



Announcement of PTT Public Company Limited

Registration Number 0107544000108

PR No. 1121000607

Subject: Bid for จัดจ้างศึกษาหาแนวทางแก้ไขปัญหา Reliability ของอุปกรณ์พื้นที่ New DPCU (Hiring of Pre-Feasibility Study Services for Improving Equipment Reliability in the New DPCU Area)

As PTT Public Company Limited intends to invite written Bid for จัดจ้างศึกษาหาแนวทางแก้ไขปัญหา Reliability ของอุปกรณ์พื้นที่ New DPCU (Hiring of Pre-Feasibility Study Services for Improving Equipment Reliability in the New DPCU Area)

Place of delivery at The contractor shall deliver the job The contractor shall deliver the job at the PTT Rayong Gas Separation Plant, 555 Sukhumvit Road, Mab Ta Phut, Muang, Rayong 21150

Within The contractor shall deliver the job to the PTT 3 times within 120 days (counting continuous everyday), Starting from the date after the contractor has acknowledged a Service Order or Letter of Intent from PTT. However, it shall not be included the time that the PTT forbids it from the operation or orders job suspension. The delivery term is DDP at Rayong Gas Separation Plant AS PER INCOTERMS 2010

according to the conditions/detail/drawing and the documentation attached to the announcement, which shall be considered as part of this Instruction to Bid, as follows:

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| - Terms of Reference | 1 Set |
| - Form of Power of Attorney | 1 Page |
| - Form of Bank Guarantee | 1 Page |
| - PTT Supplier Sustainable Code of Conduct | 1 Set |
| - Price Bid Form | 1 Set |

Person who is interested may purchase Bid Documents at the price of Baht - per set (Vat included) from 30 April 2026 to 08 May 2026 during 09:00 - 16:00 hours (NOTE : Interested bidders are requested to notify their intent via email to siriwimon_u@pttplc.com (CC: supakrid.p@pttplc.com and kawin.t@pttplc.com) by providing the company name, contact person's name and phone number, a copy of the Company Registration Certificate issued within the last 6 months, and—in cases where safety training has not yet been completed—the list of attendees for the pre-site visit safety briefing along with copies of their National ID cards.) as follows:

- Procurement section , GSP Procurement & Inventory Management, Division. Gas Separation Plant Rayong, 555 Sukhumvit Road, Mabtapud, Muang, Rayong 21150
(MR. SUPAKRID PANANURATANA Tel. 038-676-179)



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Pre-Bid Conference for clarification shall be held at MS Team on 11 May 2026 Registration for the Conference shall be during 10:15 to 10:30 and conference shall commence at 10:30 hours. (Speaker MR. KAWIN THONGLIM Employee ID No. 580264 Tel. 0966361539)

Site examination shall be held at PTT Public Company Limited Rayong Gas Separation Plant on 13/05/2026 at 13:30 hour.

The bidder who does not attend the pre-bid conference / conduct site examination shall be ineligible to tender.

Submission of Bid Price, evidence and technical documents shall be on 21 May 2026 at 09:00 - 15:00 hour, as follows:

- Procurement section , GSP Procurement & Inventory Management, Division. Gas Separation Plant Rayong, 555

Sukhumvit Road, Mabtapud, Muang, Rayong 21150

Announced on 30 April 2026

(MR. KRITSARA KHONGNUAL)

Procurement Section Head

Procurement section



Subject : จัดจ้างศึกษาหาแนวทางแก้ไขปัญหา Reliability ของอุปกรณ์พื้นที่ New DPCU

By :
MR. KAWIN THONGLIM

Create date : 27 March 2026
Rev.2
SAP PR No.1121000607

Division/Department :
Mechanical Plant Maintenance Division

| Related standard systems | | | | | |
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Terms Of Reference

PTT Public Company Limited (hereinafter called “PTT”) would be interested to hire จัดจ้างศึกษาหาแนวทางแก้ไขปัญหา Reliability ของอุปกรณ์พื้นที่ New DPCU as following

1. Objective

To perform pre-feasibility study and CAPEX Estimation for improvement of New DPCU with the accuracy of +/- 50% to enhance the operational reliability and readiness.

2. Bidder Qualifications

2.1 Bidder shall carry out the business involving the products to be offered.

2.2 Bidder must not have the following characteristics as prohibited by the Blacklist:

2.2.1 Being a person or juristic person who has been convicted by the National Anti-Corruption Commission of Thailand (NACC), such a person shall no longer be considered to possess the prohibited characteristics described in this clause if they receive a final verdict of not guilty; or

2.2.2 Being a person or juristic person who is a party in any dispute or lawsuit against PTT that resulted in criminal penalties, excluding petty offenses.

The person or juristic person in the first paragraph shall be released from the prohibited characteristics (Blacklist) in the following cases:

2.2.2.1 A case where PTT is a defendant and a final judgment has been reached;

2.2.2.2 A case where PTT is the injured party and a final judgment has been reached indicating that the person did not commit the offense as charged;

2.2.2.3 A case where PTT is the injured party and a final judgment has been reached indicating that the person did commit the offense as charged, but the person has already served their punishment, completed their parole period, or has been awaiting sentence for at least three years; and

2.2.2.4 A criminal case that has been resolved through the withdrawal of the complaint or lawsuit, or has been disposed from the directory.



