GENERAL INVESTMENT DIVISION
PROCUREMENT DEPARTMENT

Thessaloniki, 5/12/ 2019
Ref.No. : 7831

CALL FOR TENDER (037/2019)
For the repair and maintenance of AC & DC Motors of ThPA SA

A' PART – GENERAL TERMS

ARTICLE 1. Description of the Material & Financial object of the Contract

1.1. Contract Object

The object of this Tender regards:

A) The **repair** (reconstruction of a stator windings or/and rotor) for the AC and DC electric motors of Th.P.A. SA and

B) The preventive maintenance of the aforementioned electric motors.

Interested parties can submit their offers for the repair of the motors or maintenance or both.

1.2. Duration

The Contractor shall provide its services for a period of 18 months.

1.3. Award Criterion

The contract will be awarded on the criterion of the lowest price. **To identify the lowest price, the offered prices for: (Ai) the repair of stator, (Aii) the repair of rotor and (Bi) maintenance, shall be individually evaluated per type of service and per motor.**

ARTICLE 2. Participation Right – Qualitative Selection Criteria

2.1. Entitled to participate

Participation to the procedure for the conclusion of this contract is open to natural or legal entities and, in case of associations of economic entities, the members thereof, exercising a professional activity which is relevant to the subject of the services to be rendered.

2.2. Technical and Professional Capacity

- It is required from the bidders to possess of the appropriate infrastructure and equipment for the performance of the works in question, as such are cited in detail in Part B' of this call.
- Quality Assurance Certificate ISO 9001:2015, for repair and maintenance of motors.
- Two-year experience in similar works.

ARTICLE 3. Description of Procedure

3.1. Interested parties can submit their offers to the Procurement Department of ThPA SA by **e-mail** to e-mail address cathanasiou@thpa.gr, carbon copy to ptheologou@thpa.gr, by **23/12/2019** at the latest.

3.2 Clarifications

Requests for general complementary information – clarifications, demands shall be electronically submitted to e-mail address: cathanasiou@thpa.gr and with a carbon copy to ptheologou@thpa.gr, while those relating to technical issues to: asachinidou@thpa.gr seven (7) working days before the

expiry of the deadline for the submission of tenders at the latest. Clarifications (replies) shall be posted on the Th.P.A. SA website.

ARTICLE 4. Extension, amendment, supplementation or cancellation of the Tender.

Th.P.A. SA reserves the right to extend the deadline for the submission of offers or to cancel the award procedure or to decide to repeat it at any state, without any liability, cost or sanction, following a Decision of its competent body. It also reserves the right to amend and modify the terms of the procedure with transparency.

ARTICLE 5. Content on the Tender

The content on the tender are designated as follows:

A) Participation supporting documents

B) Technical offer and

C) Financial offer

For all other matters, variant offers, counteroffers or amendments of offers or any proposals which may be regarded as counteroffers shall not be taken into account.

Offers shall bear the signature and seal of the company and will include the following information:

5.1 Supporting Documents

To demonstrate that they meet the selection criteria, economic operators must submit the following supporting documents:

- Solemn declaration, with which the Candidate declares that he has taken cognizance of the special requirements and particularities of the Subject of this Tender and fully and unconditionally accepts the terms of this Tender.
- In order to establish lawful incorporation and representation, in cases where the economic operator is a legal entity, the economic operator shall produce the legitimizing incorporation and lawful representation document per case applicable (such as the Articles of Incorporation and Association, certificates of changes, corresponding issues of the Official Government Gazette (OGG), formation of the BoD into body in the case of SA companies, etc., depending on the legal status of the participant). The above documents shall specify the lawful establishment, all relevant amendments to the statute, the person(s) legally binding the company on the date of the tender (legal representative, right of signature, etc.), any third parties authorized to represent the contractor, as well as the term of office of the person(s) and/or the members of the management body/legal representative.
- Solemn Declaration of its registration to the relevant Chamber of either Commerce or Trade record and that they exercise the specific profession.
- Copy of the ISO 9001-2015 Quality Assurance Certificate, for repair and maintenance of motors.
- Guarantee Letter of participation in this Tender, according to the relevant article of this Call.
- Copies of contracts for similar works of the last two years accompanied by good performance certifications.
- Copies of licenses of the working personnel and in particular:
  - Mechanical engineer
  - Electrician or Internal Facilities Electrician A' Specialization (motors until 75kw) and C' Specialization or
  - Technician of electric machines winding.
- Any additional necessary information the participant deems purposeful.

