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RGCA/MPEDA/4.1/SSP/2017-18 14.02.2018

INVITATION FOR QUOTATION - PANEL BOARD

The Project Director, Rajiv Gandhi Centre for Aquaculture (RGCA) invites sealed competitive quotations from the Panel Board Fabricators for the **MPEDA- Self-sufficiency Project*, Vallarapadam post, Cochin- Ernakulam District-682504, Kerala***

TERMS & CONDITIONS:

(i) The tender/Firm/Company should submit the experience certificate/ work completion certificate of MV panels along with the Quotation.

(ii) The contractor, before submitting the quotation should essentially inspect the site and ascertain all the necessary information, including the risks, contingencies, nature of ground, place of installation etc. and also acquaint himself with the local conditions.

(iii) The tenderer along with his quote submit the fabricator's design drawings demarcating all the necessary provisions etc.

(iv) The rate quoted for the work shall be inclusive of all incidentals, hiring of all necessary equipment's, installments and expenses of staff/labour connected with the work. Nothing other than the quoted rates shall be entertained under any circumstances.

(v) The contractor has to bear full liability for the Provident Fund & Employees State Insurance Scheme payments for the workers working under their rolls as required by law.

(vi) The rates should also include all Taxes, by the central Government/State Government as on the date of submission of the Tender.

(vii) The Tenderer/ Firm/Company should possess GST Registration.

(viii) Retention amount 5% of total bill value shall be retained as security deposit, which shall be released after liability period 12 months from the date of Virtual completion.

(ix) The Tenderer without certified photocopies of Company profile documents and experience certificates in support of fulfilling minimum criteria as above will be rejected.

(x) The time allowed for the completion of the work is 1 Months from the 7th day of issue of work order or the date on which the site is handed over to the Contractor whichever is later and time shall be of the essence of the Contract.

(xi) Every Tender shall be accompanied by an Earnest Money Deposit for Rs 10,000/- Only, in the form of Demand Draft drawn in favour of The Project Director, Rajiv Gandhi Centre for Aquaculture, payable at Mayiladuthurai, Tamil Nadu. Tenders not accompanied by such Earnest Money are liable to be rejected straightaway. E.M.D. in any other form may not be accepted.

(xii) The Earnest Money will be retained in the case of successful Tenderer as part of the Security. EMD given by unsuccessful Tenderers will be refunded without any interest and the same will be done only after successful Tenderer accepts the Contract and after providing Security Deposit.

(xiii) RGCA reserves all right to accept or reject any or all of the quotations without assigning any reason thereof.

(xiv) RGCA will not be responsible for delay or non-receipt of tender documents sent by post/courier. Offers received late, conditional offers, offers without authority/signature and incomplete offers will be summarily rejected.

The quotation shall be sealed and super scribed as "***Quotation for Panel Fabrication Works for SSP***". Quotations submitted through e-mail will not be accepted.

The contractors are requested to submit the quotation on or before 17.30 hrs 27.02.2018 to the **Project Director, Rajiv Gandhi Centre for Aquaculture, c/o. The Marine Products Export Development Authority, MPEDA House, Panampilly Nagar, Cochin-682036**

