CALL OF TENDER FOR THE AWARD OF PROCUREMENT OF THE SUPPLY, INSTALLATION, COMMISSIONING AND TESTING OF ONE (1) SUPER POST PANAMAX TYPE SHIP TO SHORE QUAY CRANE FOR CONTAINER TERMINAL USE

Piraeus, Greece

14 November 2019

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1. IN GENERAL

1.1 Preamble

The Port of Piraeus (Port of Piraeus) is the largest port in Greece, spanning a coastline length of more than twenty-four (24) kilometres and expanding over an aggregate area exceeding five million (5.000.000) square meters.

The Port of Piraeus is situated at the intersection of sea routes linking the Mediterranean with Northern Europe and its geographic position (south of the 38th parallel) enables major line ships to access it without significant deviation from the Far East trade routes.

The Port of Piraeus hosts a complex and unique variety of activities, including: ferry/passenger shipping (it is the largest passenger port in Europe), servicing of all types of cargo, cruise, vessel repair activities, as well as the Port of Piraeus free zone (a control type I customs free zone) operating under applicable tax and customs legislation in the area (Piraeus Free Zone).

1.2 The Piraeus Port Authority S.A. (PPA)

PPA is the legal entity entrusted with the administration and operation of the Port of Piraeus. It was established as a legal entity of public law by virtue of Law 4748/1930, which was restated by Compulsory Law 1559/1950 and ratified by Law 1630/1951, each as subsequently amended and supplemented.

In 1999 PPA was transformed into a stock corporation (Société Anonyme).

In April 2016, following an open public tender process, the Hellenic Republic Asset Development Fund (HRADF), under its capacity as the major shareholder of PPA, and COSCO HK Ltd entered into a Shares Purchase Agreement (hereinafter: SPA) for the acquisition of the majority participation in the share capital of PPA.

In August 2016, PPA ceased to be a state-owned company and since that day it is a private-owned company, due to the concession agreement between Greek State and PPA ratified by Law 4404/2016.

2. DEFINITIONS

For the purposes of understanding the terms of this Call, definitions of the following terms are given herein below:

a) **Contracting Authority**" the Société Anonyme under the corporate name "Piraeus Port Authority S.A."

b) "**Authorized Representative**": a legal representative of the Candidate (according to the Candidates statutes/bylaws) thereof or a specifically authorised representative (by a decision issued by the Candidate's competent body), as the case may be, who has the power to bind the Candidate and also has the authority to sign and submit the Candidate's Offer;

c) "**Binding Declaration**": refers to the Binding Declaration as per Law 1599/1986 or in the case of a foreign candidate a text of analogous form of evidence, in accordance with the provisions of the country of provenance thereof signed by the Authorized Representative. In all cases where there is a reference to the term "Binding Declaration", it is intended that such is effected by certification of the original signature of the signatory;

d) "**Tender or Call**": the said document;

e) "**Candidate**": The legal entities/companies participating in the Tender by submitting an Offer for the supply of equipment and services that are subject matter of this Call for Tender.

f) "**Interested party**" means any legal entity/company which intends to take part in the tender procedure by submitting an expression of interest.

g) "**Procurement Department Protocol**": The PPA Procurement Department's Secretariat office, located at PPA's premises at 10, Akti Miaouli, Piraeus, Greece;

h) "**Contract**" means the Agreement entered into with the Contractor.

i) "**Concession Agreement**" means the 24.6.2016 amendment and codification into a single text of the Concession Agreement of 13.2.2002 between the Hellenic Republic and Piraeus Port Authority S.A., which was ratified by Law 4404/2016.

j) "**Contractor or Supplier**": the candidate to whom the procurement contract will be awarded, by virtue of the contract to be drafted and signed"

k) "**Eligible Bank**": means a bank or credit institution that is lawfully established and operating: (i) in a jurisdiction that is an EU, EEA, OECD or FATF member state or

member country; or (ii) in another jurisdiction that has a long-term debt rating of A- (or equivalent) or superior by at least two of Standard & Poor's, Fitch or Moody's;

l) "**Tender Evaluation Team**" or "**Committee**" means the PPA Tender Evaluation Team established by PPA.

m) **"Offer"**: The offer to be submitted by the Candidates in the frame of this Tender and/or the main folder of the offer which includes three (3) sub-folders:

(i) 1st sub-folder named: ***"Participation Supporting Documents"***

(ii) 2nd sub-folder named: ***"Technical Offer"*** and

(iii) 3rd sub-folder named: ***"Financial Offer"***.

n) "**Participation Guarantee**" has the meaning attributed to it in Article 7.1, Article 16 and Annex A hereof.

o) "**Good Performance Guarantee**" has the meaning attributed to it in Article 7.2, Article 16 and Annex B hereof.

p) "**Advance Payment Guarantee**" has the meaning attributed to it in Article 7.3, Article 16 and Annex C hereof.

3. CONTRACTING AUTHORITY – SCOPE OF TENDER

3.1 The Contracting Authority

The Contracting Authority is PPA.

The address to which the offers are submitted is:

Piraeus Port Authority S.A.

Central Protocol

10, Akti Miaouli

185 38, Piraeus, Greece

3.2 Scope of Tender

The scope of the tender shall be the 'Award of Procurement of the Supply, Installation, Commissioning and Testing of one (1) Super Post Panamax Type Ship to Shore Quay Crane for Container Terminal use', **CIF** ready to operate at Piraeus Port Authority S.A within a maximum delivery time of: Fifty six (56) calendar weeks from contract date, ready to operate at Pier I Container Terminal of P.P.A. S.A.

Note that for the successful completion of the procurement, the selected counter party shall undertake at no extra cost for PPA SA:

- The insurance and transportation of the said crane.
- The installation of the delivered QC Crane and related equipment at manufacturers premises and at Pier I Container Terminal.
- The testing and commissioning of the delivered QC Crane and related equipment at Pier I Container Terminal.
- The technical and operational training at PPA premises for the delivered QC Crane and related equipment.
- The supply of spare parts and special tools requested within this Call.
- The process of obtaining the relevant certification for the cranes in Greece according to the applicable and latest Greek and EU legislation, as in force, by providing all the necessary documents to PPA and the competent Greek authorities where required and proceeding with any necessary act for this purpose.

3.3 Time limits for receiving Tender documentation – Provision of clarifications

Interested parties may receive additional information or clarifications in relation to the present Tender, by submitting questions up to **three (3) days (included)** prior to the expiry of the time limit for the submission of offers in writing to PPA Procurement Department by e-mail to qctender@olp.gr and procurement@olp.gr

After the lapse of the above time limit no other communication or request for clarification as to any terms may be acceptable.
Written responses by PPA S.A. are notified to all interested parties until two (2) working days prior to the expiry of the time limit for the submission of offers.

The time limit for the submission of offers is 4th December 2019 until 16:00 Greek time (GMT +2).

Candidates are not allowed to refer to verbal responses or clarifications by PPA S.A.

4. SUBMISSION OF OFFERS - OFFER DOCUMENTATION

4.1 Submission of Offers

Since PPA is a private-owned company and due to the immense importance of the procurement (both for PPA and the Hellenic Republic and consequently for the public interest) no objections in relation to the content of this bid invitation (if submitted) will be examined by PPA.
PPA, at its absolute discretion, has the right to cancel or repeat the procedure at any stage.
PPA may also cancel the outcome of the process and to resort to the procedure of competitive negotiations, when there is an emergency cause.

The Offers shall be submitted to PPA Procurement Department's Protocol in person by the Candidate himself or by the candidate's Authorized Representative.

Alternatively, the offers may also be sent to PPA Procurement Department's Protocol by registered post upon proof of receipt (from PPA SA) dated no later than **4th December 2019.**

The Candidates are responsible for dispatching the sealed folder of offer thereof until the receipt of such folder of offer by PPA.
Any insurance costs, custom duties and transport charges related to the submission of the offer shall be fully borne by the candidate.

The candidates are responsible for and accept the risk for any event, to include even force majeure, that may have as a result the non-timely or non-duly submission of the folder of offer thereof.

Offers submitted after the above date and time are overdue and shall be returned without being unsealed.

4.2 Language of the procedure

The official languages of the procedure are Greek and English and all information and all documents from the Candidate shall be drawn up either in Greek or in English, or accompanied by a lawful Greek or English translation.

Moreover, all written and oral arrangements between the tenderers, Tender Committee and PPA shall also be in either Greek or English.

4.3 Offer Documentation

The Offer will consist of three (3) sealed sub folders (1st "Participation Supporting Documents", 2nd "Technical proposal" and 3rd "Financial Proposal") which should be incorporated and submitted all together in one (1) sealed folder of offer with the clear wording 'ORIGINAL' written on the front envelope or binder for reasons of evaluation.

Candidates are also requested to submit a second identical sealed folder of offer with the clear wording 'COPY OF ORIGINAL' written on the front envelope or binder for reasons of evaluation.

It is clarified that each sealed folder of offer (Original and Copy of original) should contain three (3) **sealed** sub folders:

i. 1st sub-folder named: ***"Participation Supporting Documents"***
ii. 2nd sub-folder named: ***"Technical Offer"*** and
iii. 3rd sub-folder named: ***"Financial Offer"***.

On all folders of offer the following titles must be clearly written:

- The word «OFFER».
- The wording "ORIGINAL" or "COPY OF ORIGINAL"
- The title of the Call of Tender.
- The date of submission of the offer.
- The name, address and details of the candidate.

On each one of the three (3) sub-folders the following titles must be clearly written:

- «PARTICIPATION SUPPORTING DOCUMENTS»
- «TECHNICAL PROPOSAL» and
- «FINANCIAL PROPOSAL».

4.4 Validity of offers

Offers shall bind the candidates **for four (4) calendar months** from the submission deadline date. Any offer which sets forth a term of validity less than the above mentioned shall be rejected.

Participants are advised that they may be requested to extend the validity of their proposals by a **further two (2) months**.

It is at PPA's sole discretion to consider all proposals as void and invalid and cancel the whole bidding process. No compensation will be paid to the bidders under this circumstance.

(i) True and Correct statements

Each candidate understands that the information contained in its offer will be relied upon by PPA in making its decision with respect to the award of the contract and such information is expressly warranted by the candidate to be true and correct. Furthermore, each candidate will furnish such supporting and confirming information, prior to the award of the contract, as may be reasonably requested by PPA.

(ii) Reasons for rejecting an offer may include (but are not limited to):

- If any information provided by the candidate/sis found to be incorrect.
- If a candidate fails to verify any information provided in the proposal in response to PPA's request.
- If technical requirements are not met.
- If adherence to the Tender terms are not followed.
- If the same participant submits more than one (1) offer.

(iii) Due to the exceptionally tight timeframes for implementing the mandatory PPA investment program, specified in the Concession Agreement, decisions of PPA SA are final and no protests or objections submitted in relation to them will be taken into account.

5. PRESUMPTION RESULTING FROM THE PARTICIPATION IN THE PROCEDURE

5.1 Submission of an offer in the tender procedure will constitute a presumption that each candidate accepts the terms of this Call for Tender, has been apprised of the tender documents and information and is fully aware of the project implementation conditions. In particular, candidates are obliged to fully apprise themselves of all project implementation conditions including all those specified in this Call for Tender and consequently submission of an offer in the tender procedure shall be a presumption that the candidate/s:

(i) Have checked, are aware of and accept all technical conditions for the offered cranes in PPA SA Container Terminal facilities.

(ii) Will be fully responsible for the design, manufacturing and supply of the crane that to be handed to PPA, according to the provisions and terms of the Standards as described herein.

(iii) Will fully comply with all written remarks and suggestions from PPA S.A. and the selected Auditing body (third party).

(iv) They will need to fully comply with all remarks and suggestions a) during a design approval b) during manufacture c) during assembly d) during installation e) during final testing and commissioning of the third party which will be controlled by PPA SA. All costs or corrections to the designs, testing, fabrication of parts, any NDT tests will be carried out at the contractors cost and must be included to the candidates financial offer to the tender.

(v) In case any assembly is carried out at PPA SA premises, the full responsibility of the proper assembly preconditions and requirements are at the contractor's sole responsibility, liability and cost.

5.2 Any failure by the candidate to take into consideration all the above issues and requirements using all information possible, is at its own exclusive responsibility and shall not release the candidate from liability neither from its obligation to comply in full with its contractual obligations if selected for the Award of Tender.

5.3 In light of the above, the candidates must fully and unreservedly guarantee the accuracy of the project and, if chosen, they will unreservedly undertake to carry out all work and in general to perform the project in full compliance with all terms, specs, etc. and the project implementation schedule specified herein.

5.4 Candidates are not entitled to any remuneration for expenses incurred relating to the compilation and submission of information mentioned herein, such as tender dossiers, etc.

6. PREQUALIFICATION CRITERIA AND PARTICIPATION SUPPORTING DOCUMENTS

6.1. Prequalification Criteria

Each Candidate is obliged, upon penalty of disqualification, to fulfil the following prequalification criteria.

6.1.1 Professional prequalification criteria (ON/ OFF criteria)

Each Candidate that participates in the tender procedure on its own or as a member of a Joint Venture or a Group of companies/entities is obliged, upon penalty of disqualification, to have the following professional qualifications:

1. It must not be in a state of bankruptcy, liquidation or compulsory receivership and proceedings to have it declared in a state of bankruptcy, liquidation or compulsory receivership must not have been launched.
2. The managing partners in the case of a limited or general partnership or limited liability company, and the Chairman and Managing Director in the case of a Société Anonyme or the natural persons exercising management functions in all other cases must not have been convicted on the basis of a final judgement for:
   a. participation in criminal organizations within the meaning of Article 2(1) of Council Joint Action No. 98/773/JHA.
   b. bribery within the meaning of Article 3 of Council Decision of 26 May 1997 and Article 3(1) of Council Joint Action No. 98/742/CFSP
   c. fraud within the meaning of Article 1 of the Convention to protect the financial interests of the European Communities.
   d. money laundering within the meaning of Article 1 of Council Directive 91/308/EEC on prevention of use of the financial system for the purpose of money laundering.
   e. embezzlement (Article 375 of the Hellenic Penal Code)
   f. fraud (Articles 386-388 of the Hellenic Civil Code)
   g. Extortion (Article 385 of the Hellenic Penal Code).
   h. Forgery (Articles 216-218 of the Hellenic Penal Code).
   i. Perjury (Article 224 of the Hellenic Penal Code).
   j. Bribery (Articles 235-237 of the Hellenic Penal Code).

k. Fraudulent deliberate bankruptcy (Article 398 of the Hellenic Penal Code).

3. They must have fulfilled obligations relating to the payment of social security contributions in accordance with applicable Greek law (in the case of a Greek or foreigner candidate engaged in activity in Greece) or in accordance with the law of the country of establishment.
4. They must have fulfilled obligations relating to the payment of taxes in accordance with applicable Greek law (in the case of a Greek or foreigner candidate engaged in activity in Greece) or in accordance with the law of the country of establishment.

6.2. Financial and economic standing criteria (ON/OFF)

Upon penalty of disqualification, each candidate must meet the following financial criteria by submitting appropriate documentation which proves that:

1) It has a minimum turnover per year of 10.000.000 €, for the past three (3) years in container crane sales (i.e. minimum of € 30.000.000 in total)

6.4. Quality related Documentation (ON/OFF)

Upon penalty of disqualification, each candidate must meet the following quality criteria by submitting appropriate documentation of which proves that:

It holds an ISO 9001 quality management system certificates of the candidate/s relative to the candidate/s means of business in force.