NOTE: The Solemn Declarations provided in this Call, if drawn up by Greek citizens living in Greece, shall be in the form provided for in article 8 par. (2) of Law 1599/1986, and will be submitted by the interested natural persons, or, should they be drawn up by legal entities and depending on the legal status of the interested legal entity, the solemn declaration must be signed by: (a) the general

partners and managers of a General or Limited Partnership, or (b) the managers of a Ltd; or (c) the legal representative of a SA (e.g. Chief Executive Officer), as evidenced by an act of the Board of Directors where the relevant competency is cited and which has been published in the Official Government Gazette.

5.2 Information of the Technical Offer

The technical offer must cover all requirements and specifications set forth by Th.P.A. SA in Part 'B of the herein, describing in detail the process and method for the repair of the electric motors, as well as the tests to be performed before delivery.

5.3 Information of the Financial Offer

The Financial offer shall be drafted by filling the prices in the Financial Offer Template **(Ai-ii and Bi)** included in this Tender, will be signed by the participant, will bear the seal of the company and will include the following:

- Price in Euro (€), excluding VAT, for each engine.
- The validity of time of the offer, which may not be less than ninety (90) days.
- The time for the repair and delivery of the motors, which may not exceed the maximum time provided for per motor, as appear in the table of the Appendix of this Call (**par. 7 – Part B')** by filling the relevant form.
- Any possible additional information the participant deems necessary.

ARTICLE 6. Language

The official language of this procedure is Greek and the offers shall be drafted in Greek or be complemented by their official translation to Greek. In case of discrepancies the Greek wording shall always prevail.

Additional informational and technical leaflets or other documents – corporate or not – with special technical content may be submitted in English, without having to be accompanied by a Greek translation.

ARTICLE 7. Period of Offer Validity

The submitted offers must be valid for **ninety (90) days** after the closing date for the submission of offers for the Tender. Any offers valid for shorter period of time shall be rejected as inadmissible.

The validity of the tender offer may be extended, if ThPA S.A. requires so, before their expiration, for a maximum period equal to the initial period of validity of the tenders provided by the tender Notice.

ARTICLE 8. Guarantee of Participation in the Tender

To validly participate in the process for the drafting of this contract, participants must deposit a guarantee participation, amounting to **one thousand and four hundred euro (1.400€).**

In case of an association of economic operators, the guarantee of participation shall also include the term that the guarantee covers the liabilities and obligations of all economic operators participating in the association.

The guarantee of participation must be valid for at least thirty (30) days after the end of the term of validity of the offer established by the contract documents.

The awarding body may, before the end of the offer, request from the offeror to extend the term of validity for both the offer and the guarantee, before such lapse.

The participation deposit shall be returned to the contractor upon the submission of the good performance guarantee.

The guarantee of participation shall be returned to the other participants, after the award.

Instead of a letter of guarantee, participants can deposit the corresponding amount at the Cashier's Desk/Bank Account of Th.P.A. SA. A copy of the receipt/proof of deposit must be included in the supporting documents file.

ARTICLE 9. Evaluation of Tenders

The Tender evaluation shall be made by an Evaluation Committee within a reasonable time after the lapse of the submission deadline.

During the evaluation, the Committee may address requests to the participating economic operators to provide clarifications on the submitted supporting documents and the economic operators must provide the clarifications within the specified, on a case-by-case basis, deadlines.

ARTICLE 10. Contract – Amendments – Unilateral Termination

Following the notification of the result of the Tender to all participants, a contract is signed between ThPA SA and Tender/s.

ARTICLE 11. Special Terms for the Performance of the Procurement

11.1 Performance Guarantee

For the signing the Contract it is requested to submit a Performance Guarantee, the amount of which is designated at a percentage of 5% of the fee, excluding VAT, and which shall be submitted before or during the signing of the contract.

The Performance Guarantee for the contract shall cover in their entirety and without exceptions the implementation of all the terms of the contract and any claim by Th.P.A. SA against the supplier.

The Performance Guarantee shall be forfeited in the case where the terms of the contract are violated, as specifically defined in it.

The Performance Guarantee shall be refunded in its entirety after the final and definitive quantitative and qualitative receipt of the subject of the contract. Should there by remarks on the delivery/receipt protocol or if the delivery is late, the refund of the Performance Guarantee above shall be carried out after the remarks and the late delivery issues have been dealt with.

11.2 Period of guaranteed smooth operation (warranty period)

The minimum acceptable time of guaranteed smooth operation (warranty period) is fifty (50) days after the motor is commissioned.

In case where the motor is not immediately commissioned, the warranty period shall lapse within one (1) year from the receipt of the motor, by the latest.

During the warranty period, the contractor shall be liable for the smooth operation of the motors and must restore any malfunction which may ensue from his failing or omission.