Bill of Quantities for Panel Board to Self Sufficiency Project Vallarpadam Kochi					
Sl.no	**Description of Item**	**Quantity**	**Unit**	**Rate**	**Amount**
1.	**Main Panel:** Floor mounting cubicle type conforming to the above common specifications Bus bar shall be 300A TPN aluminium suitable for 25 Ka for 1 sec. Current density shall be 0.8 A/ Sqmm. The same shall be supported on SMC supports. The incomer from EB source: The same shall be equipped with 250A 4P MCCB, 25 Ka with built in thermal over load, magnetic short circuit and earth fault releases, 3 no cast resin copper wound CT of ratio 250/5A class-1, 10 VA, 1 no microprocessor based Microprocessor based Multi Function Meter to read KW,KWH, KVA, KVAH, PF, Current, voltage and frequency, LED type RYB indication lamps controlled by suitable MCB and 1 no resin cast copper wound CT of ratio 250/5A clas-1 for APFC sensing in the Y phase and 1 no 6A 4P MCB, 10 Ka for sensing EB voltage for APFC panel The incomer from 125 KVA DG set: The same shall be equipped with 250A 4P MCCB, 25 Ka with built in thermal over load, magnetic short circuit and earth fault releases, 3 no cast resin copper wound CT of ratio 250/5A class-1, 10 VA, 1 no microprocessor based MFM to read KW,KWH, KVA, KVAH, PF, Current, voltage and frequency, LED type RYB indication lamps controlled by suitable MCB The incomer from 62.5 KVA DG set: The same shall be equipped with 125A 4P MCCB, 25 Ka with built in thermal over load, magnetic short circuit and earth fault releases, 3 no cast resin copper wound CT of ratio 125/5A class-1, 10 VA, 1 no microprocessor based MFM to read KW,KWH, KVA, KVAH, PF, Current, voltage and frequency, LED type RYB indication lamps controlled by suitable MCB Bus couplers: 2 nos each fitted with 250A 4P MCCB with built in thermal over load and magnetic short circuit releases Outgoing feeders: 2 nos outgoing feeders each fitted with 125A TPN MCCB, 25 Ka with built in thermal over load and magnetic short circuit releases 6 nos 100A TPN MCCB, 25 Ka with built in thermal over load and magnetic short circuit releases 11 nos 63ATPN MCCB, 25 Ka with built in thermal over load and magnetic short circuit releases All the MCCBs shall have front operating handle with door interlock Bottom chamber of the panel shall have an earth bus of size 25x6mm aluminium with provisions for earthing the switch board at both ends All bus bar shrouding shall be either FRP or SMC. Hylam sheet should not be used for the same. All the 3 incomers and 2 nos bus couplers shall be key interlocked so as to achieve the following sequence of operation. EB supply to fed entire bus 125 KVA to feed entire bus when EB supply fails 62.5 KVA DG to feed entire bus when EB supply fails	1	Nos		

	EB and 125 KVA to share the bus without paralleling EB and 62.5 KVA to share the bus without paralleling The panel shall be provided with space heater with ON/OFF control and thermostat				
2	**Pump Panel:** Floor mounting cubicle type conforming to the above specifications Bus bar shall be 100A TPN aluminium suitable for 16 Ka for 1 sec. Current density shall be 0.8 A/ Sqmm. The same shall be supported on SMC supports. The incomer feeder shall be equipped with 1 no 100A TPN MCCB, 16 Ka with built in thermal over load and magnetic short circuit releases and with front operating handle with door interlock, 3 nos resin cast CTs of ratio 100/5A calss-1, 10 VA , no digital ammeter, 1 no digital voltmeter, and LED type RYB indication lamps controlled by 6A TP MCB, 10 Ka Outgoing feeders: 3 nos feeders to control 10 HP induction motors, each equipped with 1 no 25A TP MCB, 10 Ka and 1 set automatic star/ delta starter with SPP and LED type ON/OFF/Trip indication lamps controlled by suitably rated MCBs, ON/OFF push buttons with stay put feature for OFF PB 4 nos to control 5/3 HP induction motors, each equipped with 1 no 16A TP MCB, 10 Ka and 1 set DOL starter with SPP and LED type ON/OFF/Trip indication lamps controlled by suitably rated MCBs, ON/OFF push buttons with stay put feature for OFF PB 1 no feeder fitted with 1 no 20A TP MCB, 10 Ka 2 no feeder fitted with 1 no 25A TP MCB, 10 Ka 2 no feeder fitted with 1 no 63A TP MCB, 10 Ka 1 no space heater with ON/OFF control and thermostat shall be provided	1	Nos		
3	**Blower Panel** Wall mounting cubicle type conforming to the above specifications Bus bar shall be 100A TPN aluminium suitable for 16 Ka for 1 sec. Current density shall be 0.8 A/ Sqmm. The same shall be supported on SMC supports. The incomer feeder shall be equipped with 1 no 63A TPN MCCB, 16 Ka with built in thermal over load and magnetic short circuit releases and with front operating handle with door interlock, 3 nos resin cast CTs of ratio 63/5A calss-1, 10 VA , no digital ammeter, 1 no digital voltmeter, and LED type RYB indication lamps controlled by 6A TP MCB, 10 Ka Outgoing feeders-4 nos each equipped with 1 no 25A TP MCB, 10 Ka, DOL starter with SPP suitable for 5 HP/3HP induction motors, ON/OFF push buttons with stay put feature for OFF PB, LED type ON/OFF/TRIP indication lamps controlled by suitable rating MCB The panel shall be provided with space heater with ON/OFF control and thermostat	1	Nos		