6.5 Technical Capacity criteria (ON/ OFF)

Upon penalty of disqualification, each candidate must meet the following technical criteria by submitting appropriate documentation which proves that:

1) It has manufactured within the past three (3) years, at least three (3) cranes of similar type and size) It has a legally operating sales representative within the European Union and preferably within Greece.

3) It has a table list of track record regarding previous relevant experience of the candidate/s (including relevant sales).

7. GUARANTEES

Guarantees shall be required for either participation to the tender procedure and or to the winning bidder / Supplier of the procurement. In case of Joint Venture or of Group of companies/entities, the letters of guarantee are common to all members.

7.1 Participation Bank Guarantee

The Tender Participation Bank Guarantee Letter must be issued by an eligible bank, in accordance with the template of Annex A of this Call for Tender and shall be valid for one (1) month longer than the validity of the offer, at the amount of two hundred thousand euro (200.000.00€),

The Participation Bank Guarantee Letter shall be addressed to the Piraeus Port Authority S.A., and in the event of a Joint Venture or Group of companies/entities must be common to all members hereof.

The above Guarantee (irrespectively of its type) will be forfeited a) if the candidate does not fulfil all obligations stated in this Tender and b) if the Temporary winning bidder does not appear to sign the contract.

7.2 Good Performance Guarantee

A Good Performance Guarantee upon signing the Contract is required.

The Good Performance Guarantee Letter must be issued in accordance with the template of Annex B of this Call for Tender by an Eligible Bank in favour of PPA for an amount equal to 10% of the total amount of the contract. The good performance guarantee will be valid until the end of the warranty period of the cranes.

No Contract will be signed unless the good performance guarantee is delivered to PPA.

7.3 Advance Payment Guarantee

An Advance Payment Guarantee upon signing of the contract is required.

The Advance Payment Guarantee Letter must be issued in accordance with Annex C of this Call for Tender by an Eligible Bank in favour of PPA for an amount equal to 20% of the total amount of the contract.

7.4. Deposit of the amount of guarantees in the bank

Alternatively, candidates may provide the necessary documentation that an equal to the related tender bank guarantee amount, has been deposited, transferred and was made available as guarantee (hereinafter: the Tender participation guarantee) for the participation of the Candidate in the tender, in one of the following PPA's bank accounts:

ΕΘΝΙΚΗ ΤΡΑΠΕΖΑ	**GR1501101900000019050500651**
ALPHA BANK	**GR7101401250125002320006462**
Eurobank	**GR4902600250000440201113841**
ΤΡΑΠΕΖΑ ΠΕΙΡΑΙΩΣ	**GR8501721140005114032172486**

7.5. Return of the guarantee amounts

i) The Tender Participation Guarantee Letter will be released or the participation guarantee amount will be returned by PPA to unsuccessful candidates within fifteen (15) working days from the completion of the Tender and to the successful candidate upon signature of the contract.

ii) The Good Performance Guarantee Letter or the good performance guarantee amount will be returned after the end of the warranty period of the cranes and settlement of the claims of PPA, if any.

iii) The Advance Payment Guarantee Letter or amount will be returned after the final payment.

8. SUB-FOLDER OF PARTICIPATION SUPPORTING DOCUMENTS

8.1 Participation Guarantee according to the requirements of article 7.

8.2 Professional prequalification documentation

Each candidate that participates in the tender procedure, on its own or as a member of a Joint Venture or consortium, is obliged to prove that it meets the requirements of the following Participation Supporting Documents by submitting the originals, legally certified copies or valid, simple, clear and easy-to-read information where applicable.

All candidates, irrespective of their formation are obliged to submit the following documentation unless otherwise stated herein:

i. A brief description of the candidate/s legal entity and business.

ii. The candidate/s registration certificate (or equivalent) in force issued by the candidate/s business registry.

iii. The candidate/s competent management body's decision to participate in the Tender, submit the offer and appointing its authorized representative to specifically sign and submit the offer; the authorized representative must have delegated powers to answer on behalf of the candidate/s to any questions PPA may have, and to sign the agreement (In cases of Individual Enterprises).

iv. A binding declaration of the candidate/s:

   a. stating that it is fully aware of the contents of this call and unconditionally and unreservedly accepts its terms;

   b. acknowledging that its participation in the process takes place at its sole risk and expense and that the participation as such does not establish any right to compensation from PPA or PPA's personnel;

   c. acknowledging that disqualification from the Tender or failure to succeed in the Tender does not create any right to compensation for the candidates;

v. full contact details for the candidate/s' authorized representative (including full name, address, phone and fax numbers and email address);

vi. A binding declaration according to the law of the country of establishment of the candidate/s, confirming that the candidate/s fulfil/s the criteria of Article 6.1.1.

vii. A binding declaration, affirming:

a. That, in case of award of contract to the specific candidate/s, the candidate/s accepts and commits to the execution of the procurement, will undertake the procedures for issuing the relevant Certificates of Conformity, CE documentation and any other legal requirement according to Greek Law on behalf of PPA SA in order for the equipment to be fully operative at PPA SA.

b. The legal entity that possesses the know-how of the design studies/ manufacturing method/ assembly method / testing method and commissioning method of the crane until certified according to EU and Greek legislation.

c. The country and location of manufacture, construction and assembly of the Crane.

d. That the offered vendors list equipment will be readily available for production for at least the next ten (10) years from the date of submission of the statement and that if the equipment is deemed obsolete within this time period that he/she will propose a relevant replacement part and or equipment of which will be directly interchangeable.

e. That the candidate commits to be providing technical support to PPA for the next five (5) years if he/she is selected with the award of the Call.

In the case of a Joint Venture of contracting enterprises or Group of companies/entities, the abovementioned documents must be submitted by all members.

In the case of a Group of companies/entities or a Joint Venture, a private agreement establishing the Joint Venture must also be submitted which appoints the leader of the Joint Venture of contracting enterprises or Group of companies/entities, which must declare the following as a minimum:

i) The contracting enterprises' agreement to jointly submit the expression of interest.

ii) the stakes of each member in the arrangement.

iii) the joint representative and process agent for the members of the grouping or Joint Venture, in dealings with PPA S.A. and

iv) that members of the Joint Venture shall be jointly and severally liable to PPA S.A. for implementing the project and in the case of special or quasi general succession, the successors must be bound to continue to participate in the Joint

Venture under the same terms.

Furthermore, the grouping of contracting enterprises / joint venture should also submit:

a) An official copy from the register of minutes of the Company's Board of Directors or the competent body which approved participation in this tender procedure, appointing one or more representatives to submit the tender, and to sign any document relevant to the tender procedure, and appointing a process agent.

b) A solemn declaration from the legal representative and process agent appointed by decision of the candidate's competent body, in which he unconditionally and unreservedly accepts his appointment as representative.

c) Evidence confirming that the candidates legal representative has not been convicted for an offence related to his professional activity and conduct, based on a decision applicable res judicata (a certified copy of an extract from the criminal record or other equivalent document shall be sufficient).

Note that the corresponding certificates (that the candidate/s is/are not bankrupt, not in liquidation, etc.), issued by the competent authorities of the country in which the company is established must be submitted, along with other supporting documents requested to the Candidate/s and must be in effect on the date the contract is to be signed. If the said certificates are not issued by the relevant country they may be replaced by a sworn statement or if there is no provision for such in the laws of the country of establishment, by a solemn declaration before a judicial or administrative authority, notary public or competent professional body of the country of origin or provenance.

The abovementioned participation supporting documents must be valid at the time of contract signing and should be resubmitted by the participants upon request of PPA.

The Evaluation Committee will initially (a) identify the Offers which were duly submitted (at the correct time, place and process) and (b) will immediately proceed with the review and evaluation of the fulfilment of the ON/OFF criteria set above in paragraph (SUB-FOLDER OF PARTICIPATION SUPPORTING DOCUMENTS). The Offers that were duly submitted and satisfy the ON/OFF criteria will be defined by the Committee as Offers that are acceptable and will proceed to the next stage of evaluation of the Technical Sub-Folder.

Apart from the hard copy of the documentation, an electronic copy will be submitted. Where discrepancies between the dossier submitted in hard copy and the electronic version are identified, the documents in hard copy will have precedence.

All pages of the original folder to be clearly and consecutively numbered (i.e. 1 – 200) and the electronic version to be scanned with the same numbering.

9. SUB-FOLDER OF TECHNICAL PROPOSAL

The technical Proposal should include a description of the proposed Ship to Shore Crane in order to sufficiently demonstrate the candidates' understanding of PPA's specific requirements according to this Tender Call for the following:

- The supply, installation, commissioning and testing for the Crane requested within this Tender Call,
- An analytical technical description and specification of the proposed Crane according to the technical requirements of PPA SA as stated in ANNEX D and E,
- The ability to provide the relevant certification for the crane in Greece according to the applicable and latest Greek and EU legislation, as in force, by providing all the necessary documents to PPA and the competent Greek authorities where required and proceeding with any necessary act for this purpose,
- The technical and operational training at PPA premises for the delivered equipment,
- The supply of spare parts and special tools requested within this Call,
- Any other documentation requested in this Call.

Within the technical proposal, the candidate is required to provide a table or equivalent list with comments for each item within Annex D and E with reference to technical documentation.

Participants amongst others are obliged to provide the following documents **as part of their Technical Proposal**:

1. The candidates proposed warranty period (In effect as of delivery and final acceptance of equipment).
2. The candidates proposed delivery time schedule (Stated in calendar weeks by submitting an indicative Gantt chart of the entire process).
3. Lists including technical descriptions of spare parts and special tools offered.
4. An analytical list of the documents and manuals for the proposed cranes.
5. An analytical description of the proposed training for the offered cranes.

IMPORTANT NOTE: The Technical Proposal must not include any financial information. Any financial information in the Technical Proposal will invalidate the proposal.

10. SUB-FOLDER OF FINANCIAL PROPOSAL

Participants are requested to submit a financial proposal as shown in Annex F.

The below mentioned costs will be fully born by the candidate:

a) The full cost of the Equipment and spare parts and special tools.
b) All the testing and certification costs including the cost of the auditing body (third party).
c) All documentation and manuals as stated in the Tender Call.
d) All training costs at PPA S.A. premises.
e) Costs of transportation and insurance of machinery.
f) Visa application, travelling and lodging cost in Greece for all Supplier's personnel.
g) The cost for travel, accommodation, meals etc. for two (2) employees of PPA S.A. throughout the duration of construction of the crane. (Six round trip tickets to be provided from the Suppliers location to and from Greece).
h) The details of the cost of PPA S.A. personnel and the mechanism of charging will be specified in the contract.
i) In general, any other cost that may occur for the delivery, assembly and commissioning of the Equipment in fully functional and in tested operation mode.

Terms and conditions

- All prices should be stated in Euro, CIF at Container Terminal facilities located in Pier I – NEO IKONIO, KERATSINI, GREECE, excluding VAT.
- No invoices should be issued without prior written consent from PPA SA.
- All costs regarding supply of equipment, delivery, shipping, insurance, erection in their final positions, inspections, certifications, training and any others mentioned in the Call for Tender should be fully borne by the Candidate.

11. TENDER AWARD

The evaluation committee appointed by PPA shall evaluate the proposals on the basis of their responsiveness to the requirements set by this call, applying the evaluation criteria as follows:

Evaluation of Technical Proposal/ Technical Score:

→ (i) Technical specifications of machinery: up to 70 points

→ (ii) Delivery time of machinery: up to 15 points

→ (iii) Warranty period of machinery: up to 15 points

Technical Score (St) = 100 Total Maximum Points

The formula for determining **the Financial Score (Sf)** shall apply as follows:

Sf = 100 X FM/F

Where:

→ Sf is the financial score;

→ FM is the lowest priced Financial Proposal and

→ F is the price of the proposal under consideration.

Proposals will be ranked according to their **combined technical (St) and financial (Sf) scores** using the weights:

Where:

→ T = the weight of 60% given to the Technical Proposal;

→ P = the weight of 40% given to the Financial Proposal; and

→ T + P = 1.

The combined technical and financial score, S, is calculated as follows: -

S = St x T % + Sf x P %

The Candidate achieving the highest combined technical and financial score (S) will be ranked first and will be the Temporary winning bidder. In the event of an absolute tie the Candidate with the highest Sf score will be ranked first and will be the Temporary winning bidder.

12. WARRANTY

The candidate shall clearly identify within the offer, the proposed terms of warranty for the crane. The warranty period of the cranes shall be of at least ten (10) years for the metallic structure and at least one (1) year for the effective trouble free working condition of the crane without failure.

Within the warranty period, the candidate shall be fully and solely responsible to repair or rectify any technical problems or issues that may arise at its own cost, of which are due to sole responsibility of the candidate or manufacturer of the crane. (Damages and wear and tear parts shall not be subject to the stated warranty period).

The warranty period for the Equipment Spare Parts should be at least two (2) years after hand-over and final acceptance from PPA.

Any additional free warranty provided will be taken into account for the vendor's selection. Components which are repaired or replaced during the warranty period shall be subject to the remaining original warranty period plus one (1) year.

The provided warranty period shall take effect from the date of final acceptance and the signing of the Acceptance Report.

During the warranty period, in case PPA cannot solve a problem, the Supplier should be able to send an expert engineer within ten (10) working days from the written request from PPA unless otherwise reasonably agreed by both parties in writing.

After the warranty period, in case PPA cannot solve a problem, the Supplier should be able to send an expert engineer within fifteen (15) working days from the written request from PPA unless otherwise reasonably agreed by both parties in writing.

The delivery time of Spare Parts should not be more than ten (10) working days during the warranty period and no more than fifteen (15) working days after the warranty period from the written request of PPA unless otherwise reasonably agreed by both parties in writing.

13. ACCEPTANCE

After arrival and assembly of the equipment the Supplier shall undertake and successfully carry out the process of obtaining on behalf of PPA the relevant Certificates of Conformity, CE documents and any other relevant requirement in Greece in accordance with the Greek and EU legislation, as applicable and in force, and provide PPA and the competent Greek authorities with any required documents for all procured equipment and generally proceed with any necessary acts for this purpose.

The Supplier shall also conduct and carry out ALL the acceptance tests to confirm that the procured equipment meets the Tender specifications and performances before and after delivery of the mentioned crane. PPA staff will be present at ALL acceptance tests, irrelevant of the location.

Prior to the acceptance inspection, the Supplier shall submit the test and inspection procedures to PPA. The test scope shall cover all operations and performance. The acceptance test shall be jointly attended by both parties.

After the completion of the Acceptance Test, the Supplier shall prepare the Acceptance Report, which shall include but shall not be limited to the following:

- The type of the equipment tested, date & location
- The specific tests implemented
- List of the participants both from PPA and the Supplier
- Any defects detected and remedy measures

The Supplier shall submit the following documentation prior to requesting PPA to sign the final Acceptance Report:

- The Quality Control and Inspection documentation folder signed by the candidate.
- The complete Inspection Report folder containing the entire Inspection process signed by the candidate.
- The successful testing and commissioning reports of the equipment signed by the candidate.

- The relevant Certificates of Conformity and CE documents for all the Equipment in accordance with the applicable Greek and EU legislation as in force.
- All manuals, documents and drawings as stated in this Call in hard copy and in soft copy versions in duplicate.
- Relevant delivery documentation for the spare parts/special tools and equipment.
- Any other relative documentation mentioned in this Tender Call.

Both PPA and the Supplier shall sign the final Acceptance Certifications only when all of the following conditions are met:

- PPA regards that the crane is fully compliant with the requirements of the Tender and the Contract.
- Any defects and problems detected during the acceptance inspection have been solved by the Supplier and agreed by PPA.
- PPA has received all items and documentations specified in the Contract.