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In accordance with Clauses 2.2.2.1 to 2.2.2.4, if the counterparty is a juristic person, the directors of the limited company, partners with unlimited liability, or authorized directors of the public company limited, shall be subject to and exempt from the prohibited criteria (Blacklist) in the same manner as the juristic person.

In the case that Clause 2.2.2.3 applies and a final judgment is reached determining that the juristic person has committed an offense as charged, but it appears that the directors of the limited company, partners with unlimited liability, or authorized directors of the public company limited did not participate in the commission of the offense, and such directors or partners have resigned from the juristic person, then such directors or partners shall be released from the prohibited characteristics (Blacklist).

In the event that a final judgment imposes different period of punishment or parole on the juristic person, the directors of the limited company, partners with unlimited liability, or the authorized directors of the public company, the longest period of punishment or parole will be used to determine release from the prohibited characteristics.

2.2.3 Being a person or juristic person whose contract has been terminated by PTT due to committing the corrupted act against PTT;

2.2.4 Being a person or juristic person in the process of being ordered bankrupt by the court, or a person received a receivership order from the court in the context of a bankruptcy case, either temporarily or absolutely, and for which a final verdict has not been issued to resolve the case, cancel the bankruptcy, or discharge the bankruptcy, regardless of whether the court has approved a composition in bankruptcy for such person; and

2.2.5 Being a person or juristic person who has been in the Thailand designated list announced by the Anti-Money Laundering Office under the law of Counter-Terrorism and Proliferation of Weapon of Mass Destruction Financing Act. If the entity referred to in Clause 2.2 is a juristic person, the directors of the limited company, partners with unlimited liability, or the authorized directors of the public limited company, shall be included.

2.3 Bidder shall not be a person with a previous record of abandoning any work undertaken as declared by PTT and The Comptroller General's Department.



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2.4 Bidder shall be the person or persons who purchased/received the Bid Documents and may not assign to other persons the right to submit the Bid.

In the case of the Bidder being a partnership/ consortium/ joint venture, the mentioned Purchaser/ Receiver must be a party of the said partnership/ consortium/ joint venture. Hence, the Bidder in the form of partnership/ consortium/ joint venture shall be obligated as a joint debtor to PTT.

Remark: A partnership/ consortium/ joint venture shall not be permitted to submit the Bid except it is stated clearly in the Terms of Reference that a partnership/ consortium/ joint venture is allowed to do so.

2.5 On the day of announcement/bid invitation, should not have any joint interest with other bidders or is not a person who will cause obstruction for a fair auction.

2.6 In the event that bidder is not registered in Thailand or does not have Thai nationality, bidder shall not be declared a Sanctioned Person by any authority for an activity applicable to this transaction with PTT. (Apply only transaction over 120,000,000 THB and bid is submitted by foreign individual or entity.)

2.7 The bidder shall have experience in Oil&Gas Plant design with the cost of the project is higher than 100 million Baht per contract at least one project in last 5 years (2020 - 2025).

2.8 The bidder shall have adequate and qualified manpower to undertake the work. Project Manager shall have experience more than 10 years. Lead Civil Engineer shall have experience more than 10 years. Lead Electrical Engineer shall have experience more than 10 years. Lead Instrument Engineer shall have experience more than 10 years. Lead Mechanical Engineer or Piping Engineer shall have experience more than 10 years. Lead Process Engineer shall have experience more than 10 years.

PTT reserves the right to request a change of the Project Manager in the event that the work progress is delayed by more than 10% against the planned schedule."

3. Pre-bid conference for clarification / Conduct site examination



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The bidder must attend the pre-bid conference for clarification / conduct site examination/present the work on the date/time and location indicated by PTT in the announcement. If you do not listen to the explanation , it will be considered that the bidder abandons their right to participate in the bidding process and is not eligible to submit a bid for this work.

4. Bid Evidence

Bid shall be enclosed in sealed envelope consisting of separate envelopes as follows:

(4.1) Envelope of bid qualification

(4.1.1) In case of Bid by an individual business owner, there shall be enclosed a copy of a value added tax certificate and a copy of a commerce registration certificate, certified by the owner or manager and affixed with the official seal (if any).

(4.1.2) In case of Bid by a company or partnership registered in Thailand, there shall be enclosed a certificate of incorporation issued by the Ministry of Commerce which is not more than 6 (six) months recent as from the date after the day of issuance up to the date of submitting Bid document. Unless it is an original, such certificate shall be affixed with a signature of the authorized person and the official seal of the company or partnership in authentication thereof.

(4.1.3) In case of Bid by a company or partnership registered in a foreign country, Bidder shall enjoy no immunity or protection allowing non-submission to Thai court, unless such privileges and immunities have been waived by the instruction of Bidder’s government..

(4.1.4) In the case where the authorized person of an individual business owner, company or partnership (“Entity”) does not sign the bid documents by himself and appoints a person to sign such documents on behalf of the Entity, such entity shall have to enclose a valid power of attorney which clearly and correctly states such authorization. The bidder may also have another person submit the said bid documents to PTT. However, the bidder has to certify that he will be responsible to PTT for any acts of such person in relation to submitting of the bid documents as if it is done on the bidder’s behalf.

(4.1.5) Certified copy of Thai ID./passport of the authorized signatory or copy of Thai ID./passport of grantee and grantor attached to a power of attorney.

(4.1.6) In the case where registration of value added tax has been effected, there shall be enclosed a copy of VAT



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Certificate (Form Bhor. Por. 20).