11.3 Method of Payment

The payment of the CONTRACTOR shall be made in settlement of an invoice within (60) days after presentation of the invoice to ThPA S.A. and the acknowledgement of receipt of the document, by the Central warehouse manager.

Invoicing shall be carried out at the end of each month and it shall include the Dispatch Notes of the said month.

11.4 Price Adjustment

The offered prices are considered **fixed and final** and they shall not be subject to adjustment for any reason whatsoever until the completion of the procurement. Therefore, the participation of each interested party to the tender shall entail their explicit, unconditional and irrevocable waiver from any right to adjustment of the offered prices, in their favour, and which may result from other related provision.

11.5 Delivery Time for the electric motors

The Contractor must repair or/and service and deliver the electric motors to Th.P.A. SA within the deadlines cited in the relevant article in *Part B' "Technical Specifications"* of this Tender.

The contractual delivery time for the electric motors may be extended, before the lapse of the original contractual delivery time, following a written request by the contractor, wherein he must cite the specific reasons on the grounds of which such an extension is applied for. The time for the extension may not be longer than the original contractual delivery time.

In case where the contractor submits the request and the extension is granted without the occurrence of force majeure event or other particularly serious reason rendering the timely delivery of the contractual goods objectively impossible, a **30,00 euro** fine shall be imposed for every day of delay. This fine relates to each motor and shall be withheld by Th.P.A. SA and be offset at the payment of the Contractor's corresponding invoice.

If the contractual delivery time lapse without the timely submission of an extension request, or if the extended, pursuant to the above, delivery time lapse without the motors being delivered, the supplier may be declared in default.

ARTICLE 12. Resolution of Disputes – Applicable Law

This procurement shall be governed by Greek and Community Legislation and any dispute arising between Th.P.A. SA and the Contractor, regarding its execution, implementation or, in general, the relations arising from it, until the expiration of the warranty period for the entire matter of the Contract, shall be settled by the competent Courts of Thessaloniki.

PART B': TECHNICAL SPECIFICATIONS

1. The Subject of the Call is:

a. The "**repair**" (reconstruction of stator or rotor windings or both) for AC electric motors with wound or with Squirrel cage rotor and (b) the "**repair**" (construction of new stator or rotor windings or both) for the DC electric motors; and (c) the "**maintenance**" of the electric motors of Th.P.A. SA. All motors are installed on electric Cranes on rails, on self-propelled Cranes and on Gantry Cranes.

2. Current Standards and Regulations

Contractor's works shall be carried out pursuant to the DIN, VDE, IEC, ISO, EN standards (per case applicable) and in compliance with current Greek and international regulations.

3. Manner and Place for Delivery and Receipt

The transportation of the repaired motors to and from the contractor's workshop shall be performed with the Contractor's care, expenditure and means of transportation. Following the end of works, the Contractor shall return the electric motors, his own care and means of transportation, to the Facilities of Th.P.A. SA. The electric motors shall be mandatorily accompanied by the specified electric measurements which will be signed by the Contractor.

4. Contractor's Personnel and Means

1. The Contractor must possess of the necessary facilities, equipment, know-how and appropriate and adequate technical personnel (as such will ensue from the submitted copies of contracts for similar works in the last two years), so as to be able to perform maintenance and rewinding works as well as works for the repair of stators and rotors in similar AC & DC motors with squirrel cage or wound rotors.

The Contractor must possess the following equipment – which shall be presented in a detailed table:

1.1. Main Heavy Equipment:

- Hydraulic Press
- Washing unit with pressurized warm water
- Furnace to remove winding with temperature and combustion cycle control.
- Loop shaping machine.
- Coil shaping machine.
- Low pressure powder dye chamber for varnishes and paints.

1.2. Main Portable Equipment

- High Voltage dielectric strength testing device.
- Power factor metering device (tanδ).
- Partial discharge measuring device
- Magnetic core loss testing device
- Ohmic resistance testing apparatus
- Oscillation measurement device

1.3. The Contractor's equipment must well works with all legal licenses provided for by legislation. The selection of media, devices and tools is up to the Contractor.

1.4. The Contractor must always apply the rules of good craftsmanship in the process of the works and use the appropriate tools and means for the completion of the works.

1.5 The personnel engaged must possess the formal qualifications required by Law and the commensurate composition of specializations necessary for the performance of the works provided for in the Contract. The obligation to hire, to train and to employ the suitable personnel with all the corresponding degrees and professional licenses is exclusively the Contractor's obligation.

5. <u>Description of services to be rendered</u>

5.1 The winding works for stator, rotor shall be performed in the following order:

- Receipt of the motors working sheet directions from THPA
- Execution of winding works
- Recording of the works performed
- Tests
- Recording of possible observations
- Delivery

In more detail, the contractor's obligations are as follows:

5.2 Upon the arrival of the motor at the contractor's workshop, his obligation to proceed with the dismantling of the motor within 24 hours and to establish the kind of repair required (e.g. re-winding of the rotor, stator) is automatically generated.