Only when the Acceptance Report and the Acceptance Certifications have been signed by PPA and the Supplier, the Equipment can be officially accepted by PPA (this is the final acceptance).

Analytical details of ex works and final acceptance may be read in Annex D - Technical Specification.

14. AFTER SALES SERVICES

Candidates must have authorized a representative within the European Union.

In case of parts of the equipment, where the warranty is provided from other than the candidate, the candidates must provide a list with all the authorized representatives of the above mentioned parts types.

Non-EU participants must submit sufficient evidence to prove the interchange ability and availability for a minimum period of five (5) years for all the replacement parts within the European Union (EU).

The Supplier must submit sufficient evidence to prove technical support to meet PPA's requirements on after sales service, such as onsite fault diagnosis, maintenance and supply of spare parts during the Warranty period of the Equipment.

The following after sale services will be provided to the buyer by the Supplier:

1) Technical training as mentioned in the technical section of the said document.
2) During first stage of crane normal operation (12 months), the supplier should send at least two relevant technicians or engineers to the buyer's site for 7 x 24 hour service and to provide assistance to the buyer in crane operation and trouble-shooting.
3) Provide drawings and relevant information for maintenance.
4) Within guarantee period personnel will be assigned regularly to inspect the operation of the crane to eliminate potential problem.

15. PAYMENT TERMS

15.1 Payment Terms

Payment Terms

The proposed payment terms are the following:

- 30% of the contract amount as advanced payment payable within 15 days after signing of the contract and after receiving of;
  - A Good Performance Guarantee of 10% of the amount of the contract upon signing of the agreement valid until the end of the warranty period.
  - An advanced payment guarantee of 20% of the amount of the contract upon signing of the agreement valid until final payment.
- 20% upon initial acceptance of crane at the supplier's premises.
- 40% after delivery of the crane at PPA premises and after the issuance of type approval and any other legal documents for the equipment according to Greek Law on behalf of PPA SA.
- 10% after final acceptance from PPA SA as set forth in Article 13 and after completion of on-site training.

16. GENERAL TERMS

1. The validity of the quotation should be for at least four (4) months from Proposal submission deadline set for this tender.
2. This Tender is expressly not a Contract between PPA and the Participant, or an offer to Contract.
3. PPA is not bound to accept the lowest or any Proposal.
4. Nothing in this Invitation, any Proposal, or any conduct or statement made before or after the issue of this Invitation is to be construed so as to create legitimate expectations or give rise to any contractual obligations, express or implied, or any obligations in equity. PPA makes no binding representations or undertakings as to how the Proposal process will be conducted.
5. PPA reserves the right to postpone, adjourn or cancel the Tender, as well as to amend the time table of the Tender and of the Tender in general, at any time, or to repeat the Tender, at its sole discretion, without bearing any liability towards the Participants in the Tender or/ and any third parties. Participation in the Tender remains at the Participant's sole responsibility and expense. The Participant does not derive any compensation rights out of this participation other that those set out in the present document. Participation itself in the Tender Procedure equals to Participant's full and unconditional acceptance of the Tender terms and conditions.
6. In case less than three candidate´s offers fulfill tender criteria in order for their financial proposals to be unsealed, then, PPA reserves the right to cancel the procedure by declaring it as non-successful, unless otherwise stated in the tender documents and/or the Regulation.
7. PPA reserves the right to enter into competitive negotiations with all successful Participants after the Evaluation process and before concluding the Contract.
8. The present Call for Tenders as well as the Contract will be governed by and construed in accordance with the Laws of Greece.
9. The Contract will be in the English Language and all written communication between the parties will be in the English language.
10. All applicable regulations and standards (Greek, European Union) should be complied with.
11. Confidentiality: The parties shall keep the terms of the Tender or/and the Contract strictly confidential and shall not disclose such terms to third parties, except as may be required by Law.

12. If a Participant is found to have made false or misleading claims or statements, PPA reserves the right to reject at any time, any Proposal submitted by or on behalf of that Participant. Participants should be aware that giving false or misleading information is a serious offence under the Hellenic Criminal Code.
13. The Participants are prohibited to form alliance or exchange information in the tender process, so as to damage the interest of PPA and also exclude the participation of other bidders.

16.1 Penalties imposed upon delay of the Supplier in completing the project.

i. For a delay of up to 30 days from the end of the contractual deadline for completing the project, the sum of one thousand euro's (€ 1000) shall be seized per calendar day as a penalty to the Supplier.

ii. For each day of delay after the period of the previous subparagraph, the penalty shall rise to two thousand euro's (€ 2000) per calendar day to the Supplier.

iii. Where the penalties amount to the performance guarantee figure stated in Article 7.2, provided that there continue to be grounds for imposing a penalty, PPA S.A. shall be entitled to terminate this Contract due to the Supplier's fault, in which case, the said performance bond shall be seized.

iv. PPA S.A. reserves the right to demand that the Supplier pays any other penalty imposed on it by the Hellenic Republic in accordance with the provisions of the Concession Agreement, which is associated directly or indirectly with failure to meet the deadlines in the contract schedule or with any other related event due to the Contractor's fault.

ANNEX A: FORM OF TENDER PARTICIPATION BANK GUARANTEE LETTER

(TENDER BANK GUARANTEE)

Piraeus Port Authority S.A. (PPA S.A.)

10, Akti Miaouli

185 38, Piraeus Greece

Date: …….

Dear Sirs,

1. We have been advised that:

a)[Full Name], a [Type of Entity], lawfully established under the laws of [jurisdiction], with registered offices at [Full Address of Registered Office], registration number [number of corporations' or similar register], as lawfully represented (the "Candidate") intends to submit a binding offer (the "Offer"), in response to a document entitled "*CALL OF TENDER FOR THE AWARD OF PROCUREMENT FOR THE SUPPLY, INSTALLATION, COMMISSIONING AND TESTING OF ONE (1) SUPER POST PANAMAX TYPE SHIP TO SHORE QUAY CRANE FOR CONTAINER TERMINAL USE*", issued by Piraeus Port Authority S.A. ("PPA" or "you") and dated …….. (the "Call"). Capitalised terms not defined herein shall be used as defined in the Call.

2. We have been advised that the obligations of Candidates regarding their participation in the tender process are several and accept to be bound by and to honour this letter of guarantee whether or not a call on this instrument results from the act or omission of any of the persons named at the beginning of paragraph 3 below.

3. In view of the foregoing and at the request and for the account of the Candidate, we [Full Name of Eligible Bank], acting through our [●] branch of [Full Address], hereby guarantee irrevocably and unreservedly to PPA S.A. for the full and proper observance by, and compliance of the Candidate with the terms and conditions applicable to their participation in the Process, as well as for any and all other financial and non-financial obligations of the Candidate relating to its participation in the Process, each pursuant to Call and the provisions of applicable law, up to a maximum aggregate amount of …… (€)

4. We shall commit the above amount and shall pay same to you in whole or in such part as you may specify in writing, without any objection or pretext, within two (2) Athens business days following receipt of your first and simple demand in writing or by authenticated SWIFT making reference to this letter of guarantee and stating that the Participant(s) failed to comply with the terms

5. We hereby expressly and irrevocably waive the benefit of division and discussion, our right to invoke any of the objections of the prime obligor, including personal and non-personal objections and, in particular, any objection provided for under Articles 852-855, 862-863, 866, 867 and 869 of the Greek Civil Code and waiving also any and all of our rights under the said Articles.

6. No approval, act or consent on the part of any of the Participants, the applicant(s) hereof or any third party shall be required for payment of any amounts hereunder. In addition, no objection or disagreement of any of the foregoing persons or their eventual recourse to courts of any jurisdiction or arbitral tribunals seeking non-forfeiture of this letter of guarantee shall be taken into consideration.

7. Subject to paragraph 8 below, this letter of guarantee is of indefinite duration and in any case shall remain in full force and effect until the earlier of: (a) the date on which all amounts available hereunder have been fully and actually drawn and paid to you; (b) upon receipt of your confirmation in writing or by authenticated SWIFT to the effect that you finally and irrevocably release us from any obligations hereunder.

8. This guarantee shall be governed and construed in accordance with Greek Law. The courts of Piraeus shall have exclusive jurisdiction to resolve any disputes associated with this instrument.

Respectfully,

For [Eligible Bank]

[Authorized Signatures]

ANNEX B: FORM OF GOOD PERFORMANCE BANK GUARANTEE LETTER

(TENDER BANK GUARANTEE)

Piraeus Port Authority S.A. (PPA S.A.)
10, Akti Miaouli
185 38, Piraeus Greece
Date: …….

Dear Sirs,

1. Herewith we guarantee, irrevocably and unconditionally, waiving the right to divide and to require the debtor to pay first, in favour of Piraeus Port Authority S.A. Akti Miaouli 10, 18538 Piraeus, Greece and up to the amount of euro […….] for the good performance of the contract with […company name….], […company address..], concerning the tender procedure initiated on […date..], as subsequently amended accordingly of Piraeus Port Authority S.A. Akti Miaouli 10, 18538 Piraeus, Greece, with the subject: [….tender subject….] of total value euro [……], in accordance with the number [….] purchase order of yours dated [……].

2. The above amount of guarantee is held at your disposal which we are obliged to pay to you in whole or in part without any rejection or objection on our behalf and without considering the merits of your claim within three (3) days upon your written notice.

3. For the purpose of identification your written demand for payment and all other correspondences has to be presented to us in full by authenticated swift message to our swift address […..] through the intermediary of a bank. Within the validity period of this guarantee, confirming that your original demand for payment or any other correspondence has been sent to us by registered mail or special courier and that the signatures appearing thereon are authentic and legally binding upon your company. Your written demand or other correspondence by registered mail of special courier shall be accompanied by a cover letter issued by the intermediary bank confirming that the signatures appearing on the beneficiary's attached document are authentic and legally binding upon your company. Your written demand and all other correspondence shall be issued in Greek or English language. For the avoidance of doubt, your demand for payment or any other correspondence shall be deemed to have lodged on the date on which your demand for payment or any other correspondence sent via registered mail of special courier is in our possession at our counters in […..]

4. This guarantee is valid until [….] at the latest and will automatically become null and void, if your claim in the above form has not been received by us on or before the above mentioned expiry date regardless of such date being a banking day or not. Upon expiry, we shall be automatically released and discharged from all our liabilities under this guarantee, whether this guarantee is returned to us from cancellation or not.

5. . We hereby expressly and irrevocably waive the benefit of division and discussion, our right to invoke any of the objections of the prime obligor, including personal and non-personal objections and, in particular, any objection provided for under Articles 852-855, 862-863, 866, 867 and 869 of the Greek Civil Code and waiving also any and all of our rights under the said Articles.

6. No approval, act or consent on the part of any of the Participants, the applicant(s) hereof or any third party shall be required for payment of any amounts hereunder. In addition, no objection or disagreement of any of the foregoing persons or their eventual recourse to courts of any jurisdiction or arbitral tribunals seeking non-forfeiture of this letter of guarantee shall be taken into consideration.

7. This guarantee is personal to you and is neither assignable nor transferable.

8. If the guarantee is forfeited, the amount of the forfeiture is subject to the applicable stamp duty.

9. This guarantee shall be governed and construed in accordance with Greek Law. The courts of Piraeus shall have exclusive jurisdiction to resolve any disputes associated with this instrument.

Respectfully,

For [Eligible Bank]

[Authorized Signatures]

ANNEX C: FORM OF ADVANCE PAYMENT BANK GUARANTEE

(TENDER BANK GUARANTEE)

Piraeus Port Authority S.A. (PPA S.A.)
10, Akti Miaouli
185 38, Piraeus Greece
Date: …….

Dear Sirs,

1. We have been informed that:

You have concluded a sale and purchase agreement (hereinafter referred to as the 'contract') with the company under the name [….] (hereinafter the 'Supplier') with its head offices located at [….] for the supply of …… and agreed spare parts for use in the container terminal of PPA SA at a total price of euro […..] according to the contract, the Supplier is required to provide you with an advance payment bond in the amount of euro […….].

2. This being stated, we,..... bank,... (address), irrespective of the validity and the legal effects of the contract and waiving all rights of objection, defence, discussion and division arising from the principal debt, hereby irrevocably undertake to pay immediately to you, upon your first demand, any amount up to euro […..] upon receipt of your first written request for payment along with your written confirmation that the Supplier has failed to fulfil his contractual obligations under the contract and to refund aforementioned advance payment.

3. Our bond is valid until […..] and expires in full and automatically, irrespective of whether the present document is returned to us or not, should your written request for payment and your above-mentioned written confirmation not be in our possession by that date at our counters in […..] bank of […….], [……bank address…..].
With each payment under this bond our obligation will be reduced by the amount of such payment.

4. We hereby expressly and irrevocably waive the benefit of division and discussion, our right to invoke any of the objections of the prime obligor, including personal and non-personal objections and, in particular, any objection provided for under Articles 852-855, 862-863, 866, 867 and 869 of the Greek Civil Code and waiving also any and all of our rights under the said Articles.

5. No approval, act or consent on the part of any of the Participants, the applicant(s) hereof or any third party shall be required for payment of any amounts hereunder. In addition, no objection or disagreement of any of the foregoing persons or their eventual recourse to courts

of any jurisdiction or arbitral tribunals seeking non-forfeiture of this letter of guarantee shall be taken into consideration.

6. This guarantee shall be governed and construed in accordance with Greek Law. The courts of Piraeus shall have exclusive jurisdiction to resolve any disputes associated with this instrument.

Respectfully,

For [Eligible Bank]

[Authorized Signatures]

The crane described in this Tender is a rail mounted outdoor electric, full wire rope Ship to Shore Super Post Panamax crane, included Spreader, designated for Container Terminal use.

The crane shall be equipped with electric motors, motor controls, hoisting, gantry, trolley and boom hoisting machinery, headblock, twin lift spreader, hoisting ropes, electrical protective devices, operating brakes, operator's cabin, machinery and electrical enclosures, and all relevant items required for a complete operating installation.

The entire crane construction shall be manufactured in such way to prevent any ingress of water to the internal parts of its frame or its working areas in order to fully protect the internal members of the crane from rust corrosion.

Performance

The crane shall be capable of carrying the rated loads while travelling at the appropriate corresponding outreach. The crane shall be stable under maximum operating conditions, with the permissible loads at the corresponding maximum and minimum outreaches. All of main drives or inverters shall work independently except of the boom hoist which will be linked via a changeover contactor to the trolley travel inverter.

The crane shall be capable, under maximum operating conditions, of simultaneous operation of hoist, trolley and gantry travelling motions.

When not in operation, the crane shall be stowed in a locked position, the trolley structure locked (secured) to the portal, and the crane secured to the crane track by means of rail clamps & stowage pins.

Steel Construction

The crane structure should have adequate strength and rigidity smooth appearance. All the bearing bars, diagonals, and the mast frame are of tube-type construction. The tube shall be formed from steel plate by spirally rolling and welding on both sides. Drainage holes are to be provided where water may be built-up. Sealed hatch covers are provided on all box-section

members for interior inspection. Crane structure connections are performed by welding, hinge-pins and high tensile strength bolts.

Gantry frame

Gantry frame is of single fillet welded box structure. Gantry frame is of the welded box structure. The welding connecting the flange and web of a box structure (primarily be subjected the longitudinal stress) will be one side fillet welding. The connection between the upper part of the gantry frame and the crane girder is made by welding to ensure adequate rigidity of the crane and to reduce the trolley sway and keep deflection of structure within the allowable limit. On one of the landside gantry legs, the elevator and access stairways are installed.