(4.1.7) In case of Bid by a company or partnership registered in a foreign country, there shall be enclosed

- 1) Certificate of Incorporation and/or Memorandum of Association and/or any other documents likewise issued by the competent agency/organization, which enables to identify the authorized person including Bidder's registered objectives that accord with the procurement work.
- 2) Articles of Associations (If any)
- 3) Power of Attorney) (If any)
- 4) Certificate of specimen signature or other documents that present signature.(If any)

(4.1.7.1) The list of documents in (4.1.7) 1) - 3) must be notarized by Notary Public and legalized by Thai Embassy or Thai consulate which has the jurisdiction, not more than 1 year recent as from the date after the day of notarization and legalization up to the date of submitting Bid document.

(4.2) Envelope of technical documents :

(4.2.1) Project Reference according to 2.7

The bidder is required to provide evidence of corporate experience in accordance with Clause 2.7. Such evidence shall include, but is not limited to, copies of contracts/purchase orders or certificates of completion issued by previous clients.

(4.2.2) Organizational Chart with CVs of project manager and engineers (lead discipline) following in the scope of work.

The bidders shall provide experience for each engineer according to 2.8.

(4.2.3) Project Schedule

(4.2.4) Project manpower plan

(4.2.5) Scope of Work Deliverable List

(4.3) Envelope of proposal :

(4.3.1) Quotation

5. Bid Submission



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- 5.1 Bidder shall fill the unit price or price of each item as well as the total price in the original Bid form issued by PTT or the quotation form of Bidder which shall have the contents in accordance with the Bid form issued by PTT, which shall include, but not be limited to, date of quotation, name of Bidder, subject of quotation, unit price or price of each item and the total price, and the wordings stating that Bidder shall comply with the terms and conditions of PTT. The Bidding Price shall exclude value added tax, be in THB , cover all expenditures incurred until delivery. The amount in number and word shall clearly be stated. Any deletion or correction shall be initialed by the authorized person and affixed with an official seal (If any). Where the unit price or price of each item is inconsistent with the total price, or there is discrepancy between the “number” and “word”, then, the provisions of the Civil and Commercial Code shall vern such inconsistency or discrepancy. Bid shall be valid for a period as determined by PTT. Unless otherwise determined by PTT, Bid shall be valid for a period of not less than 90 days as from date after the day of the Bid submission or according to conditions determined by PTT and upon the Bidder irrevocably submitting bid documents according to Clause 3 and may not be withdrawn.
- 5.2 Upon the expiry of submitting the proposal and bidding, the submission of proposal and bidding to PTT is forbidden.
- 5.3 PTT procurement committee will check the qualifications of the bidder, (1) if the bidder has a joint benefit with other bidders. In the event, the bidders have a joint benefit with other bidders, they shall be disqualified from the procurement. (2) PTT shall verify bidder’s qualification by using reliable sources in accordance with international standards based on transparency and fairness. In the event that the bidder fall into any prohibited characteristics (Blacklist) as per clause 2.2, the procurement committee reserves the right to reject the proposal from those bidders.
- 5.4 The bidder is responsible for thoroughly studying and understanding all terms & conditions, and details of the attached documents, including the supplementary Conditions Attached to Purchase Order / Work Order for commercial, prior to submitting the proposal.

6. Bid Security



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Bidder is not required to place Bid Security.

7. Bid Evaluation Criteria

- 7.1 For the consideration of this bidding submitting, PTT will consider by using the rules on price.
- 7.2 Bidder who won the auction
PTT will consider from minimum price
- 7.3 In the event the bidder does not qualify as per clause 2, the evidences submitted are incorrect or incomplete as per clause 3 or the price is incorrect as per clause 4, the PTT procurement committee shall not consider the bidder unless the bidder’s specification or the purchased products ’s price is incomplete or the details are different from the company’s conditions which is not an essential matter and does not cause disadvantage to the other bidders or there is a slight error, the PTT procurement company shall consider to ease the disqualification of that bidder
- 7.4 PTT reserves the right to not to ease the consideration of the following bidders;
 - (1) Does not have the name in the list of the people buying or receiving auction documents from PTT
 - (2) Has proposed details that differ from the company’s condition which are essential or are a disadvantage to other bidders.
- 7.5 In the event, the bidders have wrongfully proposed for the bidding such as submitting false documents or has appointed an ordinary person or legal entity in his behalf, the company shall revoke the auction and punish the bidder, no matter if the bidder is been chosen or not.

In the event, the bidder has proposed a low price, and it can be determined that the work cannot be operated as per the scope of work, PTT procurement committee will let the bidder submit the clarification together with the evidences to ensure that the work will be complete. If the clarification is unsound, PTT will reject the proposal or the price of the bidder. The bidder shall not claim for damages or expenses from PTT. PTT’s discretion shall be final



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7.6 Prior to affixing the signature in the agreement, PTT may revoke the auction if it appears the bidder who won the bidding or who is chosen has joint benefits, has advantage with other bidders, is an obstruction for the competition, mutually represent other bidder or bid officer or it appears that the bidder is wrongfully proposing the bid.

