (M) 4.Zero accident (S) 5.Zero loss (C) 6. Zero pollution emission
Year when TPM activity started	2015
Year of benchmarking	2019

Category	Index (Calculation Formula)	Unit	Kick off / TPM last time awarded (Excellent Award)	Actual Status 2023
S	Number of work-related accidents requiring days off work	Cases/ year	0	0
S	Number of work-related accidents not requiring days off work	Cases/ year	0	0
P	Productivity for main products	Parts/Operator hours	PTTLNG is a terminal operation service provider (no products to be delivered).	
P	Overall Plant Efficiency	%	99.9869	100
P	Availability	%	99.9869	100
P	Performance Rate	%	99.9869	100
P	Quality Products Rate	%	100	100
P	Number of breakdowns	Breakdowns / year	2	0
P	MTBF	Hour / Year	4379.425	8760.000
P	MTTR	Hour / Year	0.575	0.000
Q	Number of customer complaints	Number/year	0	0
Q	In-line defect rate, scrap	%	-	-
Q	In-line defect rate, scrap and rework	%	-	-
C	Cost index (Electric Cost per Gas Send Out)	Thai Baht / Ton	102.8	82.34
D	Production Lead time	Days	PTTLNG is a terminal operation service provider. We can provide service 24 hours a day.	
D	Delivery performance	%	100	100
S	Safety index	Accidents per 1,000,000 operator hours	0	0
M	Number of Employee Suggestions	Number/year	632	1205