Boom and girder frames

The boom and the girder are to be of single fillet welded twin box type of structure and rail support beam are to be installed on the lower part of the girder and boom. Gantry frame shall be of the welded box structure. The welding connecting the flange and web of a box structure (primarily be subjected the longitudinal stress) will be one side fillet welding. The rail support beam is made of "T" type welded section steel and the surface should have perfect levelness and durable fatigue resistance.

Trolley rail shall be joint-less and laid on the rail support beam of the girder and the boom accuracy of rail installation alignment should duly meet maximum travelling and operation requirements. Strengthened rubber pads and rail clips should be used between the rail and rail support beam to reduce and isolate vibration.

On the girder and the boom walkways, stairs and platforms are to be provided for safe, easy maintenance of equipment attached on the girder and the boom and to provide a safe escape route for the operator when the trolley is positioned at any point on the girder or the boom.

Spirally welded tube

The A-frame should be made of spirally welded tubes.

Adjusting eccentric pin sleeves are to be installed for the forestays. The forestays of the boom should be welded or rolled “H”-section construction and are to be provided with adjusting eccentric pin sleeves to ensure even load on both of them.

Boom hinge

For the twin box type boom and girder, double hinge-points are to be used between the boom and the girder. When the boom is raised by the boom hoist rope the upper hinge point effects as the pivot point. When the boom is lowered down to horizontal position the forestay is extended and is bore the boom load the lower hinge point bears load, and the upper hinge point is released.

Machinery House

The machinery house shall be located on the top of the super structure. It shall be of fabricated steel construction, with a frame of rolled or hollow sections with siding and roofing of corrugated steel sheets. The roof shall also be provided with handrails along its perimeter.

The machinery house should be dust-free environment, free from rain and with proper ventilation under all weather conditions. There should also be a room control thermostat for occasions of high temperature (i.e. over 40 degrees centigrade).

The hoisting, trolley and boom machinery and the electrical cubicles are to be located in the machinery house. The rope openings in the machinery house roof are to be provided with protective plastic covers to prevent penetration of water.

The floor will have a hatch opening to lower service crane hook to rail level.

The machinery house shall be provided with a manual operated service crane able to remove the heaviest part within the house and lower to the ground and a work bench with drawers and a jaw vice.

The machine house shall also be equipped with a rope changing machine to assist with wire rope replacement.

Electrical Room

The electrical room should meet the following requirements (not limited to):

- Walls and ceiling made with sound and heat insulation and fire-resistant material.
- A ventilation system to keep out dust.
- A flame-retardant floor with a walkway surface covered with non-skid insulating rubber mats.
- Air conditioner unit(s) capable of dissipating the heat generated by the electrical components.

The machinery/electrical room should also be provided with an inter-communication device, a folding chair and cabinet for files. Noise level in the room should be lower than 90 dB(A).

A glass window should be provided on the wall between the control room and machinery house for viewing to every machine. The floor of the room should be overlaid with anti-electrostatic material.

The machinery house shall also be equipped with at least two access doors, which are fitted with locks, handles and the width is not less than 0.78cm. All the doors lock should use a master key. The height of the door should not be less than 1.8m.

Air Compressor

An air compressor should be installed in the machinery house. The air compressor should be equipped with a receiver and an automatic pressure switch, pressure switch, pressure gauges, relief valve and a discharge valve, and also with filters, an oil water separator, a hose of sufficient length and should have a nominal working pressure of 8 - 10 bar.

The air compressor pipeline shall be fitted with its outlets at the following positions:

- Inside the machine room;
- The head and the middle of the front girder;
- Hinges of the front and back girders;
- Trolley parking position;
- The end of the back girder;

- The top of the A-frame;
- Sea side and landside gantry frames.
- Any other relevant locations

Operators Cabin

The operator's cabin shall be designed for environmentally safe working conditions. The operator's cabin shall be located on the trolley structure with the operator facing forward.

The cabin should be waterproof, insulated, and of steel construction with 2 mm galvanized steel sheets, with all windows framed in rubber gaskets. Access to the operator's cab shall be through a full-sized door in the rear or side of the cab.

The cabin design shall provide the operators' full visibility of all crane operations with adequate window area being provided. Window glass shall be of laminated safety type.

The operator’s cab must also have adequate intercommunication means.

Opening windows shall be provided with swing outward or slide. Provision shall be made so that the outside of all windows may be cleaned. Electrically operated windshield wipers or equivalent systems shall be installed on the window in front of the crane operator. The floor window should be provided with a protective metallic grating. There should also be easy and safe access for cleaning purposes.

Controls must be arranged to achieve a convenient and logical location for each device with the operator seated in the operator's chair. An adjustable seat shall be provided for the crane operator, located such that all crane controls may be conveniently reached with maximum comfort.

The seat shall be fastened securely to the floor by means of a pedestal and channel track. The seat and pedestal shall have the ability to be locked into different positions and shall be adjustable in height. The operator's access to the seat shall not be impeded.

Automatic and thermostatically controlled air conditioner shall be installed that will provide comfort (approx. 18 – 26 ºC inside the cabin). This unit shall be manufactured and mounted to minimize vibration and noise.

The cabin shall have an adequate heating system, capable of operating in temperatures of sub-zero degrees centigrade conditions.

Admissible noise level shall be according to European legislation and provided in decibels (dB).

More specifically, the operator's cabin shall be provided is also provided with the following equipment:

Two control consoles on both sides of the operator's seat and on the insulated floor. The consoles contain the following equipment:

1) Main hoist/ gantry control joystick;
2) Trolley traverse control joystick;
3) Control switch "ON/ OFF" push button with indicator light;
4) Spreader pump "ON/ OFF" push button with indicator light;
5) Spreader "extending/retracting" selector switch with indicator light;
6) Spreader normal tilting, listing and skewing joystick;
7) Spreader twist-lock "unlock/unlock" selector;
8) Each corner of spreader flipper, should Individual control, and should have ALL "raise/ lower" selector for flipper;
9) Wheel brake "apply/ release" switches with indicator light;
10) Indicator light for gantry stowage state;
11) Trolley parking position indicator light;
12) General trouble indicator light;
13) Hoist over-load indication light;
14) TTDS fault indicator light;
15) Emergency stop push-button;
16) Acoustic alarm and reset push-button;
17) Indicator light for slack rope;
18) Push button for twist-lock by-pass;
19) Push button for landed by-pass;
20) Push button for spreader TTDS by-pass;
21) Push button for over travel by-pass;

Auxiliary controls / indicators units are to be installed as follows:

1) Walkway lighting control switch;
2) Spreader feedback signal: unlock, lock, landed, 20ft, 40ft, 45ft, and twin indicator light;
3) Individual switch with indicator light for Boom girder, back girder, trolley, and portal beam LED flood lights;
4) Main Hoist height indicator;
5) Trim, List, Skew angel indicator;
6) Load indicator of Main Hoist;
7) Wind speed indicator;
8) Switch for windshield wiper;
9) Various switches for alarms and loud speakers system
10) Two 12VDC, two 24VDCand two 230VAC sockets in the operator cabin.

The following indicator lights are to be installed in front of the operator to alert the ground personnel to the following status:

1) The spreader is landed on the container (yellow);
2) Twist-locks are in unlocked position (green);
3) Twist-locks are in locked position (red);
4) Spreader in twin condition (blue);

Mechanical parts

Sheaves and Pulleys

All sheaves shall be of metallic type, suitable for use with the proposed wire ropes. The sheaves shall specifically be of precision cast iron type and shall be constructed in such way to minimize wear of sheaves and also wire ropes.

Sheaves shall be provided with steel guards of at least 12 mm thick steel plates to prevent the ropes from jumping out of the grooves.

Drums

All drums shall be of metallic type, suitable for use with the proposed wire ropes and with rope grooves and shall be constructed in such way to minimize wear of drums and also wire ropes.

Buffers

All gantry bogies on the four corners of the crane should be installed with buffers. The buffers should be able to absorb the kinetic energy developed if the Crane impacts at full speed. Relevant buffers should also be installed at any other required locations.

Fire Extinguishers

Fire extinguishers according to Greek and European legislation should be installed in the Machinery room, Electrical room, Operator cabin and at the gantry level.

Stairs, Ladders and walk ways

The crane shall be provided with stairs and ladder in accordance with the applicable international standards and regulations. They will be provided to give proper and secure access to all machineries, rope sheaves and other equipment requiring maintenance, lubrication and or inspection. Stairs will be used at locations where frequent travel is required. Hand rails and safety cages will also be provided where required. The width of stairs and ladders shall correspond to the applicable international standards and regulations. Stair treads, platforms and walkways located outside shall be of galvanized open grating or punched steel plate. The maximum length of any single ladder will be no longer than four (4) meters in length with intermediate platforms installed at lengths over four (4) meters. Width of the main passage ways shall not be less than 700mm and 500mm for auxiliary passage ways.

Fasteners

Fasteners should be complied with the proposed relevant standards and threads will be metric size.

Where rotation speed is high, steel wires passing through nuts and washers specially made for high strength nuts and pre-tensioning torque should be adopted.

Nylon self-locking nuts should be used where there are no special requirements.

Screws and bolts 12 mm diameter and below shall be of stainless steel grade A4 (316).
Screws and bolts above 12 mm diameter shall be with adequate surface treatment for maritime environment.

Raw Materials and Equipment

All materials and equipment shall be new, of the highest grade, free from defects and shall conform to the applicable standards and specifications proposed.
The candidate shall indicate in his bid which steel grades will be used.
To ensure material used for fabrication fully meets the design requirements, the candidate must submit a steel quality report, chemical analysis and mechanical properties test reports with respect to furnace batch number within the quality documentation.
Material must be tracked through the complete production process to ensure the right material is used. The process includes storage inspection, material requisition, surface preparation, cutting, fitting and forming. If any original markings are removed by blasting, and rust removal process, the product must be re-marked after that process.

Sub-Assemblies of Crane

Main Hoist

The hoisting and lowering machinery and equipment shall be designed in such way to allow full access of maintenance engineers to each and every part of the construction.
The hoisting and lowering machinery shall consist of AC motor(s), protection ≥ IP24, spring operated disc brakes with electro-hydraulic thrusters, emergency braking units, gear reducer assemblies, easy for maintenance couplings, rope drums with grooves including a round bar with a limit switch under the drum to stop the machinery in the event that the ropes spring out from the drum grooves, limit switches for upper and lower hoisting limits, centrifugal limit switches for over-speed protection, a load cell system with load indication and maximum load limit cut off device for overload and snag load protection. The Main hoist should not be operated with the load when the boom in latch condition but except empty loaded.

Trolley Travel

The Trolley Travel device shall be of a rope towed type consisting of sheaves supported on a welded steel structure carried on steel wheels with replaceable axles. The system should also

consist of AC motor(s), protection ≥ IP24, spring operated disc brakes with electro-hydraulic thrusters, emergency braking units, gear reducer assemblies, easy for maintenance couplings, rope drums with grooves including a round bar with a limit switch under the drum to stop the machinery in the event that the ropes spring out from the drum grooves, limit switches for end limits and a centrifugal limit switches for over-speed protection. The trolley shall be provided with four (4) buffers at its 4 corners to damp shock load imposed by the collision of the fully loaded trolley at 70% rated speed with the rail end stop. The trolley should be provided with four (4) adjustable side-rollers, and to be easily removable and fall-down protected. The trolley frame shall be designed as a simple structure with a safe support block for prevention of the trolley from falling down in case of wheel or wheel shaft failure. Jacking lugs are also to be provided which will allow axle replacement at any point of trolley travel. The trolley wheel bearing housings should be adjustable to ensure traversing on the straight line. The trolley frame shall be fitted with access walkways, platform, and railings for maintenance and wheel replacement. Interlocks should be provided between the Trolley and the Boom. The trolley travel should not be able to run during the boom operation and the boom girder not in a horizontal condition. All functions should be hardware and software protected for reasons of safety. Trolley Travel wire ropes should be divided into front and back system ropes with tension cylinders installed on the rear girder directly acting on the rear wire rope. Both the front rope and the rear ropes are to be configured with balance sheaves and damping units to reduce wire rope swings are fitted at places where wire ropes are led from the balance sheaves to protect any fatigue-broken wires of the wire rope there.

Boom Hoist

Drive unit consists of motor, gear reducer, motor brake, drum brake, drum and coupling etc. Boom hoisting consists of drum, reducer, motor, brake and coupling, etc. A pair of the hook latches device is to be fitted on the top beam of the seaside mast frame to secure the raised boom. Boom hoisting is to be provided with two thruster brakes that are mounted on high-speed shaft of the gearbox. Each thruster brake shall have a braking torque shall be not less than 1.25% of rated load torque, the total safety factor shall be not less than 1.75. The emergency disc back-up hydraulic brake fitted directly to the drum end side flange, the Braking torque of the emergency brake is greater than 1.5 times rated load torque.

One independent set of boom hoist wire rope should provide, they will be clamped on the top of the pylon, and each side wire rope shall be able to hold the boom and to raise or lower the

boom to position while either side of the rope is broken. During normal operation, the two sides of ropes can be run synchronously.

A weather-proof boom operation control cabin shall be located on the waterside cross beam of gantry frame. The control station shall be fitted in this cabin and interlocked with control in the operator's cabin.

The following protection and interlocks are to be provided for the boom hoisting:

1) Limit switch for automatic emergency stop of the boom at its extreme uppermost position;
2) Protection for automatic stop of the boom at its normal up stop position,
3) Over-speed protection automatically sets the boom brakes at the boom speed in excess of its rating by 15%,
4) Limit switch for the slack rope,
5) Interlock between the boom latch and boom hoisting to ensure that the boom cannot be lowered until the safety latch is disengaged,
6) Interlock between the trolley traversing and boom hoisting to ensure that boom hoisting cannot be energized until the trolley is returned inward to stowed position on the girder,
7) Boom operation can be achieved in the operator cabin from 0 to 60°.

Outdoor service crane on A-Frame

A rotating type service crane shall be fixed on the A-frame and Boom tip to cater the requirement of the maintenance or repair works. The length of the crane arm design for the Boom tip shall be able to handle heavy parts and able to shift / place to the front end of the trolley platform when the trolley in forwarding end stop position.

Gantry Travel

The gantry travel device shall be supported by four main equalizer assemblies located under each portal corner. The numbers of wheels shall be determined after determination of the maximum allowable wheel load. The gantry wheels shall be of double flange type. The system shall consist of AC motors of protection class ≥ IP 55, gear reducers, spring operated wheel disc brakes with electro-hydraulic thrusters, anti-collision buffers able to absorb the

dynamic energy of the crane traveling at 70% rated speed at rated load and protective covers for all rotating equipment. Rail sweeps are to be provided under the outermost bogies to clear debris from the rail track. In addition, when the crane control power is to be cut off, the wheel brakes should be able to be released manually.

Rail clamps shall be installed at each side of the gantry system. The rail clamps shall be lifted by hydraulic cylinders and lowered by means of spring force. The rail clamps shall be lowered, either automatically when the main contactor is opened or by the crane operator by means of a push button in the operator's cabin.

The gantry system shall also contain locking pins in event of earthquake, hurricane or heavy winds that will be anchored into openings on the pier. One locking pin shall be situated on each side of the gantry system that may be hoisted and lowered into position by means of a hand lever. The locking pins shall also have limit switches to identify open and closed positions. The pins of plates shall be designed to match the stowage socket installed at the facility of PPA S.A.