5. 3 immediately after, the contractor shall fill out and dispatch to the competent Committee of Th.P.A. SA the Stator, Rotor Repair Sheet, pursuant to Appendix 1, which shall include of information relating to the detected problem, the history and the required works. The Contractor's work commences on the date he will receive the signed Works Mandate.

5.4 For each winding, the Contractor shall fill out a Winding Data Sheet, in compliance with attached Appendix B.

5.5. The rewinding work shall indicatively include the following, but will not be limited to such:

- Marking of elements for rewinding;
- removal of old winding;
- detection and repair of core short-circuits (RING TEST) in case of a rotor problem;
- cleaning of core and shell (casing);
- replacement of destroyed ferrimagnetic core coils with new ones;
- construction and testing of coils;
- installation of coils on core;
- installation of sensors;
- installation of seals, wedges and head fastening;
- connection of coils;
- test of core;
- repair of core;
- electric winding measurements;
- final insulating varnish impregnation;
- Protective varnish

Final Tests:

- ohmic resistance measurement;
- electric insulation measurement and testing;
- balancing;
- oscillations measurement;
- No-load test.

Note: Destroyed windings shall <u>be returned to Th.P.A. SA</u>

5.6 Maintenance works shall indicatively include the following:

dismantling,
testing of windings and parts,
cleaning – washing thereof,
drying,
insulating varnishing,
machining of commutator,

rotor commutator undercut,
replacement of bearings,
balancing,
reassembly,
Final tests:

- ohmic resistance measurement,
- electric insulations measurement and testing,
- balancing,
- oscillations measurement;
- No-load test

5.7. Winding materials to be used and which will be the Contractor's exclusive liability are presented in detail as follows:

i. Copper conductors
ii. Conductor insulation
iii. Main insulation
iv. Nomex type insulation papers
v. sealing tape for heads
vi. wedges
vii. seals
viii. Safety belts
ix. induction ring
x. impregnation varnish
xi. protective varnish
xii flexible cable of proportional cross-section fitted with pins

Where the use of copper rods instead of wire is required, copper will be electrolytic, high purity and accompanied by a relevant certificate.

The wielding of the rotor's windings shall be performed by soldering, while the ends of the stator's windings will be wielded by silver soldering.

All necessary materials – wedges, materials for the fastening of coils, resin, coils, insulating sheet of appropriate thickness – which shall be used for the repair of the insulations shall be F class (155 ^{0} C) and must mandatorily be accompanied by the relevant suitability certificate.

5. 8 The insulation of the winding must ensure effective protection for the electric conductors on five levels:

A. Electric insulation between windings of the same phase
B. Electric insulation between coils of different phases
C. Electric insulation to the magnetic core (earth)
D. Physical-Chemical protection from the environment
E. Mechanical support against mechanical and electrodynamic strain.

Where the construction of a winding using insulated wire (enamelled) is required, such wire must be tolerant to temperatures up to 180 ^{o} C.

6. TEST-MEASUREMENT STANDARDS

6.1 Electric tests – measurements

i. DC ohmic resistance measurement (IEEE 118)

ii. Insulation resistance measurement (IEEE 43-2000)
iii. Polarization index measurement (IEEE 43-2000)
iv. Dielectric strength test (IEC 60034-1)

v. Pulsating voltage test (IEC 60034-15)

viii. Core losses measurement (IEEE 432)
viiii. No load operation test (IEEE 112)
viiiii. Clearance test (IEEE 112)

6.2 ACCEPTANCE TESTS

- Visual inspection of the quality of the protective finishing of the windings and general inspection of the stator.
- Measurement and confirmation of ohmic resistances for stator phases
- Insulation resistance and stator polarization index test
- Testing of the insulation between conductors using the pulsating voltage test.