4	**Automatic power factor correction Panel (40 KVAR APFC panel)** Wall mounting cubicle type panel fabricated as mentioned above. The same shall be fitted with an aluminum bus rated 100A TPN with 25 Ka for 1 second short circuit level. The incomer shall be fitted with 125A TPN MCCB, 25 Ka with built in thermal over load and magnetic short circuit releases, LED type RYB indication lamps and 6-stage microprocessor based automatic power factor correction relay. The current will be sensed from 1 no CT mounted on the EB incomer feeder, the 3-phase and neutral voltage will be sensed from the EB incomer 1 no outgoing feeder fitted with 1 no 15 KVAR MPPH capacitor, 1 no capacitor switching contactor, 1 no 32A TP MCB, 10 Ka 1 no outgoing feeder fitted with 1 no 10 KVAR MPPH capacitor, 1 no capacitor switching contactor, 1 no 20A TP MCB, 10 Ka 2 nos outgoing feeders each equipped with 1 no 5 KVAR MPPH capacitor, 1 no capacitor switching contactor and 1 no 10A TP MCB, 10 ka 2 nos outgoing feeders each equipped with 1 no 2.5 KVAR MPPH capacitor, 1 no capacitor switching contactor and 1 no 6A TP MCB, 10 ka The panel shall be provided with ventilation fan preferably on the top with a hood and space heater with ON/OFF control and thermostat	1	Nos		
5	**CT Metering Panel** The fabrication details will be as given in the general specifications. The panel will be floor mounting and cable entry from top and bottom chambers.The panel will be installed indoor. The same will have 3 compartments, the bottom compartment shall be equipped with 3 nos 500A porcelain cut out fuses and 1 no 300A neutral link, the middle compartment will be left free for EB to fix the energy meter. The middle compartment will also have 3 nos bus bar mounted copper wound CT calibrated by EB-MRT and 1 no test terminal for testing of meter. The top compartment will be equipped with 250A TPN MCCB with built in thermal over load and magnetic short circuit releases and with front operating handle with door interlock. The top compartment will have hinged door with locking arrangement. The bottom and middle compartment will have bolted doors with sealing arrangement for EB sealing. The middle compartment will also have a view window made of acrylic sheet for meter veiwing	1	Nos		

Technical Specifications for Electrical panels

1.0 General Specification for Panel:-

1.1 Construction Details:

(a) The switchgear shall be metal enclosed, modular type suitable for indoor floor mounting and shall have following features.

(i) Shall be fabricated by using cold rolled sheet steel.

(ii) All cubicles / panels shall comprise of rigid welded structural frames made of pressed and formed cold rolled sheet steel of thickness not less than 2.5 mm. (12SWG) Cladding of the frames and doors shall be made out of 2mm(14SWG) & 1.6 mm.(16SWG) thick sheet steel respectively. All cable gland plates shall be made out of 3 MM (10SWG) thick sheet steel plates.

(iii) All cubicles shall be provided with ISMC-75 channel base frame.

(iv) Height shall not exceed 2375 mm. Normal operating height shall not exceed 1850 mm.

(vi) Shall be single front execution as specified in specific requirements and shall be of dead front type. Whenever specified in specific requirements, single front execution panel shall not need rear access for operation or maintenance purpose.

(vi) Shall have designation labels on front side

(vii) Shall be provided with neoprene gaskets for removable covers, doors, between panels and base frame and all around the perimeter of adjacent panels.

Switchgear panel shall be suitable for top/bottom, cable entry as specified. There shall be adequate space for ease of termination of aluminum conductor multi core cables, selected with 60% derating factor.

(b) Switchgear shall be divided into distinct vertical sections each comprising:

(i) A completely enclosed bus bar compartment running horizontally

(ii) Enclosed vertical bus bars serving all modules in vertical section

(iii) A separate horizontal enclosure for all auxiliary power and control buses, if required.

Vertical cable alley of minimum 300 mm wide covering entire height with undrilled detachable gland plate.

Minimum feeder section width shall be 450mm & height 250mm

(c) Operating devices shall be incorporated only in the front of switchgear.

(d) Each shipping section shall have metal sheets at both ends.

(e) Cable alley shall be provided with suitable hinged doors.

(f) Rear of single front switchgear shall be dead rear since no maintenance will be carried from rear of panel

(g) All doors shall be with concealed type hinges and captive screws. Doors shall be provided with right angle turn type door lock.

(h) space heater controlled by thermostat shall be provided .

(i) Switchgear bus bars shall be of uniform cross section throughout the length and made of high conductivity, electrolytic aluminum conductor.

Bus bars shall be provided with at least the minimum clearances in air as specified.