Gantry Cable Reel System

The gantry cable reeling device shall be mounted on the crane structure near the seaside rail. The cable reel system shall be a mono-spiral, bi-directional and constant cable tension heavy-duty type. The cable reel shall be driven by AC constant torque motor with magnetic coupling or frequency conversion motor. The drive system should design to minimize abrupt starting, braking and excessive stacking of the cable as the crane passes the cable feed point.

The design also ensures that there is no undue mechanical and electrical strain on the cable. The motor is provided with over-temperature protection, which shuts down the system and prohibits crane gantry travel when overheating occurs.

The reel is made up of hot-dipped Galvanized steel material or stainless steel and is properly earthed. No part of the system shall protrude into the container handling operation paths and non-protruding beyond the gantry buffers.

The reel is able to coil and uncoil automatically and be synchronized with the crane gantry travel.

In order to minimize torsion build-up, a bi-directional multi roller cable guide is provided and mounted at the wharf level near the cable channel so that the cable can be retrieved from either direction parallel to the cable channel.

Another multi-tension and under-tension detection devices are provided. On detection of over-tension or under-tension of the cable, gantry travel in either direction is prohibited.

The cable is considered as over-tensioned when the tension in the cable exceeds of the safe working cable tension recommended by the cable manufacturer.

The cable is deemed to be in an under-tension state when any slack in the cable occurs between the cable reel and the cable lower guide.

The cable reel system is designed such that, when the crane is parked and subjected to a gust of wind, the cable reel is able to pay out appropriate length of cable automatically in accordance to the amount of crane movement caused by the gust.

The design ensures that under such circumstances, the cable does not sustain any damage.

Anti-collision protection

The crane shall be provided with polyurethane or hydraulic buffers at traveling ends of both the trolley and gantry. The crane structure shall be designed for shock load imposed during the collision with an adjacent crane or end stop at 70% speed with the power off and under energy absorbing effect of the buffer without damage of any member and/or part.
Steel wire with spring tension shall be installed on both sides of the crane boom to sense contact with the super-structure of the ship (if required).
Photoelectric Limit switches are provided at both sides of the waterside gantry to slow down the crane when it close to the adjacent crane. Additional mechanical switches shall be provided to prevent against a collision with the adjacent crane.

Local control device

An enclosed local control device for the gantry travel function shall also be installed on the inside of the landside gantry frame construction allowing local gantry travel at reduced speed.

The local station should consist of the following control functions:

1) Hoist Up and Down control switch (20% speed),
2) Gantry Left and Right control switch with inching and base speed,
3) Inside panel light,

4) Faults display,
5) Fault alarm,
6) LED flood light ON/OFF switch with indicator light for each location,
7) Walkway light ON/OFF switch,
8) Manual ON/OFF switch for wheel brakes,
9) Spreader TTDS by-pass switch,
10) Auxiliary transformer control power selector and turn ON switch.

The gantry system shall also be provided with adequate jack up points on the landside and seaside parts of the cranes frame for maintenance and repair works.

The gantry system shall also consist of both a mechanical type with limit switches and laser type anti-collision system installed at each corner of the gantry system. The system will cut the motion of the crane when engaged and resume once the disengaged. There shall also be an interlock between the stowage device and gantry traveling to ensure that gantry traveling cannot be started until all stowage pins are lifted up from the stowage sockets.

The gantry system shall also have combined warning signal flashing lighting with alarm bells/sirens situated at each corner of the gantry frame activating when the operator selects gantry travel function. The alarms and sirens should be visible and be heard from a distance of at least 30 meters of the crane in any working condition.

IMPORTANT NOTE:

All areas of the crane shall be safely accessible by means of stairs and walkways without use of external machinery.

Electrical System

Power supply

The Power supply to the crane from the PPA's pier shall be: 20KV ±10% AC, 50Hz ±2%, 3 phases with optical fiber cable.

The three (3) phase high-voltage power shall be fed to the crane through high-voltage cable. The cable shall be wound onto the cranes cable reel. The Supplier shall be responsible for connecting the HV cable through separable straight connectors inside the pit of pier of PPA S.A. The HV pit shall be located at the waterside of the waterside gantry leg and at a distance

of one hundred twenty meters before the rails end. Cable reel device consists of the reel made from tube steel, driving unit, fiber optic rotary connector and slip ring collector. The drive unit should be of multi-motor with magnetic coupling type and is simple in structure and fed by A.C power. This type of drive unit should be able to provide sufficient braking torque to prevent cable from dropping off and therefore brakes are not necessary.

Effective length of the trailing cable shall be designed for traveling distance of 370 m each side from the feeding point. The cable reel shall be provided with a cable end protection switch. When this switch is activated and the traveling power is cut off, at least three (3) wraps of cable must remain on the reel.

A space heater is provided in the slip ring housing. The Cable reel is installed outside of the seaside gantry or on the sill-beam which is perpendicular to the rail.

A four hundred (400) VAC, 3 phases 4 wire, 50HZ shore power is supplied for emergency drives, obstruction lights, etc. A socket should be mounted at gantry landside position to accept this shore power supply.

The crane can supply the following power through H.V. transformer in machinery house:

a) Drives' power supply: According to drive systems standard,
b) Auxiliary driving power: 400VAC / 50Hz, three phase,
c) Lighting power: 230VAC / 50Hz, single phase,
d) PLC control power 230VAC and 24VDC.

Two HV transformers should be installed in the machinery room of Dry Resin type. One is supplying the power to drive section. Another is supplying to auxiliary equipment. Both transformers should not be less than IP20 waterproof if there is no special transformer room.

Festoon cable and cable hanger system

Power and control wiring should be running in flexible cables from junction boxes on the landside end of the girder via a festoon system to the trolley. Festoon cable carrier rail is mounted under the boom and girder. The festoon cable and its carriers are run on the rail. All the festoon cables are bound in sections to prevent the cables from hitting the crane structure. At least 20% of spare control wires should be provided for each control festoon cables.

The cable carriers should be provided with roller bearings. To reduce noise level the carrier wheels are covered with wear-resistant polyurethane plastic nylon. Horizontal wheels and

bumpers are provided on the cable carriers. The bumpers are made from elastic polyurethane to absorb collision energy.

Cable carriers are to be designed such that the carrier bearing can be replaced without removing the cable.

A large service platform is to be provided at the rear part of the crane for easy maintenance and replacement of the cable festoon parts.

Spreader cable

Multi-core cable is used to supply power from the trolley to the spreader. The cable will be protected against over tension in the event of loss of power, or other overload condition. Multi-pin plug and receptacle are used for the spreader cable to ensure convenient and quick connection and changing. There are at least 10% cores for spare use.

Design of the cable and weatherproof plug and receptacle is to have the voltage level no less than the operating voltage on the spreader.

The spreader pump power can be turned on and off by switch in the operators cabin.

The plug with spreader cable coming from trolley will be directly connected to the spreader by using spreader cable reel.

The spreader all signals should communicate with the crane control system via a two-wire (CAN open) system.

Main drive and its protection

The drive units are using common DC bus system. All the inverters will be connected to the DC bus. Two hoist motors should use two inverters. The main hoist and Gantry Travel function will employ master slave technology with two inverters to drive separately two AC motors in synchronous speed. Trolley and boom hoisting motors share one set. The shared inverters will be on a first come, first served basis. The main hoist control system will sense the load conditions in the hoisting circuit and automatically provide faster hoisting and lowering speed with lighter loads by varying the frequency with the master switch in full speed hoist or lower position. The degree of motor frequency variation will be inversely proportional to the load. The drives shall have selectors allowing the crane to operate (at least at lower speed) with one of the drives in the effect the other is damaged.

Motors

The main hoist, trolley, boom hoist and gantry traveling motors are squirrel cage type motors. All the motors will be sized based on the actual torque required to operate the crane motions under any operating conditions and will be suitable for operation to meet acceleration and peak torque requirements.

The main motors will be equipped with anti-condensation heaters.

All the main motors will be thermal protected by thermostats to operate alarm/ trip relays in the control panel and will have protection class F. All exterior mounted motors will have at least IP65 enclosures, while motors mounted inside the machinery house shall be at least IP23.

Interlock protection of main hoisting

The electronic cam limit switch and encoder used for main hoisting are of world well known electrical equipment supplier's product. They are installed at the end of motors or drums and have the following functions:

1) Lifting stop at the spreader's maximum lifting height.
2) Slow down before reaching the hoisting up travel end.
3) Slow down before reaching the landside lowering end..
4) Slow down before reaching the seaside lowering end.
5) Lowering stop at landside, the height is adjustable.
6) Stop at seaside lower end, i.e. the lowest position of the spreader.
7) Interlock for sill beam protection.

In addition to above stated safety protections, the main hoisting is provided with other interlock functions:

1) Upper extreme end limit switch of gravity type, which is mounted on the trolley. When the spreader is lifted up and overrides the stop limit switch (cam type is in failure) and hits the counter lever of the gravity type limit switch, which is activated and cuts off control circuit power. This gravity type switch is not activated normally and its activation is referred to as a fault and it is necessary to operate the by-pass push-button to re-start.
2) Interlock between the spreader and main hoist

a. Connection between the spreader and head block has twist lock limit switches. When one of the switches is not activated, the main hoisting is not operative. In this case main hoist may be operated through the by-pass keyed button.

b. When the spreader is at the position of landing, the main hoisting lowering motion cannot be operated. In case of necessary, it can be operated by the by-pass button.

c. The Main hoist is operative with the twist-locks fully disengaged or fully engaged. During lifting of a container, twist-locks cannot be unlocked. In addition the spreader cannot be telescoped during twist-locks' operation.

d. The cable connection between head-block and the spreader is performed through multi-core cable with quick disconnected plug. The plug must be inserted back to the head-block junction box receptacle; otherwise main hoist cannot be operated.

3) Overspeed protection

An overspeed switch is fitted concentrically with the main hoist drum and is set at 115% of the maximum operation speed of main hoist motion. Whenever the switch is activated (i.e. the over-speed fault), the power of control circuit is cut off and the alarm is turned on. For re-starting, it must be reset by pressing the reset button.

4) Overload protection.

The crane is provided with the load cell to sense accurately the lifted load and to display it. The accuracy is not lower than the code required. When the load reaches 100% of rated load, an acoustic alarm is put in action. When the load reaches 110% of rated load, the hoisting will be stopped automatically. Only lowering can be operated.

Interlocks for trolley travelling

The limit switches for the trolley are all securely installed on the trolley girder and encoder is fitted on the motor. All are of non-contacting type proximity switches except overtravel limit switches. They have the following functions:

1) Stop the trolley at seaside and landside extreme end limit (by mechanical lever operated limit switch). The limit switch is activated in case of failure of the end stop limit switch. For recovery, the by-pass button must be pressed.

2) Stop the trolley at seaside and landside travel end and this is trolley normal stop.

3) Slow down check before end is reached (by proximity switch and PLC program), slow down reduce to 15~20% of rated speed.

4) When the operator's access gate is not properly closed, then the trolley cannot be started. During the trolley running, if the gate is opened, the trolley will stop operation.

Gantry traveling interlock

The gantry traveling should be provided with the following interlocks:

1) Wheel brake limit switch. The Crane is provided with storm wheel brake, which is provided with limit switch activated whenever the brake is released and gantry may be operated only when the brake is released.

2) Stowage pin limit switch, which is activated when the stowage pin is engaged, and gantry traveling cannot be operated.

3) When the gantry collision system is active, gantry traveling is not allowed.

4) When the wind speed reached to 18 m/s, the gantry speed will be reduced to slow down speed only. When the wind speed reached to 22 m/s, the gantry will stop operation.

Interlock of the boom hoisting

The boom hoist is a non-operation mechanism and has interlocks and limit switches including:

1) Upper end and lower end stop limit switches;

2) Slow down limit switches before the upper and lower end (cam limit switches);

3) The boom rising up end stop limit switch (mechanical lever operated limit switch), which is activated when it is necessary to lower the boom. At first, the boom is raised up to this stop limit switch and the safety latch is lifted up. Then the boom can be lowered.

4) Safety latch rising end limit switch (proximity switch). The boom can be lowered only if this limit switch is activated until the boom leaves the raising slow down zone. The latch disengagement is accomplished automatically through the computer program.

5) Boom hoist rope slacks limit switch. When the switch is activated, the wire rope slackening is detected and the Boom motion cannot be run.

6) Overspeed protection. When boom hoisting operation speed reaches 115% of rated speed, this switch is activated and emergency stop is in action. For restarting, reset buttons must be pressed.

7) Boom hoisting is interlocked with main hoist and trolley traversing. When the boom is a latching condition, the main hoist and trolley can be running in slow speed with no load.

8) Boom upper extreme end stop limit switch (mechanical lever operated limit switch). That switch is activated in case of the end stop limit switch failure.

Emergency Auxiliary Motor

The crane should be supplied with a back-up set of A.C. power drive for the Main Hoist, Trolley Travel and boom hoisting. In case of the main drive system or main motor failure. The Main Hoist and Boom hoist can use the sprocket and chain to connect between the auxiliary AC motor set with high-speed shaft of gearbox, it's up / down motion control by manual.

For the trolley travel, a fixed type and a quick-connect coupling should be used. The coupling connector uses a manual pusher to connect both two gear coupling (AC motor set and high-speed shaft of the gearbox).

The power supply may be fed from the crane or supply from the shore power.

Panel board and control panel

All the high voltage switchgear, drive panel, panel board, control panels are of integrated protection type with protection grade no less than IP20. All the doors on panels are lockable to ensure personnel safety and good performance of electric system. The high voltage switchgear and high voltage transformer will be located in the machinery. PLC panel and IGBT drive panels should be located in air-conditioned electrical room.

Various special push buttons

The emergency push button location as following:

a) One in the electrical room (on electrical panel);

b) One in the PLC room;

c) Two in the machinery house (near the access door);

d) One at the operator's cab (on operation console);

e) One in the boom control station;

f) One on the trolley platform;

g) One at the Boom tip;

h) One at Back-reach the end of girder;

i) Three on the gantry area, one located at landside and another located at the seaside, one located in checker cabin;

j) One in the Gantry control station;

All the emergency stop switches must be water resistant level not less than IP65.

Boom control station should be mounted on the upper sill beam at seaside, the position of this station should be arranged to clearly see the operation of the whole boom and hatch area. The control "ON" logic must have interlocked with the operator cabin and gantry control station.

Gantry control station should be mounted around landside gantry area.

Alarm system

Protection and alarm devices

The following electrical protections are provided for the crane.

1) Voltage loss protection which is able to automatically turn off the HV main switch in case of power supply is cut off; (10% or can be adjustable)

2) Various motors and powered machinery are provided with short-circuit protection. Motors for every crane movement have over current protection;

3) Neutral position protection. When starting or power is recovered after voltage loss the master controller must be put in the neutral position first then the motor can be energized and started.

4) Overload protection device;

   a. When the load under spreader reaches rated load, indicator light is on in the operator's cab.

   b. When the load under spreader reaches or exceeds 110% of rated load the lifting is stopped immediately and acoustic alarm is given the operator.

5) High voltage cable length protection;

The high voltage cable reel is provided with cable paying out end interlock protection to prevent the high voltage reel cable against over tension and breakage.

Alarm signal device

Alarm devices provided are as the following:

1) Electrical acoustic alarms are fitted on crane legs, one for each side. They are activated in 2 seconds before the gantry motors are rotated.

2) Rotary flashing strobe lamps are fitted at outer side of every leg, one for each and they turned on at the same time as the acoustic alarms.