7. Time for the Completion of Works

The maximum repair times acceptable by Th.P.A. SA are cited in the tables below:

AC ELECTRIC MOTORS TABLE

TYPE OF MOTOR	STATOR REPAIR TIME	ROTOR REPAIR TIME	MAINTENANCE WORKS TIME
Motors up to 10kw	3 days	4 days	5 days
11-30 kw motors	4 days	5 days	5 days
31- 60 Kw motors	7 days	9 days	6 days
Motors over 60 KW (wire stator)	8 days	9 days	7 days
100 KW motor (rod stator)	9 days	15 days	9 days

DC ELECTRIC MOTORS TABLE

TYPE OF MOTOR	STATOR REPAIR TIME	ROTOR REPAIR TIME	MAINTENANCE WORKS TIME
Motors up to 30 KW	8 days	10 days	8 days
31- 80 KW motors	9 days	12 days	9 days
81- 200 KW motors	12 days	16 days	12 days
201- 350 KW motors	14 days	16 days	14 days

TECHNICAL INFORMATION OF AC-DC ELECTRIC MOTORS
APPENDIX (A ' - REPAIR SHEET)
APPENDIX (B ' - WINDING DATA SHEET
FINANCIAL OFFER ALTERNATIVE CURRENT MOTORS (AC)
FINANCIAL OFFER DIRECT CURRENT MOTORS (DC)
FORM OF REPAIR AND MAINTENANCE TIMES

Thessaloniki, /2019

The CHIEF EXECUTIVE OFFICER OF Th.P.A. SA
FRANCO NICOLA CUPOLO

TECHNICAL CHARACTERISTICS OF ELECTRIC MOTORS

ALTERNATING CURRENT (AC) MOTORS

S/N	TYPE OF ELECTRIC MOTOR	WINDING	
		STATOR	ROTOR
	ELECTRIC CRANES (E/C)		
1.	Electric Motor (E/M) 380 V/ 62KW/2250RPM	Enamelled wire	Copper bars
2.	E/M 380 V/ 132KW/990RPM	Enamelled wire	Copper bars
3.	E/M 380 V/ 120KW/18000RPM	Enamelled wire	Copper bars
4.	E/M 380 V/ 100KW/990RPM	Enamelled wire	Copper bars
5.	E/M 380 V/ 100KW/900RPM	Enamelled wire	Copper bars
6.	E/M 380 V/ 60KW/2250RPM	Enamelled wire	Copper bars
7.	E/M 380 V/ 45KW/975RPM	Enamelled wire	Copper bars
8.	E/M 380 V/ 45KW/980RPM	Enamelled wire	Copper bars
9.	E/M 380 V/ 45KW/750RPM	Enamelled wire	Enamelled wire
10.	E/M 380 V/ 43,2KW/720RPM	Enamelled wire	Enamelled wire
11.	E/M 380 V/ 33KW/725RPM	Enamelled wire	Enamelled wire
12.	E/M 380 V/ 33.2KW/950RPM	Enamelled wire	Enamelled wire
13.	E/M 380 V/ 63KW/1740RPM	Enamelled wire	Copper bars
14.	E/M 380 V/ 32KW/980RPM	Enamelled wire	Enamelled wire
15.	E/M 380 V/ 32KW/990RPM	Enamelled wire	Enamelled wire
16.	E/M 380 V/ 23,5KW/960RPM	Enamelled wire	Enamelled wire
17.	E/M 380 V/ 25KW/965RPM	Enamelled wire	Enamelled wire
18.	E/M 380 V/ 18KW/955RPM	Enamelled wire	Enamelled wire

19.	E/M 380 V/ 11,2KW/710RPM	Enamelled wire	Enamelled wire
20.	E/M 380 V/ 13KW/950RPM	Enamelled wire	Enamelled wire
21.	E/M 380 V/ 11,2KW/1100RPM	Enamelled wire	Enamelled wire
22	E/M 380 V/ 11,2KW/1100RPM	Enamelled wire	Copper bars
23	E/M 380 V/ 184KW/1785RPM	Enamelled wire	Copper bars
24	E/M 380 V/ 160KW/1485RPM	Enamelled wire	Copper bars
25	E/M 380 V/ 86KW/1430RPM	Enamelled wire	Copper bars
26	E/M 380 V/ 32KW/990RPM	Enamelled wire	Enamelled wire
27	E/M 380 V/ 25KW/980RPM	Enamelled wire	Enamelled wire
28	E/M 380 V/ 18,5KW/955RPM	Enamelled wire	Enamelled wire
29	E/M 380 V/ 13,5KW/955RPM	Enamelled wire	Enamelled wire
30	E/M 380 V/ 11 KW/1435RPM	Enamelled wire	Enamelled wire
31	E/M 380 V/ 9 KW/7500RPM	Enamelled wire	Enamelled wire
32	E/M 380 V/ 9 KW/1100RPM	Enamelled wire	Enamelled wire
33	E/M 380 V/ 7,5KW/710RPM	Enamelled wire	Enamelled wire
34	E/M 380 V/ 7 KW/14100RPM	Enamelled wire	Enamelled wire
35	E/M 380 V/ 7,5KW/970 RPM	Enamelled wire	Enamelled wire
36	E/M 380 V/ 17,2KW/725RPM	Enamelled wire	Enamelled wire
37	E/M 380 V/ 17,2 KW/900RPM	Enamelled wire	Enamelled wire
38	E/M 380 V/ 15 KW/970 RPM	Enamelled wire	Enamelled wire
39	E/M 380 V/ 10 KW/960RPM	Enamelled wire	Enamelled wire
40	E/M 380 V/ 9,7KW/9,7RPM	Enamelled wire	Enamelled wire
41	E/M 380 V/ 8,2KW/1420RPM	Enamelled wire	Enamelled wire