8. Contract and Performance Security

8.1 Successful Bidder chosen by PTT shall contact PTT

(1) In case of the procurement which is not over 10,000,000 (Ten million) Baht or is not required to proceed under PTT conditions to be done in a form of a contract, the Successful Bidder which PTT agrees to perform Purchase shall contact PTT to sign a Purchase Order within the period specified by PTT

(2) In case of the procurement which is above 10,000,000 (Ten million) Baht or is required to proceed under PTT conditions to be done in a form of a contract, successful bidder chosen by PTT shall contact PTT to sign a letter of intent and /or contract (as the case may be) within the period specified by PTT

In the event of non-compliance with the said clause 7.1 (1) or 7.1 (2), PTT shall confiscate the security (if any) If PTT needs to acquire substitution procurement from another person at a higher price, Bidder shall be responsible to pay PTT the difference within 30 days from the day after the date of notice thereof by PTT. PTT also reserve the right to claim any other damages arising therefore.

8.2 In execution of a Contract or Work Order or Letter Of Intent , Successful Bidder is required to place the Contractual Guarantee.

In the case where the Contractual Guarantee is required and unless otherwise stipulated in the details attached to Work Order, Successful Bidder chosen by PTT (hereinafter called “Contractor”) shall submit to PTT, cash or Bank Transfer or cashier cheque/draft or a bank guarantee or Thai Government bond or PTT bond or State-owned enterprise bonds with principal and interest guaranteed by the Ministry of Finance or PTT debenture 5percent of the price of the Contract or Work Order or Letter Of Intent (the fraction remaining shall be round up) to ensure the performance of its obligations under Contract/ Work Order or Letter Of Intent . The Contractual



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Guarantee shall be returned when Contractor has been discharged from all obligations under the Contract/ Work Order or Letter Of Intent .

- 8.3 Contractor shall be responsible to pay revenue stamp required for the Contract or Work Order at the rate stipulated in the Thai Revenue Code.
- 8.4 In case where Successful Bidder fails to enter into the Contract within the period of time specified by PTT or the Contractor fails to comply with the terms or conditions under the contract without reasonable cause, such person, upon PTT’s consideration, will be regarded as abandoner and his name will be removed from the Approved Vendor List of PTT.

9. Delivery

- 9.1 The contractor shall deliver the job to the PTT 3 times within 120 days (counting continuous everyday), Starting from the date after the contractor has acknowledged a Service Order or Letter of Intent from PTT. However, it shall not be included the time that the PTT forbids it from the operation or orders job suspension.
- 9.2 The delivery term is DDP at Rayong Gas Separation Plant AS PER INCOTERMS 2010

10. Place of delivery

The contractor shall deliver the job The contractor shall deliver the job at the PTT Rayong Gas Separation Plant, 555 Sukhumvit Road, Mab Ta Phut, Muang, Rayong 21150

11. Payment

- 11.1 PTT shall make the payment
three times to the contractor on the thirtieth (30th) days after PTT’s Acceptance Committee has accepted the service successfully
1st Payment: 10% of contract price after hand over following documents:
- Project schedule
- Master Project Deliverable List



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2nd Payment: 30% of contract price after hand over deliverable list according to article 20.2 under deliverable lists and approved by PTT.

3rd Payment: 60% of contract price after hand over deliverable list according to 20.1, 20.3, 20.4, 20.5, 20.6 and 20.7 under deliverable lists and approved by PTT.

PTT shall pay the contractor once the contractor has delivered the work correctly and completely as per the agreement or memorandum and when PTT has received the work and the contractor has requested to receive the payment.

11.2 The payment shall be made by bank transfer to the account as designated by contractor.

11.3 Payment shall be subject to deduction of penalty and/or amount disputed.

12. Penalty

If Contractor fails to deliver work to PTT within the time specified, Contractor shall be liable to pay a penalty for each day of delay in an amount of 0.1% (zero point one percent) of the value of such undelivered work and maximum 10% of total contract value from the due date for delivery up to the date PTT accepts such work, provided, however, that if undelivered work has to be used in combination with or as an essential component for the work already accepted by PTT, the penalty shall be imposed in full on the cost of entire work.

13. Liability

- Liability Notwithstanding the foregoing, CONTRACTOR's maximum liability to PTT (including without limitation liability resulting from breach of contract, tort, negligence, breach of statutory duty, misrepresentation or otherwise for any loss, damage, costs or expenses, or injury ("Damages") sustained by PTT and arising out of or in connection with this Contract) shall respond to all damages but not exceed the total contract value.

Nothing in this paragraph shall exclude or limit the Contractor's liability to PTT for fraud or fraudulent concealment, gross negligence or willful misconduct.

- Consequential Damages Notwithstanding any other provision in this Contract or elsewhere to the contrary, Contractor shall be liable but not exceed the total contract value for any special, incidental, indirect or consequential loss or damage of any



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nature, arising at any time, from any cause whatsoever, including loss of revenue or profit.

14. Governing LawThe Contract shall be governed by and interpreted in accordance with the laws of the Kingdom of Thailand.

15. Warranty and Guarantee

15.1 The contractor shall warrant its work products for 12 months following the date the PTT's committee has accepted the service successfully in accordance with the conditions set by the PTT.

15.2 The contractor shall deliver the warranty certificate to the PTT with the supplies/ equipment. (if any)

16. Advance Payment

No Advance Payment

17. PTT Supplier Sustainable Code of Conduct) (When the contract having the value from 2 million Baht)

Successful Bidder who agrees to purchase/work/rent , shall accept and conform with the “PTT Supplier Sustainable Code of Conduct” PTT reserves the right to inspect if Bidder is in compliance. With the PTT Code of Conduct.