3) Wind alarms

An anemometer is fitted at an adequate location on the crane to measure the wind velocity. There is an indicator in the operator's cabin. A visual warning is given when wind speed reaches 18m/s and acoustic and visual alarms are given when the wind is reached 22m/s speed.

4) Air obstruction light (LED)

Four (4) air obstruction red lights are installed on the crane, two of them are mounted at 2m above the A-Frame and the other two are located at the boom tip. The air obstruction lights are optically controlled.

Illumination

Illumination power source is separate from the main power circuit. Illumination circuit is divided into several independent sub-circuits. Each of the circuit is provided with short circuit protection. All the outdoor lighting fixtures should waterproof, anti-vibration and anti-corrosive. All the lights shall be of LED technology.

Average illumination levels at various locations are as follows:

1) 30 lux for stairs, ladders, walkways, etc.

2) 100 lux for the machinery house, electrical room, measured at 0.8m above the floor. No twinkle effect at the rotating part. Each control panel is provided with lighting (door controlled) inside;

3) 100 Lux in the operator's cab measured on the control console surface;

4) The lighting intensity under the crane measured at 10 meters from the centerline on either side of the Trolley light will at least be an average 150-lux at 1-meter height above the ground. For all lightings are "ON". There must be not less than 300-lux. The Supplier shall be to design enough light in total under Boom girder, which is of projective type LED light and even in foggy days, all of light should be use waterproof type (not less than IP65) and they will have good effects. In addition, three (3) LED lights will be placed at portal beam level on each side to provide additional lighting at the work area between the legs, two (2) LED lights are located on trolley platform front side and three (3) LED lights are placed at operator cabin platform rear side.

5) One (1) LED light located on the roof of the boom control station to enable operator to view clearly the boom latching process.

6) Emergency lights are provided above each exit door in the machinery house, electrical room and along the way from cabin floor to the operator's cabin.

7) All LED lights control switches should have "ON" indicator lamp on each control panel.

Intercommunication

Telephones used on the crane are installed at the following locations;

1) Operator Cabin;

2) Electrical room;

3) Machinery room;

4) Boom operator station;

5) Boom tip;

6) Boom back reach;

7) A-frame platform;

8) Elevator cabin;

9) Gantry landside, near to gantry control station;

10) Checker's cabin.

Microphone

A microphone shall be mounted in the operator's console and one loud speaker is mounted on the trolley frame to announce the personnel at dock and in ship.

IMPORTANT NOTE:

The candidate shall also take relevant precautions for electromagnetic interference (radars) from incoming vessels.

Auxiliary power supply equipment

Power outlet receptacle

Receptacle socket for maintenance use:

Maintenance socket receptacles 230V, single phase, 50HZ, 32A are provided at following locations:

a. Two in the machinery house;

b. Two in electrical room;

c. One in the Boom control station;

d. One in the computer room;

e. Two at operator's cab;

f. One at the gantry seaside and one at the gantry landside;

g. One at the boom tip and one at the back reach girder;

h. One at the A-frame platform;

i. One on the trolley platform;

j. Two in the checker cabin.

In addition socket outlets will be provided for 400V, 3 phases, 50HZ, 63A are provided at following locations:

a. One at gantry landside;

b. One in the machinery room.

All socket outlets, which are exposed, will be weatherproof type. All single-phase sockets will be fitted with earth leakage protection to avoid accidental electrocution.

Heating equipment

All main motors, panel boards and control panels are provided with anti-condensation heaters to prevent condensation during non-operation period of the Crane.

Wiring

All the cables applied to the crane are suitable for the port crane installations, the ambient temperature, and voltage level. Cross-section area of the conductor will meet the thermal capacity, voltage drop, mechanical strength and impedance requirement in case of single phase short-circuit depending on the circuit applied and components used. Rated voltage of all fix installed low-voltage cables (power and control) are 600/1000VAC. The fix installed cable will be CJV/DA type (XLPE insulated PVC sheathed ship cable). Signal cables used for signal detecting and intercom (such as signal wires of tachometer, load cells, PC communication, load signal transfer, telephone wires etc.) are of shielded cables to ensure that the signal transferring accuracy is not affected externally. Except some of the control and communication wiring, the section of wires will not be less than 1.5mm².

Control cabling at least 10% of spare conductors between panels and junction boxes.

All the wires connecting the limit switches have a certain allowance of length. All multi-conductor cables are provided with permanent identification marks to facilitate the electrician and maintenance personnel to wiring and inspect. The conductors will be identified with wire numbers at both ends with heat-shrinkable sleeves, including spare conductors. Insulation color of grounding conductors will be green and yellow. Where insulation colors are not compatible, colored synthetic tubing or sleeves with a minimum length of 40mm will be used at conductor ends. Other conductors external to the panels will not be color coded.

All the cabling of the crane is designed for safety, reliability, convenience and good appearance and strictly in compliance with IEC standard. Cables will be laid on the cable ladders inside the crane structure (boom, girder, sillbeam, etc.) as much as possible to prevent physical damage. Cables will be easily accessible within the complete length of cables as much as possible.

Indoor cables run (such as in the machinery house, electrical room, boom control cabin and operator's cab) in the cable tray, cable ladder or PVC conduit; Outdoor cables will run in the galvanized steel conduits or cable trays. All cables are secured with plastic cable ties firmly and laid neatly. Vertical cabling must be secured with steel cable ties at an interval of 1.2 m max. Bending radius of the cable is not less than 8 times cable diameter. Bending radius of

the conduit is not less than 6 times conduit external diameter. The cable to the final components (such as limit switches, lightings, socket, auxiliary motors, etc.) will use cable gland if it is applicable.

The cables of different voltage level (high-voltage, low voltage or signaling) are laid and installed separately.

All the cable trays, steel conduits, cable ladders are surface galvanized. The cable occupied space in the cable tray will not be greater than 60% of cross-section of the cable tray. The cable filling capacity of the conduit will not greater than 40% of cross-section of the conduit. All cable outlets are guarded with sleeves. Outdoor metal junction boxes are made of stainless steel (grade 304).

Terminals

Connection terminals of the outgoing lines at the panel board and control panels are installed in a place in the panels where maintenance is easily to be conducted.

All the terminals of the motors, switchgears, controls and panels should be identified in an approved manner.

Terminals of the control panels and in the junction box have the number greater than practically required by 20% as spares.

Conductors of smaller diameters are connected to the terminal board with connectors. Conductors of larger diameters are provided with terminals bolt-secured.

Ground protection and lightning protection

The Crane should have a ground protection system.

The wires used for ground protection must not be provided with switches and fuses. Ground protection is provided independently.

All the electrical equipment, mechanical structure, metal supporters of electric equipment, mechanical structure, panel board and control panels are reliably grounded.

Connection between the earth line and the equipment will be bolt type and provided with anti-loosening and anti-corrosion measures, and the connections should be free of painting. In addition, the neutral point of secondary side of the transformer will be earthed.

Measure for lightning protection

All the electrical equipment should have reliably earthed to protect the equipment against lightning damage. The Crane structure should electrically be connected to the gantry rail properly. The metal flexible cable will span over the structural hinge point additionally.

Application of PLC

The PLC system on the Crane can process all system control signals including driven system. All interlock and logic control functions, except a few hardware interlocks, are performed by PLC. The PLC system has reliable power failure protection.

It receives data from input device (analog signal, sensor switch, limit switch etc.), executes logic judgment determined by the program stored in memory and gives control output signal to the electrical equipment and electrical components.

The PLC's power is supplied from the control transformer that is independent of drive and lighting systems.

The PLC is provided with program and data memory and failure recording device. Memory has larger capacity than the system needs for further expanding. For hoisting, load-measuring device is provided and displayed in the operator's cab.

LCMS and RCMS

One LCMS (local crane management system) shall be supplied, computer and monitor in the PLC room. It builds the project application software on the purposely designed configuration platform. The LCMS should meet the following functions:

(1) Microsoft Window 10;
(2) Display the status of STS;
(3) Details diagnostic the crane fault;
(4) Showing the production data on each crane;
(5) Maintenance schedule assistant;
(6) Event playback function.

The LCMS should be the standard type of electrical system integrator. The messages shown on the LCMS must be the English version.

Each crane should be provided the RCMS (Remote Crane Management System), it is via RF communication, the main PC system located at the Engineering Department Building or other location. The Supplier must provide all software and hardware and coordinate the local frequency of the antenna device. Moreover, the function of RCMS must be same as the LCMS.

Personnel elevator

The crane shall be equipped with outdoor pinion and rack driven elevator with capacity of 4 persons. The elevator shall be approved by Labour Department (Ministry). Telephone and overload alarm are to be provided in the elevator.

There are four (4) elevator landings, at ground level, access to the cable reel, access to the operator's cab and machinery house. The elevator has a safety exit to enable personnel to escape from the elevator car in case of power failure.

Spreader Headblock and Trim, list, skew

Spreader headblock

1) The Headblock consist of steel structure, sheave block. Main hoisting ropes are wound on four (4) sheaves on the headblock through trolley sheaves. Sheave guards are located on the four (4) sheaves to prevent the wire rope from jumping out its groove.
2) The headblock should be able to perform horizontal shifting along the gantry direction.
3) The structure frame designed and constructed with an adequate safety factor without fatigue fracture. Outside surface will be smooth and without discontinuities to prevent snagging on adjacent containers, cell guides or other structure.
4) The spreader is attached to the head-block through twist lock pins.
5) Access ladders to the personnel platform on the head-block are installed on the main frame matched that of spreader.
6) Flared guiding bores are provided at the bottom surface of the headblock at four corners where the spreader is attached to. The flared bores have dimension of approximately 150mm.

Spreader trimming, listing and skewing

1) To meet the container handling requirement the spreader is provided with listing, trimming and skewing adjustment.
2) Trimming range is ±5°, skewing ±5°, and listing ±3° (with loadand without load).
3) These functions will be fulfilled by hydraulic cylinders. Control elements for operation these three movements are provided in the operator's cab.
4) The Anti-Snag protect function should share the same cylinders with TLS system.

Spreader and Cargo beam

Spreader

1) The Spreader is able to handle ISO 20ft, 40ft, 45ft, and twin twenty feet containers.
2) The signal transmission from spreader to crane's PLC/ from crane to the spreader is used the profibus communication.
3) The spreader should have TTDS protect function, an ultrasonic sensor to detect the container (reach to a distance about 6M will be reduced the hoist down speed), and indication lights for Lock/ un-lock/ Landed/ Twin mode.

Cargo beam (Hook spreader)

1) The design of the cargo beam shall connect with the headblock and spreader.
2) The hook shall be able to handle SWL 76 tons capacity rams horn hook, which is fitted to the beam through a trunnion that allows both swings of the hook shank and 360-degree unlimited rotation of the hook. The trunnion will have an anti-friction thrust bearing to support the hook.
3) The cargo hook beam needs to be provided with four lifting lugs of total capacity of 80t at its four corners.
4) Identification of load capacity (under headblock / spreader), self-weight, and lifting lugs' capacity will be clearly marked on the hook beam.

Miscellaneous/ Others

Logos and nameplates

The Supplier shall furnish various metal nameplates to be installed respectively on the gantry frame and other places designated by the buyer. Nameplates will bear the following data;

1) Buyer's name, logo and crane No.;
2) Rated lifting capacity;
3) Manufacturer's name and date of manufacture.

A plate showing crane principal data will be installed at a notable location in the operator's cabin.

Description related to operation and application will be identified adjacent to the operation handle (joystick and push buttons).

Plates with instructions are fitted adjacent to the instruments and indicator lights. All the plates and identifications are in English.

The buyer's logo should meet the buyer requirement, the details information such as the font, size, color, location, etc., the Buyer will submit to the Supplier during the crane design review meeting.

Limit switches

Main hoist, trolley, boom hoist and anti-collision device are to be provided with limit switches.

Standard limit switches shall be used for outdoor use, which is in compliance with IEC and with protection of IP55 (water-tight and dust-tight). Proximity switches are used where shock load in imposed frequently.

Functions of these limit switches are described in detail in relevant sections.

Lubrication system

1) All gear reducers are lubricated by oil bath.

2) Sheave anti-friction bearings: grease lubricated. Where two and more sheaves are installed on the same shaft respective grease filling hole will be provided for each bearing to ensure proper lubrication.

3) Hinge pins: grease lubricated. Lubrication points located on top or upper portion of the crane may be led to lower position with steel tubes.

4) Wire rope: according to the buyer's practice (i.e. acceptable extent of pollution on the crane) either oil or grease may be selected and lubricant filling means will be supplied accordingly.

All the rotating parts will effectively be lubricated. The lubrication points located at higher position will be lubricated in concentration mode, i.e. many lubrication points are concentrated to a part with obvious identification. Adequate spaces are provided for all lubrication points for easy to operation of the maintenance staff.

Special tools accompanied with the crane

The candidate shall propose any relevant special tools and equipment required of which will allow the maintenance team to fully implement maintenance and repair tasks on the aforementioned crane.

The cost of tools and any other relative expenses involved shall be fully borne by the candidate.

Spare parts accompanied with the crane

The candidate shall propose and offer the following spare parts within his/her offer:

Mechanical spare parts

1) One (1) spare (twin lift) spreader of 65 tons SWL.
2) One (1) over height device directly connectable to the above mentioned spreader.
3) Three (3) spreader trailers for the transfer of the above mentioned spreaders.
4) One (1) spare gearbox reducer of each of the following main functions (Hoist, Trolley, Gantry).
5) Two (2) spare wire rope sheaves for each of the main functions.
6) One (1) complete braking unit for each of the main functions (Hoist, Trolley, Gantry and Boom).
7) Two (2) spare driving gantry wheel and two (2) driven gantry including shafts.
8) One (1) spare trolley wheel and one (1) trolley wheel shaft fully assembled.
9) One (1) spare side roller for Trolley and one (1) side roller wheel shaft fully assembled.
10) One (1) spare catenary wheel and one (1) catenary wheel shaft fully assembled.
11) One (1) spare set of trolley connection point short rails.

Electrical spare parts

1) One spare (1) inverter for each of the main functions (Hoist, Trolley, Gantry and Boom).
2) Two (2) spare motors for the gantry travel function.
3) Two spare (2) joysticks for each main function
4) Four (4) spare load cells for the load sensing device of the crane.
5) One (1) spare magnetic coupling for the high voltage cable reeling device.
6) One (1) spare magnetic coupling for the spreader cable reeling device.
7) One (1) laptop with programs installed for the PLC, Control builder, CMS, Drive window for inverters and for the Spreader.

The cost of spare parts and any other relative expenses involved shall be fully borne by the candidate.

Documentation & Manuals

The awarded supplier will be obliged to submit the below documentation to PPA upon the delivery of the equipment (in one CD and one hardcopy for the delivered Crane):

1) Operators' manual (in English & Greek).
2) Maintenance manuals of entire crane (in English & Greek).
3) Maintenance manuals of other OEM branded parts if not included in the maintenance manual (in English & Greek) if not included in entire cranes manuals.
4) Structural inspection manual (in English & Greek).
5) Quality assurance data (raw material certificates, CE of other OEM branded, inspections reports: NDT, dimensional inspection).
6) Mechanical studies (static, dynamic, fatigue) and electromechanical.
7) Mechanical Construction drawings in electronic drawing fully accessible files
8) Electrical wiring and schematic drawings in electronic format, fully accessible and tracking ready mode.
9) Spare parts books including relevant part numbers.
10) PLC software back-up program.
11) Certification in accordance with EU DIRECTIVE 2006/42/EC.