All bus bars, bus taps shall be insulated with close fitting sleeve of hard, smooth, dust and dirt free heat shrunk PVC insulation of high dielectric strength to provide a permanent high dielectric non-aging and non-tracking protection, impervious to water, tropical conditions and fungi. The insulation shall be non-inflammable and self-extinguishing and in fast colours to indicate phases. The joints shall be insulated in such a way as to provide for accessibility of contact bolts for maintenance. The dielectric strength and properties shall hold good for the temperature range of 0 to 90 degree centigrade. If the insulating sleeve is not colored, bus bars shall be colour coded with colored bands at suitable intervals. Both main horizontal bus bars and vertical bus bars serving modules shall be insulated.

Bus bar joints shall be of the bolted type and shall be insulated. Spring washers shall be provided to ensure good contact at the joints.

Bus bars shall be thoroughly cleaned at the joint locations and suitable contact grease shall be applied just before making a joint.

Bus bars shall be located in air-insulated enclosures. Direct access to, or accidental contact with bus bars and primary connections shall not be possible. All apertures and slots shall be protected by baffles to prevent accidental shorting of bus bars by the entry of maintenance tools. To provide a tight seal between cubicles, bushings or insulating panels shall be provided for bus bars crossing from one cubicle to another.

Each switchgear cubicle shall be fitted with a label on the front rear of the cubicle. Each switchgear shall also be fitted with a label indicating the switchgear rating and duty.

Each relay, instrument, switch, fuse and contactor shall be provided with a separate label.

Switchgear shall be complete with inter-panel wiring.

One metal sheet shall be provided between two adjacent vertical sections running to the full height of the switchgear except for the horizontal bus bar compartment. However, each shipping sections shall have metal sheets at both ends.

After isolation of the power and control connections of a circuit, it shall be possible to safely carry out maintenance in a compartment with the bus bars and adjacent circuits alive.

Clamping arrangement shall be provided for incoming & outgoing cables.

1.2 Pretreatment and Painting:

(a) All metal work of the fabricated panel shall undergo a seven-tank process of degreasing, pickling in acid, cold rinsing, phosphating, passivating etc. in seven-tank treatment plant before painting.

(b) The treated panel shall be painted in 2 coats of high corrosion resistant primer. The primer shall be baked in oven.

The finishing treatment shall be by synthetic enamel or epoxy paint with powder coated finish, as specified. In case of powder coated finish (b) above is not applicable.

All the outgoing and incoming cables are to be terminated in the terminal station to be fitted in the cable alley

Approved Make list for panel components

Sl.no	Description of Item	Make-1	Make-2	Make-3	Make-4
1.	MCCB	L&T	Legrand	Schneider	Siemens
2	MCB	L&T	Legrand	Schneider	Siemens
3	Meters	Rishab	Socomec	Trinity	Siemens
4	Indication lamps	L&T	Schneider	Siemens	
5	Contactor	L&T	Schneider	Siemens	
6	Overload relay with SPP	L&T	Schneider	Siemens	
7	Push button	L&T	Schneider	Siemens	
8	Capacitor	Epcos	Legrand	L&T	Schneider
9	Capacitor switching contactor	Epcos	Legrand	L&T	Schneider
10	Wire	Orbit	Powerflex	KEI	
11	APFC relay	Epcos	Legrand	Baluk	Schneider
12	Porcelain fuses and neutral bar	Havells	Bosma	HPL	

General Terms And Conditions For Panel Fabricators

1. The make of components to be fixed in the panels to be selected from the approved list given in the enquiry
2. Panels shall be fabricated as per relevant IS standards
3. Panel fabricator should have type tested similar panels at CPRI and test report shall be furnished to client/ consultant for verification
4. Before taking up the fabrication of panels, the fabricator has to submit G/A and SLD of the panels (both DOL and star/ delta) and wiring diagram of starter panels for approval
5. After fabrication of panels, the same shall be subjected to routine tests at fabricator's works in the presence of client/ consultant. The test reports are to be prepared in the enclosed format and same to be signed by fabricator's testing engineer and client's representative/ consultant. The panels shall be dispatched to site after getting clearance from client/ consultant
6. Fabricator shall depute their technician to site at the time of installation if required by client in case of any problem arises free f cost
7. The panel along with all the components fixed on the same shall be guaranteed for 18 months from date of supply or 12 months from date of commissioning whichever is earlier. Any defect found during this period shall be rectified/ replaced by the fabricator.

PROJECT DIRECTOR
R.G.C.A

Drawing hereby enclosed

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