Vendors who have a plan to run business with PTT must act along PTT regulations and conditions, sustainable practice for PTT groups’ vendors, including:

17.1 Vendors must run firms strictly along involved rules which covered business ethics, social responsibility, security and environment, for example, labor protection law, safety law, and environmental law. Moreover, vendors must run business with transparency, honesty and must not violate the intellectual property rights.

17.2 Vendors must have qualifications related to ESG Interception Criteria including:

(1) Vendors must not be tolerating, permitting, or engaging in bribery, corruption, or unethical practices whether in dealings with public officials or individuals in the private sector.

(2) Vendors must have involved work permits along the defined laws.



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(3) Vendors must not be judged to false in term of financial, environment, security and labor court. Furthermore, vendors must not be found in list of personality, juristic person and company that run business against Thai laws within 3 years before launching the auctions.

(4) Vendors must have firms’ policies to will not hire youth labor that age below 15 years old.

(5) Vendors must have enterprises’ policies to pay labor’s compensation at least the defined legal minimum wage. In addition, vendors must not force employees to work more than the legal defined hours.

(6) Vendors must have SSHE management system in working place along the defined law and concern about employee’s safety.

(7) Vendors must have management system of working area and also environmental liability, for instance, the leaking of dangerous substance in soil and underground water.

18. Contractor’s performance evaluation

18.1 PTT shall evaluate vendors after the completion of the delivery of products/services in each delivery period, based on their work performance.

18.2 PTT reserves the right to use the vendor evaluation’s result in order to determine the bidder’s qualification for the next PTT’s bidding.

18.3 In the case of any vendors in the PTT Approved Vendor List(PTT AVL) is given graded “D” from the vendor evaluation under a specific type of work, PTT reserves the right to delist such vendors from type of work hereunder. The vendors shall not be permitted to register with PTT AVL under such type of work for at least 3 years from the delisted date.

18.4 If the vendor has any queries with regards to the vendor evaluation, the vendor shall submit the request in writing to the procurement unit of PTT for the explanation of such evaluation. The copy of the purchase order/contract and work result must be attached to the request. The vendor can access the system *ptvm.pttplc.com* for the results of vendor evaluation



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19. Personal Data Protection

19.1 Both parties agree to comply with the Thai Personal Data Protection Act and all applicable personal data protection laws including any subsequent amendments, other relevant rules and regulations of the jurisdiction where such party is mandated, in respect of collection, use and/or disclosure of any personal information. In this regard, each party represents and warrants that it has right and authority to disclose any personal information of any third party to the other party and has obtained all necessary consents from the relevant third party to disclose such personal information. Any collection, use and disclosure of personal information hereunder shall be conducted to the extent it is necessarily required for and in compliance with such law(s).

In the event that any performance hereunder of either party is considered to be a data controller or a data processor under Thai Personal Data Protection Act including any amendments, the parties agree to enter into a Data Processing Agreement, Data Sharing Agreement or any other similar documentation to ensure adequate level of data protection as required by law and such document shall be incorporated hereinto.

19.2 Subject to scope of works under this TOR, in the event that a bidder must become a Data Processor for and/or on behalf of PTT under Thai Personal Data Protection Act including any amendments, awarded bidder or any bidder informed to be selected shall meet PTT’s personal data protection standard. Such bidder shall complete Third Party Assessment form attached with this TOR and submit to Rayong Gas Separation Plant within 7 working days after the date on which the award is announced or informed by PTT, as the case may be.

In case that the result of Third Party Assessment does not meet PTT’s personal data protection standard, awarded bidder or any bidder informed to be selected shall strictly follow its obligations specified in Data Processing Agreement which form under 19.1





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Privacy Notice

<https://pttpdpa.pttplc.com/Privacy/106107>

20. Scope of Work

Project Overview

The objective of this project is to enhance the operational reliability and readiness of the New DPCU (Dew Point Control Unit). The system consists of three (3) identical refrigeration compressor trains, each designed to handle a gas flow of 450 MMSCFD for dehydration and dew point control.

Current Operational Constraints

Currently, the facility faces a significant constraint regarding equipment testing. Utilizing the main process gas (Bypass Gas) as a medium for periodic test runs is not economically viable, as 100% of the bypass gas must be routed to the Gas Separation Plant (GSP) for maximum product recovery. Redirecting this gas for testing purposes results in unjustifiable revenue loss.

The Contractor shall conduct a technical pre-feasibility study and provide a CAPEX estimation with an accuracy of ±50% to improve the reliability of equipment in the new DPCU area.

Design Requirements

- 1 Max Feed 700 MMSCFD by configured for 2+1 operation (2 Operating at total capacity of 700 MMSCFD and 1 Standby).
- 2 The improvement must follow 2 TSO’s BCM cases.
 - 2.1 Power Blackout*



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2.2 Cyber Security*

- 3 The new improvements shall enable the equipment in the New DPCU area to be test-run at least once or twice a month via a minimum bypass flow or other viable methods to maintain the reliability and readiness of the associated systems in the area.
- 4 Bypass Gas quality shall comply with TSO CODE Year 2566 specifications. (ตามภาพด้านล่าง ตาราง6.1 ข้อ กำหนดคุณภาพก๊าซ)

***Cyber Security ;** The Contractor shall comply with GSP7 Engineering Standards and perform a Cyber Security Risk Assessment to provide comprehensive recommendations.(ES60.02 ESD Specification, ES60.05 DCS Specification , ES60.11 Plant Information Management System)