Training

On-site training shall be provided by the candidate within the offer of supply of the mentioned jib cranes. Indicatively the training program should be arranged in three (3) separate groups as follows:

1) Operator training – Three (3) days full training of operators, first day theoretical and second and third day's practical training on the crane.
2) Mechanical technician training – Four (4) days full training of technicians, two (2) days theoretical and two (2) days practical training on the crane.
3) Electrical technician training – Four (4) days full training of technicians, two (2) days theoretical and two (2) days practical training on the crane.

The candidate shall be obliged to propose and arrange the final dates, times and content of the final training program schedule with PPA prior to the arrival of the crane.

The training will be accepted by PPA upon signature of the relevant 'acceptance of training' form of which shall be created by the candidate and signed by both the candidate and the trainees.

The cost of training and any other relative expenses involved shall be fully borne by the candidate.

Technical folder

The technical folder of which shall be delivered to PPA prior to the acceptance of the Crane shall comprise of a minimum of the following:

- detailed description of the machinery,
- detailed drawings of the Crane including mechanical / electrical / hydraulic / pneumatic schematic and constructional information.
- Studies for static, dynamic and fatigue of the crane.

- the documentation on risk assessment demonstrating the procedure followed, including:
  (i) a list of the essential health and safety requirements which apply to the machinery,
  (ii) the description of the protective measures implemented to eliminate identified

hazards or to reduce risks and, when appropriate, the indication of the residual risks associated with the machinery,

- the standards and other technical specifications used, indicating the essential health and safety requirements covered by these standards,
- any technical and testing reports giving the results of the tests carried out either by the manufacturer or his authorized representative,
- a copy of the operating and maintenance instructions of the Crane, including all documents also mentioned in Article 8.3 and
- the applicable EC declaration of conformity of the Crane including any other equipment or machinery incorporated into the Crane.

Quality Assurance

The Contractor must operate and propose an approved quality system for the design, manufacture, final inspection and testing of the proposed equipment.

The quality system must ensure conformity of the machinery within the provisions of Directive 2006/42/EC and welding procedures shall come up to the requirements of EN 1090 in conjunction with DIN 13001 or equivalent. All the elements, requirements and provisions adopted by the manufacturer/candidate must be documented in a systematic and orderly manner, in the form of measures, procedures and written instructions. The documentation on the quality system must permit a uniform interpretation of the procedural and quality measures, such as quality programs, plans, manuals and records.

It must contain, in particular, an adequate description of:

- the quality objectives, the organizational structure, and the responsibilities and powers of the management with regard to the design and quality of the machinery,
- the technical design specifications, including standards that will be applied, the means that will be used to ensure that the essential health and safety requirements.
- the design inspection and design verification techniques, processes and systematic actions that will be used when designing the machinery,
- the corresponding manufacturing, quality control and quality assurance techniques, processes and systematic actions that will be used,
- the inspections and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out,

- the quality records, such as inspection reports and test data, calibration data, and reports on the qualifications of the personnel concerned,
- the means of monitoring the achievement of the required design and quality of the machinery, as well as the effective operation of the quality system.
- The installation / erection plan of the equipment at PPA according to FEM (Fédération Européenne de la Manutention) 1.001 3rd Edition and relevant applicable standards.

Approval Procedure

The candidate of whom the Tender shall be awarded to will also be obliged within the offer to provide a list of internationally recognised audit control bodies (third party)stating at least three (3) within the European Union for the task of supervision, inspection and certification of the design, construction, assembly and testing phases of the entire project of which PPA S.A. will select one (1) of the bodies. (Further duties and responsibilities of the controlling body may be read within this document)

The candidate of whom the Tender shall be awarded to will be obliged to create at minimum the initial mechanical, electrical design drawings, studies and quality plan for pre-inspection and evaluation.

Indicative design review drawings shall be as follows:

1) Crane general arrangement;
2) Trolley general arrangement;
3) General layout of machinery house;
4) General layout of the operator's cab;
5) Gantry structure;
6) Girder structure;
7) Boom structure;
8) Boom hinge structure;
9) Head block assembly;
10) Spreader assembly;

11) Cargo hook beam assembly (if it's required);

12) Layout of boom operation cabin;

13) Main hoisting assembly;

14) Trolley traversing assembly;

15) Gantry traveling assembly;

16) Boom hoisting assembly;

17) Main hoist rope reeving;

18) Boom hoisting wire rope reeving;

19) Stowage device assembly;

20) Cable reel assembly;

21) Stairs, ladders, walkways and platforms arrangement;

22) Elevator general arrangement (if Supplier's product is used);

23) Shipment procedure of fully erected crane;

24) Spreader trimming, listing and skewing device arrangement:

25) Operator control station layout drawing;

26) Power supply single line diagram.

During the pre-inspection and evaluation phase, PPA S.A. shall reserve the right to propose minor changes or additions to the initial design drawings, where deemed appropriate by PPA S.A.

The Contractor shall not have the right to directly cancel or dismiss any proposals or changes unless they are not feasibly possible according to the proposed design standards. For avoidance of conflict, any proposals or changes requested by PPA that cannot be implemented must be adequately proven by means of mechanical study or proof according to the design standards by the Contractor.

The initial design drawings shall include as a minimum, the entire metallic frame structure and electrical system in detailed separate drawings of which shall contain all the sections and areas of the proposed crane.

When the final details of initial design are agreed between PPA and the Contractor, only then the Contractor will send the final design, studies, drawings and quality assurance and quality control plans of which will be pre-approved by the designer of the Contractor to PPA who will then forward to the audit control body (third party)in order to certify the relevant studies, drawings and quality plans.
Studies, designs and drawings will be such as but not limited to: static, dynamic, fatigue and beam model studies, electromechanical studies (main motors calculation, main brakes and couplings calculation, wire rope calculation, bumper calculation, storm brake calculation, wheel load and stability calculation) cooling, heating, lighting studies, etc. as well as mechanical construction and electrical layout and schematic drawings, etc.

Only once the final approval is provided by the audit control body (third party)and the Contractor notified in writing by PPA, can the Contractor commence construction works of the crane. In the case the audit control body (third party)provides remarks or non-conformities, PPA S.A. will inform the Contractor in writing, who will be obliged to revise his/her studies, drawings and plans at no extra cost and to thereafter re-submit to PPA S.A. for re-approval by the audit control body.
In either case, the Contractor shall be fully responsible for the compliance of the studies, design and construction of the crane according to the applicable standards.

Surveillance under the responsibility of the audit control body
The purpose of surveillance under the responsibility of the audit control body (third party)is to make sure that the Contractor duly fulfils all the obligations arising from the Tender, Offer and Contract that will be signed with PPA S.A.

The Contractor shall also for inspection purposes, allow the audit control body (third party)access to the places of design, manufacture, inspection, testing and storage, and shall provide it with all necessary information, such as but not limited to:

- the documentation concerning the quality system and electro-mechanical drawings and studies,
- the quality records provided for in that part of the quality system concerned with design, such as the results of analyses, calculations, tests, etc.,
- the quality records provided for in that part of the quality system concerned with

manufacture, such as material certification, inspection reports and test data, calibration data, reports on the qualifications of the personnel concerned, etc.

- Any other requested information by the audit control body.

Moreover, the audit control body (third party)may pay the Contractor unannounced visits. The need for these additional visits and their frequency will be determined on the basis of a visit monitoring system managed by the audit control body.

The audit control body (third party)will also supervise and report on the entire construction and testing process of which shall entail the following according to the technical and quality plan of the Contractor:

1) The design and approval phase,
2) The manufacturing phase,
3) The assembly phase,
4) The erection phase,
5) The testing as described in the latest FEM 1.001 3rd edition standards,
6) Compliance of the crane manufacture to the applicable standards,
7) Compliance of the Contractor throughout the duration of the agreed contract.

The audit control body (third party)shall have the right to halt or stop any works if it deems that the works are not performed in a way stated in the Contractor's specification or quality plan and reserves the right to request revision and correctional works until they are deemed satisfactory.

IMPORTANT NOTE:

In cases and the event of multiple non-conformities by the Supplier of which require re-evaluation, inspection and study of the audit control body, PPA S.A. will not be liable for any extra charges. If multiple non-conformities are found, PPA S.A. will notify the Supplier in writing to rectify within three (3) working days.

Supervision on behalf of PPA S.A

Supervision of assembly and manufacturing will be done by the supervisors appointed by PPA S.A., the indications of which are obligatory for the contractor to comply with, independently and in close cooperation with the audit control body.

The contractor is required to fully cover the costs of two (2) PPA S.A. engineers (one a Mechanical and one an Electrical) throughout the duration of the assembly period. The costs include (6) sets of round-trip air tickets from Greece, local transportation in the Contractors country, office facilities, hotel accommodation and meals and any other relevant costs.

Regarding the construction, PPA S.A. supervisors will receive the certificates from the audit control body (third party)with which it is in constant communication on progress, development of business, and construction. If necessary PPA S.A. may go to the contractors manufacture factory (at the expense of contractor), for reasons if inspection and may suggest additional tests of which the cost will be borne by the contractor.

Commissioning, testing and acceptance on the buyer's site

The Supplier shall have the responsibility for all the risk and cost of shipment, insurance, unloading, and connection crane cable to HV feeding point and testing until a provisional certificate of acceptance is issued by the Supplier.

The Supplier shall design related parts in accordance with the given structure and dimensions of the pier for the successful operation of the crane.

PPA S.A. will supply pilot service into the buyer’s harbor and towboat and berthing free of charge.

Various tests of the crane specified in the tender documents will be conducted at the Supplier’s terminal before shipment. The crane will be delivered to the buyer’s terminal as fully erected. In 3 months before shipment the Supplier shall:

1) Notify predicted ship schedule and relevant matters;
2) Provide shipment and erection procedure of the crane;
3) Provide Test program and detailed field test and test record forms.

The following data will be submitted before field testing and commissioning:

1) Test reports and qualification certificates of various materials used for the crane;

2) Test reports and qualification certificates of purchased mechanical and electrical equipment;

3) Test reports and qualification certificates of main load bearing elements such as twistlocks, high-strength bolts, wire rope fittings etc.;

4) Qualification certificates of welds;

5) Qualification reports of assembly quality;

6) Painting qualification certificates.

Appearance inspection

Visual inspection includes conformity of the following items with the technical specifications and provisions. These items are: every main crane movement mechanism electrical equipment safety devices, brakes, control valves, lighting and inter-communication system; structural members and connections, stairs and ladders, walkways, operator's cab and platforms; all the protection devices; cargo hook beam, container spreader, fittings and connections; wire rope and its fittings for secure; sheave block shafts and fasteners, connection plate system and trail parts.

Visual inspection shall also include the inspection of whether all necessary certificates have been submitted and examined; the appearance acceptance of the machine must meet the following requirements.

Crane visual inspection may be accepted if the following attached:

1) Correct installation position and complete with all necessary parts;

2) Structure without any deflection and/or damage;

3) Painting meets specifications requirement with uniform color and acceptable durability;

4) Secure installation of all devices and standardization;

5) Piping arranged neatly;

6) Without any external oil leakage;

7) All identification marks are clearly visible.

High-tension insulation test

The buyer's electrical Power Administration Department will perform high-tension insulation tests. This should be arranged by the buyer before the cranes arrive at the buyer's site. And it should be executed by the buyer immediately after the cranes arrive at the buyer's site.

Crane performance Tests

Static load test

The purpose of static load test is to examine the load bearing capability of the crane and its structural members and components. The test is considered successful if the test result shows that there is not any crack, permanent deformation, painting peeling off and/or any damage that affect the crane performance and safety, not any loosening or damage at joints and connection is found after test.

1) Before static test the trolley is traversed along full length of its rail to and for several times with 0.7P (P is rated load under spreader) load and at 0.75V (V is rated speed of trolley traversing). After the load is removed position the trolley at several points mentioned below to determine measuring base points:
   a. At max. outreach measured from seaside rail centerline;
   b. At max. backreach from landside rail center line.
2) Position the trolley in turn at the above said two points and add gradually the load from 0.75P up to 1.25P without any shock or impact. The load in lifted to 100~200mm above ground and is hold for 10 minutes.

Dynamic load test

The purpose of the dynamic load test is to verify the crane operation and performance as well as capability of every movement and brakes.

The test will be considered successful if no permanent deformation of structure, no abnormal activation of protection devices, no loosening or damage at joints and connections found and all electrical switches are activated normally after the test. During test the crane will be operated in accordance with normal operation procedure and at the speed, acceleration and deceleration adjusted within normal operation range.

1) Each motion operated individually

Main hoisting is tested with rated load P and load of 1.1P respectively at the above stated points a., b, and c. The load is lifted and lowered and repeated for 3 times and relevant data will be recorded. Then the trolley traversing is tested, and record measured speed and other related parameters.

2) Simultaneous operation test

Main hoisting and trolley traversing are simultaneously operated with rated load P.

3) Boom raising and lowering tests

Measured crane operation cycle time. The crane operation cycle will be performed in the specified load handling paths. The measured time for each path will be filled in the table chart.

Crane durable operation test (acceptance test)

The purpose of this test is to examine the motor temperature rise and operating current, reliability of every mechanism and component continuous operation, measure noise level at the same time.

During the crane trial run are two twenty food containers and the weighed 100% of rated load is picked up at the end of backreach. Then the load is lifted and the trolley traverses to the boom end and the load lifted to 3m away from the maximum lift. Lower the spreader to close to the water level and stop for 30 sec. Then return the load to its original position. The spreader function of twin memory at landside and seaside should be included during above operation. Every 6 hours, the gantry travels should running 100m and returns to original position (if possible). After the crane travelling 100m and returning back repeat the above operation and the total time of the test is 12 hours. During these 12 hours, the boom hoisting is operated three times. As per international practice if downtime of the crane within 12 hours test less than 0.5 hour the test is acceptable. Otherwise, repeat the test again.

Acceptance report

After the above stated tests have all been completed an acceptance report will be prepared the results of the tests and conclusion will be listed. The report will show the tested crane performance, test date, test place and the witness(es)' name.

The reported will be prepared by Supplier and the buyer's representatives.

Before the acceptances report is prepared, it is the Supplier's responsibility for safe-keeping the cranes.

Any defect occur during the testing in buyer's site should be repaired by the Suppliers at its own cost, unless it is found to be the fault of buyer.

Acceptance

The acceptance is divided into two stages: Ex-works Acceptance (carried out in Supplier's facilities before loading the cranes onto the ship), and Site Acceptance (carried out at the Buyer's terminal).

The acceptance of the cranes is performed per the quality standards and technical specifications stipulated in this document. Site acceptance will be carried out per the Test Program agreed by both parties and as stipulated in this document.

The entire process of acceptance shall be closely related to the contract signing, and design reviewing, etc. The Buyer shall send his representative(s) to participate in the entire process, especially the Ex-works Acceptance carried out on Supplier's factory before loading the cranes onto the ship.

Test Program for Acceptance

Supplier will furnish Test Program for Acceptance to the Buyer eight weeks prior to Site Acceptance. The first draft of test program will be the documents used in former similar projects, which are proven to be practical, scientific and feasible. The Buyer can raise comments for amending, and after negotiation between both parties (all costs for the Acceptance shall be fully borne by the candidate), the final Test Procedure for Acceptance will be formed. Following points are agreed by both parties:

1) Time spent on continuous operation on crane without failures will be between twelve (12) hours;
2) In regard to any kind of reliability test, failures which can be resolved within five minutes cannot be added into break down time. But if the same fault occurs ten times or more, it is unacceptable, the test must be stopped until the fault is rectified and re-start twelve hours test;
3) In regard to over load test, static load should be 140% of rated load, and dynamic load should be 120% of rated load;
4) Full-load free drop emergency stops test cannot be carried for main hoist high speed brake. It may reduce the service life. The buyer can witness the test on testing desk of Supplier if it is required by the Buyer.