42	E/M 380 V/ 4,55KW/1700RPM	Enamelled wire	Copper bars
43	E/M 380 V/ 4,5KW/1100RPM	Enamelled wire	Enamelled wire
44	E/M 380 V/ 4,5 KW/700RPM	Enamelled wire	Enamelled wire
45	E/M 380 V/ 6,5KW/1700RPM	Enamelled wire	Enamelled wire
46	E/M 380 V/ 60KW/960RPM	Enamelled wire	Copper bars (small)
47	E/M 380 V/ 6 KW/1405RPM	Enamelled wire	Enamelled wire
48	E/M 380 V/ 40KW/2055RPM	Enamelled wire	Enamelled wire
49	E/M 380 V/ 30KW/1500RPM	Enamelled wire	Enamelled wire
50	Electric motors (various)	Enamelled wire	Enamelled wire
51	Electric motors (various)	Enamelled wire	Enamelled wire

DIRECT CURRENT (DC) MOTORS

S/N	ELECTRIC MOTOR TYPE	WINDING	
		STATOR	ROTOR
1.	E/M 380 V/ 200KW/2000RPM	Enamelled wire	Copper bars
2.	E/M 380 V/ 26KW/1490RPM	Enamelled wire	Enamelled wire
3.	E/M 380 V/ 18KW/1050RPM	Enamelled wire	Enamelled wire
4.	E/M 380 V/ 253KW/1980RPM	Enamelled wire	Copper bars
5.	E/M 380 V/ 80KW/1000RPM	Enamelled wire	Copper bars
6.	E/M 380 V/ 29KW/2050RPM	Enamelled wire	Enamelled wire
7.	E/M 380 V/ 6KW/1405RPM	Enamelled wire	Enamelled wire
8.	E/M 380 V/ 330KW/1100RPM	Enamelled wire	Copper bars
9.	E/M 380 V/ 110KW/1100RPM	Enamelled wire	Copper bars
10.	E/M 380 V/ 80KW/1400RPM	Enamelled wire	Copper bars
11	E/M 380 V/ 190KW/900RPM	Enamelled wire	Copper bars
12	E/M 380 V/ 20KW/2400RPM	Enamelled wire	Enamelled wire
13	E/M 380 V/ 14KW/1580RPM	Enamelled wire	Enamelled wire
14	E/M 380 V/ 12,2KW/1330RPM	Enamelled wire	Enamelled wire
15	E/M 380 V/ 220KW/1530RPM	Enamelled wire	Copper bars
16	E/M 380 V/ 80KW/2000RPM	Enamelled wire	Copper bars
17	E/M 380 V/ 62KW/1400RPM	Enamelled wire	Copper bars
18	E/M 380 V/ 270KW/2500RPM	Enamelled wire	Copper bars
19	E/M 380 V/ 70KW/2400RPM	Enamelled wire	Copper bars

20	E/M 380 V/ 234KW/2500RPM	Enamelled wire	Copper bars
21	E/M 380 V/ 90KW/2740RPM	Enamelled wire	Copper bars

APPENDIX **A'** STATOR REPAIR SHEET (to be completed by LKDM)

I. CONTRACT PARTICULARS

Contract No.**:**	Date **:**
Contractor **:**	**:** Committee

II. STATOR – ROTOR PARTICULARS

Manufacturer **:**	Manufacture **:**
Type **:**	Insulation Class **:**
Series no. **:**	Degree of protection **:**
No. of phases **:**	
Rated power **:**	Bearings
Rated voltage of Stator/Rotor **:**	- Drive side**:** **:**
Rated current of Stator/Rotor **:**	- Opp. drive side **:**
Rated frequency of Stator/Rotor **:**	Lubricant quality**:**
Power factor **:**	Brush box
Rated speed **:**	- Type **:**
No. of Poles **:**	- Pressure **:**
Rotor voltage **:**	Brushes
Rotor current **:**	- Original quality**:**
Director of rotation **:**	- Current quality **:**

III. INSTALLATION & OPERATION PARTICULARS

Location	:
Load	:
Operating Cycle	:
Feed	:

IV. REPAIR INFORMATION

Detected Problem (Failure) :
Required Works:
Repairs History:

Appendix B' WINDING DATA SHEET

(to be completed by the Contractor for every repair)

I. DESIGN OF WINDING

1	Core diameter (internal stator – external rotor)	
2	Core length	
3	Dimensions of groove	
4	Number of grooves	
5	Number of coils	
6	Number of groups	
7	Number of turns/group	
8	Connections cables	
9	Winding Plan	

II. CONSTRUCTION OF WINDING

1	Insulation of conductors (material, thickness)	
2	Insulation of turns (material, thickness)	
3	Main insulation (material, thickness)	
4	Internal conductive coating (material, thickness)	
5	External conductive coating (material, thickness)	
6	Final impregnation resin (material)	
7	Protective varnish (material)	

TEMPLATE
FINANCIAL BID
ALTERNATING CURRENT (AC) MOTORS

S/N	ELECTRIC MOTOR TYPE	WINDING		OFFERED PRICE NET OF VAT		
		STATOR	ROTOR	Ai STATOR REPAIR (€)	Aii ROTOR REPAIR (€)	Bi MAINTENANCE
	ELECTRIC CRANES (E/C)					
1.	ELECTRIC MOTOR (E/M) E/M 380 V/ 362KW/2250RPM	Enamelled wire	Copper rods			
2.	E/M 380 V/ 132KW/990RPM	Enamelled wire	Copper rods			
3.	E/M 380 V/ 120KW/18000RPM	Enamelled wire	Copper rods			
4.	E/M 380 V/ 100KW/990RPM	Enamelled wire	Copper rods			
5.	E/M 380 V/ 100KW/900RPM	Enamelled wire	Copper rods			
6.	E/M 380 V/ 60KW/2250RPM	Enamelled wire	Copper rods			
7.	E/M 380 V/ 45KW/975RPM	Enamelled wire	Copper rods			
8.	E/M 380 V/ 45KW/980RPM	Enamelled wire	Copper rods			
9.	E/M 380 V/ 45KW/750RPM	Enamelled wire	Enamelled wire			
10.	E/M 380 V/ 43,2KW/720RPM	Enamelled wire	Enamelled wire			
11.	E/M 380 V/ 33KW/725RPM	Enamelled wire	Enamelled wire			
12.	E/M 380 V/ 33.2KW/950RPM	Enamelled wire	Enamelled wire			
13.	E/M 380 V/ 63KW/1740RPM	Enamelled wire	Copper rods			
14.	E/M 380 V/ 32KW/980RPM	Enamelled wire	Enamelled wire			

15.	E/M 380 V/ 32KW/990RPM	Enamelled wire	Enamelled wire			
16.	E/M 380 V/ 23,5KW/960RPM	Enamelled wire	Enamelled wire			
17.	E/M 380 V/ 25KW/965RPM	Enamelled wire	Enamelled wire			
18.	E/M 380 V/ 18KW/955RPM	Enamelled wire	Enamelled wire			
19.	n E/M 380 V/ 11,2KW/710RPM	Enamelled wire	Enamelled wire			
20.	E/M 380 V/ 13KW/950RPM	Enamelled wire	Enamelled wire			
21.	E/M 380 V/ 11,2KW/1100RPM	Enamelled wire	Enamelled wire			
22	E/M 380 V/ 11,2KW/1100RPM	Enamelled wire	Copper rods			
23	E/M 380 V/ 184KW/1785RPM	Enamelled wire	Copper rods			
24	E/M 380 V/ 160KW/1485RPM	Enamelled wire	Copper rods			
25	E/M 380 V/ 86KW/1430RPM	Enamelled wire	Copper rods			
26	E/M 380 V/ 32KW/990RPM	Enamelled wire	Enamelled wire			
27	E/M 380 V/ 25KW/980RPM	Enamelled wire	Enamelled wire			
28	E/M 380 V/ 18,5KW/955RPM	Enamelled wire	Enamelled wire			
29	E/M 380 V/ 13,5KW/955RPM	Enamelled wire	Enamelled wire			
30	E/M 380 V/ 11 KW/1435RPM	Enamelled wire	Enamelled wire			
31	E/M 380 V/ 9 KW/7500RPM	Enamelled wire	Enamelled wire			
32	E/M 380 V/ 9 KW/1100RPM	Enamelled wire	Enamelled wire			
33	E/M 380 V/ 7,5KW/710RPM	Enamelled wire	Enamelled wire			
34	E/M 380 V/ 7 KW/14100RPM	Enamelled wire	Enamelled wire			
35	E/M 380 V/ 7,5KW/970 RPM	Enamelled wire	Enamelled wire			
36	E/M 380 V/ 17,2KW/725RPM	Enamelled wire	Enamelled wire			