***Power Blackout ;** The Contractor is required to survey current site readiness and incorporate power blackout protection and recovery into the new design (if feasible) to ensure system stability



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ตารางที่ 6.1 ข้อกำหนดคุณภาพก๊าซ^{(1), (2)}

| | หน่วย | เขตผสมคุณภาพก๊าซบนบก | | เขตส่งมอบก๊าซบนบก | | |
|----------------------------------|--------------------|---|----------------|---|----------------|------------------------------|
| | | ฝั่งตะวันออก | ฝั่งตะวันตก | ฝั่งตะวันออก | ฝั่งตะวันตก | ฝั่งตะวันออก- ฝั่งตะวันตก |
| อ้างอิงขอบเขตจากบทที่ 6 | | ข้อ 6.2.2.1 ก. | ข้อ 6.2.2.1 ข. | ข้อ 6.2.2.2 ก. | ข้อ 6.2.2.2 ข. | ข้อ 6.2.2.2 ค. |
| คุณภาพก๊าซหลัก | | | | | | |
| ดัชนี Wobbe | Btu/scf | 885 - 1,430 | 865 - 1,430 | เป็นไปตามประกาศของผู้ให้บริการ | | |
| ค่าความร้อน | Btu/scf | 790 - 1,250 | 715 - 1,120 | ภายใต้ความเห็นชอบของ กทพ. | | |
| องค์ประกอบก๊าซ | | | | | | |
| มีเทน | % mol | ไม่ระบุ | ไม่ระบุ | ไม่ระบุ | ไม่ระบุ | ไม่ระบุ |
| C2+ | % mol | ไม่ระบุ | ไม่ระบุ | ≤ 13.6 | ไม่ระบุ | ≤ 13.6 |
| คาร์บอนไดออกไซด์ | % mol | ≤ 25 | ≤ 15 | ≤ 23 | ≤ 15 | ≤ 23 |
| ออกซิเจน | % mol | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 |
| ไนโตรเจน | % mol | ≤ 5 | ≤ 26 | ≤ 5 | ≤ 26 | ≤ 26 |
| คาร์บอนไดออกไซด์ และ ไนโตรเจน | % mol | ไม่ระบุ | ≤ 25 | ไม่ระบุ | ≤ 25 | ≤ 25 |
| ไฮโดรเจนซัลไฟด์ | ppm โดย ปริมาตร | ≤ 50 | ≤ 50 | ≤ 40 ⁽³⁾ | ≤ 50 | ≤ 50 |
| กำมะถันรวม | ppm โดย ปริมาตร | ≤ 100 | ≤ 100 | ไม่ระบุ | ไม่ระบุ | ไม่ระบุ |
| ปรอท | µg/m ³ | ≤ 50 | ≤ 50 | ≤ 50 | ≤ 50 | ≤ 50 |
| อนุภาคอื่นๆ | | ต้องปราศจากวัตถุและฝุ่นละอองหรือ ยางเหนียวซึ่งเป็นสาเหตุทำให้สถานีวัด หรืออุปกรณ์เกิดขัดข้องหรือเสียหาย | | ต้องปราศจากวัตถุและฝุ่นละอองหรือยางเหนียวซึ่งเป็นสาเหตุทำให้ สถานีวัดหรืออุปกรณ์เกิดขัดข้องหรือเสียหาย | | |
| คุณภาพก๊าซเพิ่มเติม | | | | | | |
| จุดกลั่นตัวของ ไฮโดรคาร์บอน | องศาฟาเรนไฮต์ | ≤ 50 | ≤ 50 | ≤ 50 | ≤ 50 | ≤ 50 |
| ไอน้ำ | lbs./MMscf | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 | ≤ 7 |



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Optional Case Studies for Reliability Improvement

- 1 Replace the three (3) existing trains with three (3) new trains configured for 2+1 operation (2 Operating at total capacity of 700 MMSCFD and 1 Standby).
- 2 Design two (2) new trains to work in conjunction with the existing third train.
- 3 Propose technical solutions, identify and implement necessary modifications for the three (3) existing trains to enable regular test-run capability for all equipment within these trains.

Optional case Studies for Compressor Design

To optimize bypass gas usage during testing, the system is designed with the lowest possible minimum flow for the compressors and the whole refrigerant system (enhance turndown capability).

- 1 Utilize new compressors with a minimum flow capability of 50 MMSCFD or lower.
- 2 Utilize existing compressors by reducing the minimum flow from 225 MMSCFD to a lower value.

The main scopes for this work are shown below;

20.1 Project Management

- 1 Provide project management service
- 2 Prepare Bi-weekly progress report.
- 3 General coordination between disciplines and PTT for project management & technical issues.
- 4 Conduct Constructability Review.
- 5 Feasibility study report.
- 6 Attend weekly meeting with disciplines and weekly meeting with PTTGSP representative.
- 7 Manage all commercial issues & documents.

○ Project Controller



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- 1 Provide project control service for this project.
- 2 Prepare and update project schedule.
- 3 Monitor and control project man-hour cost budget against with schedule timeline.

- Project Secretary
 - 1 Provide project secretary service to support Project Manager and disciplines.
- Document Controller
 - 1 Provide document control & in-out transmittal services by using ConZol system.
 - 2 Provide Final Handover package
- Cost Estimation Engineer
 - 1 Prepare +/-50% CAPEX Cost Estimate Report
- Procurement Engineer
 - 1 Coordinate with all approved vendors for key equipment to get budgetary quote support CAPEX Cost Estimation ±50%.