5) In regard to new requirements exceeding above basic principle, the Buyer should discuss with Supplier to resolve. Otherwise it is regarded as accepted by the Buyer.

Ex-works Acceptance

The Ex-works Acceptance will be carried out on Supplier's factory after crane erection and commissioning. Supplier will give notice eight weeks in advance for such acceptance. The Buyer or the representative(s) will be invited to participate in the Ex-works Acceptance.

The Buyer will send his representative(s) to participate in the Ex-works Acceptance. The Ex-works Acceptance will focus on:

1) Geometric parameters, static and empty load operation parameters, crane empty load test (or full load test according to the possibility);
2) Technical performance parameters;
3) Appearance quality;
4) Noises, vibration and stability of light load operation,
5) Special requirements raised by the Buyer.

Supplier will provide the representative(s) of the Buyer with the acceptance program and all facilities (including the supervision tools, etc.) required by the Ex-works Acceptance and the Site Acceptance.

The Buyer shall present a Punch-List according to the specifications stipulated in this document at the time of Ex-works Acceptance to allow Supplier to solve the Punch-List items one week before shipment departure date. For any Punch-List items which have been modifying per the Buyer's comments and accepted by the Buyer's representative(s) before loading the cranes onto the ship

Site Acceptance

The Supplier shall be responsible for the commissioning and test runs carried out on the Equipment. The official test consists of function test, durability test and load test. The test runs program shall be in accordance with the Acceptance Test program.

The Supplier shall be responsible to provide all testing and make the arrangements for carrying out the test runs.

Upon arrival of the cranes at the Buyer's terminal, Supplier will restore the areas affected by sea transportation. Site acceptance will be done per the acceptance program stipulated in this document after the cranes are powered. Apart from the dynamic data and the parameters when fully loaded to be inspected, other static specifications which have been inspected in Ex-works Acceptance will not be re-inspected. If need be, the inspection will be carried out after Site Acceptance (not influencing the Site Acceptance). The Supplier shall ready all official CE certificate documents to buyer (Crane, elevator, service crane etc).

Site Acceptance should be carried out per the Test Program as agreed by both par-ties with the local surveyor (defined in this document). The site acceptance will focus on the conformity of the cranes in technical performance parameters to the specifications. After Succeeding in the tests listed in Test Program, the Supplier shall provide all load test certificates to the buyer (It issue by the local survey company).

During the acceptance, minor Punch-List items which will not influence the operation of the cranes are allowed. Supplier is responsible to solve the remained items as soon as possible during the stipulated period (the period shall be discussed and agreed by two parties).
When the Equipment has met all the requirements stipulated in this specifications and is fit for operation, the Supplier shall issue a Certificate of Fitness to the Buyer. Upon receipt of the Certificate of Fitness, the Buyer shall appoint Buyer's representative(s), and the representative(s) shall join the acceptance tests, for which the Supplier shall be further responsible to carry out. The acceptance test shall be carried out not later than seven (7) days after the date the Certificate of Fitness is received by the Buyer. The Acceptance report has to be signed by Buyer and Supplier together. In case that the Buyer's representative(s) should unreasonably withhold his attendance and witness at the Acceptance Test (test runs), the Acceptance Test shall be carried out by the Supplier himself, and the test results and records shall be accepted by the Buyer as if the Buyer had attended. Buyer reserve the right to reject the Acceptance if the test result is not up to the agreed standard and standard requirement as stated in this document. Once the Acceptance report is accepted and signed by both parties, the Equipment is deemed to be accepted ("Acceptance").
The Supplier shall provide all necessary instruments, which should be mutually agreed upon by both parties, and all supplies like lubricants, hydraulic oils, etc. for tests.

During the test, should one or several items fail in meeting the stipulated requirements, the Supplier shall take necessary measures for the second time tests and bear the costs incurred thereafter.

The Supplier shall submit to Buyer three (3) copies of all testing reports, technical documents together with complete sets of testing items, results and condition of the equipment in line with the requirements stipulated in this Technical Documentation.

It is agreed that, if a sudden unfavorable change in the weather should occur during the Acceptance Test, the Acceptance Test shall be discontinued and the date shall be postponed until the first favorable day next following. Any delay in the Acceptance Test caused by unfavorable weather conditions shall be understood to be a permissible delay.

As-built drawings and final technical documents

At the time when the crane is delivered Supplier shall submit to the buyer 3 (three) sets of drawings and documents and data required for warranty together with three (3) sets of CD-ROMs.

Drawings

1) Complete electrical circuit diagram;

2) As-built drawings of crane structural, mechanical parts and electrical for maintenance and repair use. These will be in more detail than the drawings for review.

Technical documents

1) *Crane Instructions:*

   a. General arrangement scheme;

   b. Performance data;

   c. Detailed description of mechanisms and structure;

   d. Detailed description of electrical controls;

   e. Description of hydraulic system;

2) *Operation Manual:*

   a. Operator's duty;

   b. Operation method and sequence;

   c. Cautions for safe operation;

3) *Maintenance Manual:*

   a. Schedule and task of regular maintenance;

b. Structure inspection manual;

c. Steps of assembly and disassembly of major components and procedure of wire rope replacement;

d. Installation procedure of main mechanisms;

e. Adjustment method and data;

f. Points for attention in maintenance work;

g. Table of trouble shooting;

h. Lubrication method;

i. Lubricant (oil) specification, index and limit for replacement;

j. Lubricant (oil) type used for crane and its manufacturer.

4) Manual for the buy-out mechanical and electrical equipment, including seals, bearings, high-strength bolts, bolts of large diameter, special bolts, wire ropes, cables, carbon brushes, brush holders and other components size, quantity, location of application, performance parameters etc.

5) Manual for quickly worn-out parts and spare parts, including name, size, quantity, material, special requirement and shop drawings of the parts.

6) Operation and maintenance manuals for electrical software and hardware.

MAIN PARTICULARS

Technical Description	**Minimum Requirement**
Types of cargo for handling	ISO containers of 20'/40'/45'
Type of spreader	Twin 20' telescopic type (65 ton SWL)
Gantry Gauge from centre of each parallel rail (100mm WS deviation)	30.48 metres (+/-7mm)
Clearance between gantry legs:	≥ 18 metres
Vertical clearance height under portal beam:	≥ 14 metres
Distance between buffers of gantry frame (Length of gantry system)	≤ 30 metres
Gantry rail type	A120
Maximum wheel force (Per wheel)	≤ 70 tons
Elevator loading capacity	≥ Four (4) persons or 350 kg
Steel Structure weight	To be stated within the offer in tones

Climate conditions	
Minimum temperature	≤ -5° C
Maximum temperature	≥ +45° C
Maximum wind speed (crane in service)	≥ 20 m/sec
Maximum wind speed (crane out of service)	≥ 40 m/sec
Maximum relative humidity	≥ 95%

OPERATIONAL DATA

Technical Description	**Minimum Requirement**

Main Hoisting Data	
Lifting Capacity (With spreader)	65 tons at maximum outreach
Lifting Capacity (With hook)	75 tons at maximum outreach
Hoisting height (From level of gantry rail)	46 metres
Lowering height (From level of gantry rail)	17 metres

Operating range of Trolley Travel system	
Outreach (Front side)	60 metres
Backreach (Back side)	20 metres

Performing speeds	
With Maximum Load (Main Hoist)	90 metres/minute

With Minimum Load (Main Hoist)	180 metres/minute
Maximum Trolley Travel speed	240 metres/minute
Maximum Gantry Travelling speed	45 metres/minute
Minimum Boom Hoisting speed	≤ 6 minutes per cycle
Trim motion (of spreader)	± 5 degree
List motion (of spreader)	± 3 degree
Skew motion (of spreader	± 5 degree

CALCULATION CRITERIA AND CLASSIFICATION GROUPS

Technical Description	**Minimum Requirement**
Group classification of the metallic structure in accordance with latest FEM 1.001	
Class of use	U8
Spectrum class	Q3
Machine group	A8
Group classification of Main Hoist mechanism in accordance with latest FEM 1.001	
Class of use	T8
Spectrum class	L3
Machine group	M8
Group classification of Trolley Travel mechanism in accordance with latest FEM 1.001	
Class of use	T8
Spectrum class	L3
Machine group	M8
Group classification of Boom Hoist mechanism in accordance with latest FEM 1.001	
Class of use	T5
Spectrum class	L3
Machine group	M6
Group classification of Gantry Travel mechanism in accordance with latest FEM 1.001	
Class of use	T5
Spectrum class	L3
Machine group	M6
Calculations and design criteria	
Mechanical calculation	According to FEM 1.001 latest edition / DIN EN13001

Electrical design	According to latest DIN, IEC and VDE rules and regulation
Wire ropes	According to ISO 4308

ELECTRICAL DATA

Technical Description	**Requirement**
Main input power supply	3 phase (20000V) AC
Converters	3 phase (500V) AC
Inverters (Low harmonic)	3 phase (400V) AC
Motors	3 phase (400V) AC
Auxiliary supply	3 phase (400V) AC
Control supply	220V AC
Lighting (LED technology - ≥ IP 65 rating)	220V AC
Electrical system frequency	50 Hertz (Hz)
Auxiliary voltage shore supply plug	3 phase, 4 wire, 63 A
Cable reel and flexible cable with a single mode optical fiber cable for a travelling length of:	370 metres

STEEL SURFACE TREATMENT AND PAINTING

Technical Description	**Requirement**
The surfaces are prepared to very thorough blast cleaning grade Sa 2.5 according to ISO standard ISO8501-1:2007 and certified according to EN ISO 12944-2 C5-M. **(**Coat protection should be guaranteed for a minimum of ten (10) years.	
Painting of exterior steel construction surfaces:	
Primer coat, zinc epoxy primer	50 ~ 60μm
Intermediate coat, epoxy primer	100 ~ 130 μm
Finish coat, polyurethane finish	60 μm
Total dry film, DFT	≥ 210 μm (nominal)
Painting of interior steel construction surfaces	
Primer coat, epoxy primer	50 ~ 60 μm
Finish coat, epoxy finish paint	70 ~ 80 μm
Total dry film, DFT	≥ 120 μm (nominal)
External walkways, stairways, platforms and ladders	Galvanizing thickness ≥ 80 μm (+/- 10%)

PREFEERED VENDOR LIST

Mechanical

No.	Item	Manufacturer	Remarks
1	Steel materials for structure	According to manufacturer's standard	Candidate to propose material type and the total weight.
2	Spreader	OEM / RAM	
3	Gear reducers for main drive	OEM / SEW/ Flender	
4	High speed brakes for main drive	OEM / Bubenzer / Sibre	
5	Wire rope drums for main drive	OEM	Or any other proposed, subject to approval of the buyer.
6	Wire ropes	Vornbaumen / Teufelberger / Casar / Diepa	
7	Coupling for wire drum and motor	OEM / Bubenzer / Sibre	
8	Bearings	FAG / SKF/ INA	-MH/ TT/ BH gear box -Trolley wheel -Main rope sheave -Wire drum
9	All the other bearings	OEM	Or any other proposed, subject to approval of the buyer.
10	Traveling Wheel	OEM	Or any other proposed, subject to approval of the buyer.
11	Operator cabin	OEM	Or any other proposed, subject to approval of the buyer.
12	Operator seat	OEM / Merford Ergoseat-S 009	Preferred hanging type
13	HV cable reel system	OEM / Cavotec / Wampfler	
14	Spreader cable reel system	OEM / Cavotec / Wampfler	
15	Festoon system	OEM / Conductix / Wampfler	
16	Elevator	OEM / Alimak	
17	Service crane	OEM / Demag	
18	MH / BH emergency hydraulic brake	OEM / Bubenzer / Sibre	
19	Gantry wheel brake	OEM / Bubenzer / Sibre	

20	Buffers	OEM / OLEM	
21	Hydraulic system	Parker / Vickers / Rexroth	
22	Paint	OEM / COSCO / PPG/ HEMPEL, JOTUN	

Electrical

No.	Item	Manufacture	Remarks
1	Electrical control and PLC system	YASKAWA/ ABB/ SIEMENS	
2	Main motors (MH,TT, GT and BH)	YASKAWA/ ABB/ SIEMENS	
3	AC Drive system (MH,TT, GT and BH)	YASKAWA/ ABB/ SIEMENS	
4	Control panel / console	OEM/ Kawatoyo	
5	Switch-boards	OEM/Kawatoyo	
6	HV Power cable	PRYSMAIN / TRATOS	
7	Spreader communication module	IFM / SIEMENS	
8	Spreader cable	PRYSMAIN / TRATOS	
10	Cam switch	Stromag	Or any other proposed, subject to approval of the buyer.
11	Pulse encoder / Over-speed switch	Hubner Berlin/ BAUMER	
12	Festoon cable	PRYSMAIN / TRATOS	
13	Main Joystick (MH/GT & Trolley)	OEM / Spohn + Burkhardt	
14	LED Floodlights	CLC/ PHILIPS/ NANHUA	
15	LED walkway / Machine room/ Electrical room/	CLC/ PHILIPS/	

	operation cabin light	NANHUA	
16	Telecom system	OEM	Or any other proposed, subject to approval of the buyer.
17	LCMS / RCMS	OEM/ Kawatoyo	
18	Air conditioner (electrical room)	Daikin-split cassette type, ceiling mounted (inverter) / MITSUBISHI	
19	Air conditioner (operator cabin and checker room)	Daikin-split wall mounted type (inverter) / MITSUBISHI	
20	HV switch gear	ABB / SIEMENS / Schneider Electric	
21	HV transformer	ABB / SIEMENS / Schneider Electric	
22	Load cell	BROSA / Tessis/ Sensy	

ANNEX F: FINANCIAL PROPOSAL SUBMISSION FORMS

_____ [Date]

To:

_____ _____

[Name and address of PPA]
Ladies/Gentlemen:
We, the undersigned, offer [……] in accordance with your Call of Tender entitled "*CALL OF TENDER FOR THE AWARD OF PROCUREMENT FOR THE SUPPLY, INSTALLATION, COMMISSIONING AND TESTING OF ONE (1) SUPER POST PANAMAX TYPE SHIP TO SHORE QUAY CRANE FOR CONTAINER TERMINAL USE*" dated (_____) [Date] and our Offer. Our attached Financial Proposal is for the sum of Euros (_____)
[Amount in words and figures] and is our full and final offer that does not include VAT.

Item #	Description / Category	Unit Cost (€) (without VAT)	Quantity	Total Cost (€) (without VAT)	Warranty Provided (in years)
Cost of STS Crane					
Cost of Spare Parts					
Cost of Special Tools/Other equipment					
Cost of testing, training and certification expenses					
Cost of insurance, transportation and any other expenses					
GRAND TOTAL:					

Our Offer shall be valid and binding (without any terms) vis-à-vis PPA for four (4) months after the expiry of submission date of the offers, plus two (2) months if PPA SA requests so according to the Tender terms.
We understand you are not bound to accept our Proposal and we are not entitled to any compensation in case of non-acceptance or withdrawal of our proposal.

Yours sincerely,
_____ [Authorized Signature]
_____ [Name and Title of Signatory]:
_____ [Name of Firm]
_____ [Address]