37	E/M 380 V/ 17,2 KW/900RPM	Enamelled wire	Enamelled wire			
38	E/M 380 V/ 15 KW/970 RPM	Enamelled wire	Enamelled wire			
39	E/M 380 V/ 10 KW/960RPM	Enamelled wire	Enamelled wire			
40	E/M 380 V/ 9,7KW/9,7RPM	Enamelled wire	Enamelled wire			
41	E/M 380 V/ 8,2KW/1420RPM	Enamelled wire	Enamelled wire			
42	E/M 380 V/ 4,55KW/1700RPM	Enamelled wire	Copper rods			
43	E/M 380 V/ 4,5KW/1100RPM	Enamelled wire	Enamelled wire			
44	E/M 380 V/ 4,5 KW/700RPM	Enamelled wire	Enamelled wire			
45	E/M 380 V/ 6,5KW/1700RPM	Enamelled wire	Enamelled wire			
46	E/M 380 V/ 60KW/960RPM	Enamelled wire	Copper rods - small)			
47	E/M 380 V/ 6 KW/1405RPM	Enamelled wire	Enamelled wire			
48	E/M 380 V/ 40KW/2055RPM	Enamelled wire	Enamelled wire			
49	E/M 380 V/ 30KW/1500RPM	Enamelled wire	Enamelled wire			
50	Electric motors (various)	Enamelled wire	Enamelled wire			
51	Electric motors (various)	Enamelled wire	Enamelled wire			

TERM OF VALIDITY:.....

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THE TENDERER

SEAL-SIGNATURE

FINANCIAL BID
DIRECT CURRENT (DC) MOTORS

S/N	ELECTRIC MOTOR TYPE	WINDING		Offered Price excl. VAT		
		STATOR	ROTOR	Ai STATOR REPAIR (€)	Aii ROTOR REPAIR (€)	Bi MAINTENANCE
1.	E/M 380 V/ 200KW/2000RPM	Enamelled wire	Copper bars			
2.	E/M 380 V/ 26KW/1490RPM	Enamelled wire	Enamelled wire			
3.	E/M 380 V/ 18KW/1050RPM	Enamelled wire	Enamelled wire			
4.	E/M 380 V/ 253KW/1980RPM	Enamelled wire	Copper bars			
5.	E/M 380 V/ 80KW/1000RPM	Enamelled wire	Copper bars			
6.	E/M 380 V/ 29KW/2050RPM	Enamelled wire	Enamelled wire			
7.	E/M 380 V/ 6KW/1405RPM	Enamelled wire	Enamelled wire			
8.	E/M 380 V/ 330KW/1100RPM	Enamelled wire	Copper bars			
9.	E/M 380 V/ 110KW/1100RPM	Enamelled wire	Copper bars			
10.	E/M 380 V/ 80KW/1400RPM	Enamelled wire	Copper bars			

11	E/M 380 V/ 190KW/900RPM	Enamelled wire	Copper bars			
12	E/M 380 V/ 20KW/2400RPM	Enamelled wire	Enamelled wire			
13	E/M 380 V/ 14KW/1580RPM	Enamelled wire	Enamelled wire			
14	E/M 380 V/ 12,2KW/1330RPM	Enamelled wire	Enamelled wire			
15	E/M 380 V/ 220KW/1530RPM	Enamelled wire	Copper bars			
16	E/M 380 V/ 80KW/2000RPM	Enamelled wire	Copper bars			
17	E/M 380 V/ 62KW/1400RPM	Enamelled wire	Copper bars			
18	E/M 380 V/ 270KW/2500RPM	Enamelled wire	Copper bars			
19	E/M 380 V/ 70KW/2400RPM	Enamelled wire	Copper bars			
20	E/M 380 V/ 234KW/2500RPM	Enamelled wire	Copper bars			
21	E/M 380 V/ 90KW/2740RPM	Enamelled wire	Copper bars			

TERM OF VALIDITY**:.....** **THE TENDERER**

Thessaloniki / / 2019 **SEAL-SIGNATURE**

FORM OF REPAIR AND MAINTENANCE TIMES

TYPE OF MOTOR	STATOR REPAIR TIME	ROTOR REPAIR TIME	MAINTENANCE WORKS TIME
Motors up to 10kw			
11-30 kw motors			
31- 60 Kw motors			
Motors over 60 KW (wire stator)			
100 KW motor (rod stator)			

TYPE OF MOTOR	STATOR REPAIR TIME	ROTOR REPAIR TIME	MAINTENANCE WORKS TIME
Motors up to 30 KW			
31- 80 KW motor			
81- 200 KW motor			
201- 350 KW motor			

TERM OF VALIDITY:.....

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