- Deliverables
 - 1 Project Deliverable List.
 - 2 Project Schedule.
 - 3 Weekly Progress Report.



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- 4 Other project documents e.g. MOM etc.
- 5 CAPEX Cost Estimate +/-50%.
- 6 Feasibility study report.
- 7 Final Handover Package.

20.2 Process Engineering

- 1 Gather information and review process design data required for being used in process engineering work.
- 2 Review technical vendor data information.
- 3 Prepare flow diagrams (PFDs) for improvement of New DPCU project
- 4 Prepare heat and material balance HMB.
- 5 Prepare process datasheets for equipment (Compressor and Air-Cooled Condenser).
- 6 Prepare process equipment list.
- 7 Input technical information into feasibility study report.
- 8 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

• Deliverables

- 1 Process flow diagrams (PFDs).
- 2 Heat and material balance (HMB).
- 3 Process datasheets for equipment (Compressor and Air-Cooled Condenser).
- 4 Process equipment list.
- 5 Hydraulic calculation notes as per design cases.

20.3 Mechanical Engineering

- 1 Coordinate with vendors for technical information and quotation to support CAPEX Estimation.
- 2 Review budgetary quotations, technical clarification with vendors.
- 3 Input technical information into feasibility study report.



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- 4 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

20.4 Piping Engineering

- 1 Site survey.
- 2 Prepare preliminary overall plot plan drawing.
- 3 Prepare preliminary unit plot plan drawing.
- 4 Prepare preliminary pipe route study for main process lines.
- 5 Prepare tie-in location plan for main process lines.
- 6 Prepare preliminary MTO to support CAPEX Cost Estimate. +-50%.
- 7 Conduct Plot Plan Review.
- 8 Review and recheck safety equipment distance requirement input in piping plot plan drawing.
- 9 Input technical information into feasibility study report.
- 10 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

• Deliverables

- 1 Preliminary overall plot plan drawing.
- 2 Preliminary unit plot plan drawing.
- 3 Preliminary pipe route study (2D) Drawing.
- 4 Tie-in location plan for main process lines.
- 5 Piping MTO.

20.5 Civil and Structural Engineering

- 1 Site survey to recheck existing constrain of project.
- 2 Review all relevant existing documents and drawings to be incorporated in feasibility study and
- 3 Conceptual design study for civil and structural to support CAPEX cost estimation ±50%.
- 4 Provide conceptual design drawings of equipment foundation layout



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- 5 Provide conceptual design drawings of existing pipe rack modification (if required)
- 6 Prepare preliminary MTO to support CAPEX Cost Estimate. +-50%.
- 7 Input technical information into feasibility study report.
- 8 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

• Deliverables

- 1 Concept design or sketch drawing for civil and structural work input in feasibility study report.
- 2 Preliminary MTO for civil and structural work.

20.6 Electrical Engineering

- 1 Site survey for tie - in point of electrical system.
- 2 Prepare preliminary/update Single Line Diagram.
- 3 Prepare preliminary/update Electrical main cable routing plan and electrical equipment layout.
- 4 Prepare preliminary electrical bulk MTO support CAPEX ± 50%.
- 5 Coordinate with vendors for electrical equipment, collect results as input to equipment cost estimation.
- 6 Input technical information into feasibility study report.
- 7 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

• Deliverables

- 1 Preliminary/update Single Line Diagram.
- 2 Preliminary/update Electrical main cable routing plan and electrical equipment layout.
- 3 Preliminary electrical MTO.

20.7 Instrument Engineering

- 1 Perform site survey and site check to verify existing site conditions.



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- 2 Gather information and review existing data including existing instrument facility that effect.
- 3 Input/review to other discipline document/drawings
- 4 Prepare preliminary MTO to support CAPEX Cost Estimate. +-50%.
- 5 Provide deliverables and activities to the project as list below.
- 6 Input technical information into feasibility study report.
- 7 Attend weekly meetings with other disciplines and Bi-weekly meeting with PTT representatives.

• Deliverables

- 1 Instrument main cable routing layout drawing.
- 2 System architecture drawing.
- 3 Preliminary MTO to support CAPEX Cost Estimate. +-50%.

21. Technical Correspondence

ATTENTION : Mr. KAWIN THONGLIM

TELEPHONE No. : +669-6636-1539

E-MAIL : KAWIN.T@PTTPLC.COM

22. Other Requirements

Responsibility, in any case, the contractor cannot claim they do not know the facts or information as mentioned above of their benefit.

1. Transport of the materials, chemicals, machinery, equipment and various substances, including the transport vehicles need to consider conservation of the environment without causing overflow, leak, littering along the way or releasing of a substance, emissions and toxic elements exceeding the standards established by the law.

2. The delivered products to be imported to use in the Rayong gas separation plant shall not have an element of asbestos or ozone –destroying substance of the atmosphere as refers to the notice of the EPA, the Clean Air Act, and Section 602.



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3. Collection, transport, recovery and disposal of waste from Rayong gas separation plant activities must be comply with procedure "Waste Control generated by processing, maintenance and office" through the ISO 14001 "Operational Control"

4. The delivered product for using in the Rayong gas separation plant that is involved with the significant use of energy, e.g. the compressors of the air conditioning or other equipment shall be certified as energy saving from the manufacturer. They shall have a certificate or a certification in accordance with the industrial standards or the equivalent. In the case there is no such the certification, the delivered product shall be assessed after the installation.

5. The deliverer/subcontractor shall promote environmental responsibility and collaborate with PTT on the Energy Saving

6. In hiring involved with the system of managing energy, it has to make a report summarizing the evaluation of the use of energy delivered simultaneously to complement the job inspection.

7. So as the procurement of the goods shall comply with the Thai Labor Standards (TLS) 8001, the PTT reserves the right to consider selecting the traders in the group certified by the TLS 8001 or the traders who can show the determination in the operation according to the TLS 8001 with the guidelines in showing the following determination.

7.1 The deliverer/subcontractor shall not support the use of forced labor in all forms.

7.2 The deliverer/subcontractor shall pay the working wages and compensation a minimum as stipulated by the law.

7.3 The deliverer/subcontractor shall not do or promote discrimination when there is hiring, paying the wages and fringe benefits due to the difference on ethnicity, gender, religion, pregnancy, marriage, union membership and no prejudice due to disability or HIV positivity.

7.4 The deliverer/subcontractor shall not do or promote physical or mental punishment or using force, threat, assault their employees, including there are measures to prevent from sexual molestation by showing in words, gesture, physical contact or any other methods, and no punishment of the employees by deducting a salary or reducing their wages.

7.5 The deliverer/subcontractor shall not allow their female employees to do the job that is hazardous to health and body as prescribed by the law.



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MR. KAWIN THONGLIM

Create date : 27 March 2026
Rev.2
SAP PR No.1121000607

Division/Department :
Mechanical Plant Maintenance Division

| Related standard systems | | | | | |
|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Quality | Safety | Health | Environment | Lab | Energy |

7.6 The deliverer/subcontractor shall have measures on occupational safety, health and environment so they can work safely and provide fringe benefits as prescribed by the labor law.

7.7 The PTT shall have no policy to promote using child labor at the age below 18 years old.

7.8 The deliverer/subcontractor shall comply with the Labor Protection Act 1998 and its amendment, including other laws involved and must be consistent with the requirement on Thai labor standards.

7.9 The deliverer/subcontractor shall notify the PTT gas separation plant for acknowledgement in the case the business relations with the other deliverers in the activity to be responsible with the PTT gas separation plant.

8. The Rayong gas separation plant has the system of managing to assess the traders after the delivery. In a situation that any trader is assessed with the result is less than established by the Rayong gas separation plant; it shall give a warning letter for acknowledgement, and shall collect as information in the annual evaluation of the traders. However, the traders who fail the annual evaluation shall be removed out of the Rayong gas separation plant Approve Vender List.

9. The contractor shall comply with the notification of the Department of Welfare and Labor Protection on training of safety by preparing the documentary evidence certifying the training course on occupational safety, health and environment totaling six hours. As for those to come to work in the Rayong gas separation plant, they shall submit such the certificate to the inspector or the coordinator to record in the access control system from 1 September 2013 onwards. If the contractor fails to comply with it, it is at the discretion of the PTT to consider allowing working in the Rayong gas separation plant or not.

23. General Safety Rules / Life Saving Rules for Employees and Personnel Working in the Area of Responsibility of the Rayong Gas Separation Plant.

1. Working shall comply with the manual and standards by not doing anything that is risking a danger.
2. They shall inspect the safety condition in working area before starting to work each time.
3. Report to the superiors or the inspector promptly upon there is an accident, near- miss accident and upon seeing an action or situation that may cause an accident, damage to life, property and the environment.
4. The workplace shall not have an excess or unnecessary thing, and shall arrange them in order.



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5. The tools, machinery, equipment and vehicles shall be inspected in accordance with the schedule, and shall be used suitable with the job correctly. When there is defect/damage, it shall report to the superior or job inspector promptly.

6. Usage, adjustment, change or repair of any equipment shall be performed by the authorized person only.

7. Personnel entering the plant area must wear proper attire: long-sleeved shirts and long pants. Mandatory PPE includes safety helmet, safety glasses, and safety shoes, as well as any task-specific PPE meeting legal standards. Entry into the CCR requires long-sleeved shirts and long pants.

8. Gambling, consumption of alcoholic beverages, or use of intoxicating substances is strictly prohibited. Personnel must not be under the influence of any intoxicants and must have zero alcohol concentration in their breath (0 milligrams percent). Horseplay or any form of teasing is not allowed during working hours within the factory premises. Engaging in physical altercations or causing disturbances is also strictly forbidden.

9. It is prohibited from bringing in or consuming illegal narcotics of all types in all the area of the PTT.

10. No property of PTT Company may be taken without permission. The persons who are found to be guilty of theft shall be subject to legal actions.

11. Smoke and fire are strictly prohibited throughout the plant and all building areas.

12. Follow emergency plans, regulations, warning signs and instructions strictly.

13. Vehicles, engines, electrical tools, cameras, and other equipment that may sparks cause of fire into the plant area. Must be checked and issue a license permission by PTT.

14. Vehicle speed limits:

- Within plant area: not exceeding 20 km/h
- Outside plant but within Rayong GSP: not exceeding 30 km/h
- Between Security Post No. 4 and No. 9: not exceeding 20 km/h

15. New employee and contractor are required to attend safety training before working in the plant area and must be reviewed at least once a year or every 6 months.