



KERALA CO-OPERATIVE MILK MARKETING FEDERATION LTD.
CENTRAL PRODUCTS DAIRY, PUNNAPRA P.O, ALAPPUZHA – 688 004.
Tel: 0477-2255900, 2255999,2255921, E-mail: cpd@milma.com
GST:32AAAK5375M4ZD

No.CPD/Engg/510/2021-22

08.12.2021

Sir,

Sub: Enquiry for the supply of APFC 100 kVAR – 2 Nos.

Technical Specifications for Automatic Power Factor Control Panel.

1. Scope:

- This specification contains the minimum requirement for the design, manufacture and supply of automatic, three phase, Power Factor Capacitor Panel rated 500 Volts and below:
- The supplier shall strictly meet all specification given below and shall be supported by product catalogues, test certificates, list of Central / State Government organization who are using similar systems etc.

2. Standards:

- The Capacitor and other components such as contactors, MCCB's, MCB's etc, shall comply with the latest versions of relevant Indian Standards.

3. Ratings:

- The voltage rating of the Power Factor correction requirement shall be at 440 Volts between phases.
- The total capacity of one unit shall be a 100 KVAR . Qty : 2 nos
- The total kVAR shall be divided into automatically switched steps of suitable rating. The no. of switching stages shall be designed appropriately in 5 steps for 100 KVAR

4. Capacitor cells:

- Individual Capacitors shall be of 3 phase construction in design using Heavy Duty Polypropylene as a dielectric with vacuum deposited conductors on the poly propylene as electrodes.
- Capacitor shall be 480 V rated & able to work continuously at 480V and should be able to withstand momentary voltage of 600 V. Rated delivery of 100 KVAR shall be at 440V and so higher KVAR value capacitors to be considered and suitably derated for required KVAR..
- Each three phase capacitor shall be furnished with a U.L. listed pressure sensitive interrupter. The interrupter shall disconnect all three phases as the same time to maintain a balanced circuit.
- Capacitors shall be contained in hermetically sealed metal cans to prevent atmospheric contaminants from shortening the useful life. Dielectric material shall be low loss, less than 0.3 watts per kVAR.
- The encapsulation medium shall be ECCOL which allows out gassing to engage the pressure interrupter.
- Terminal bushings shall withstand 10KV AC to ground and be rated 30KV BIL or greater.
- Nominal design life of individual capacitor cells shall be for (20) twenty years.
- Individual Capacitor cells shall be covered by a 3 year warranty.
- All capacitor cells shall have threaded terminals for wire connection.

- To reduce line transients on system no stage shall switch more than 30 KVAR.
- The capacitors be 10000 times AFC protected.(Available Fault Current protection to ensure safety of operation).
- Capacitor should be able to work continuously at 480V and should be able to withstand momentary voltage of 600V.
- Flash Point: Greater than 200 C.
- Fire Point: Greater than 250 C.
- Operating Temperature: -40 C to +70 C.

5. Controls:

- All controls shall be mounted on enclosure door for easy inspection and service.
- A door interlock shall be provided to disconnect control power when enclosure door is opened.

6. Automatic Power Factor Controller:

- The controller should be fully automatic, intelligent microprocessor based relay operated offering minimum 6 stage for 100 KVAR.
- The controller should be capable to switch on the required KVAR for compensation based on cyclic switching.

7. Enclosure:

- The enclosure shall be made from 14/16 gauge CRCA sheet steel. Seven tank process shall be carried out for treating the sheet metal.
- The panels shall be epoxy power coated in Siemens Grey colour finish.
- The panels shall be suitable for Indoor duty.
- Capacitor cells shall be accessible for visual inspection and replacement.
- The enclosure size shall be approximately 2000mm (Height), 1000mm (Width), and 500mm (Depth).
- Caution boards as per IE rules shall be affixed on the front door in English and local language.

8. Discharge Resistors:

- Capacitor cells shall be provided with discharge resistors to reduce residual voltage to less than 50 volts within one minute of de-energisation.
- Resistors shall be chosen to ensure a 20 year minimum life.

9. Switching Stages:

- Heavy Duty Capacitor duty Contactor with high rupturing MCB shall be used for individual stage control.
- The contactors and MCB's shall be reputed make like ABB/GE/SIEMENS
- The main incomer shall be MCCB of rating 250A for 100 KVAR with continuously adjustable overload and short circuit release isolating the total capacitor circuit. Make shall be ABB / GE/ SIEMENS

10. Performance Features:

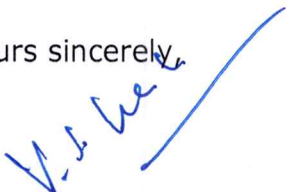
- The capacitor shall be rated for continuous duty at 40 degree C ambient at 1000 meters and below. Total Harmonic Distortion (THD) of 5% on either the voltage and current wave forms shall not affect the life of capacitors, contractors or controller. A +/- 10% variation in line voltage shall not affect the life of the capacitor.

Approved Make of APFC Panel : COMAR / ORTEA / SPRAGUE / INEL

Terms and conditions

1. The rates should be inclusive of GST, freight charges, loading charges, P&F, insurance, etc. However the unloading charges at our site will be paid by us.
2. **Interested parties must visit our dairy for verifying the site condition and technical specifications, only quotations will be accepted whom visited the site.**
3. The supplier shall guarantee to repair/replace the items supplied or part thereof if found defective due to designing workmanship or subtracted material without any extra cost within a period of 12 months from the date of successful commissioning. The entire expenditure towards replacement/repair shall be arranged by the supplier.
4. The erection of APFC panel shall be arranged by us, but the commissioning is the supplier's scope.
5. Successful tenderer has to submit the drawing for our approval within two weeks and deliver the material within 6-8 weeks.
6. Prior to commencement of fabrication the supplier have to submit two sets of drawing of all the items showing overall dimensions with typical sections, details of connections, etc for our approval. Three sets each of instruction, operation, & maintenance manual along with the drawings showing details of part list against each item of supply should be sent to us.
7. The firms quoting for above work shall provide the following along with tender documents.
 - Letter of confirmation to detailed specifications given individually.
 - Letter of authorization from manufacturer.
8. The offer should be valid for minimum Three months.
9. Payment terms for supply:
 - 60% payment will be released within 15 days after supply of materials at site.
 - 35% Payment will be released after commissioning works.
 - 5% payment after one year guarantee period. However the payment will be released on submission of a bank guarantee for an equal value valid for the guarantee period.
10. An Earnest Money Deposit (EMD) of Rs. 5,000/- shall be remitted either by cash/ NEFT (State Bank Of India, Current Account Number 57036448585, Punnapra, Alappuzha-4, IFSC Code SBIN0070215) in favour of Manager, Central Products Dairy, Alappuzha. The details shall be enclosed along with the offer. The amount shall be returned only after finalization of the tender.
11. Sealed quotations shall reach our office on or before 2.00 P.M on 22.12.2021 and will be opened at 2.30 P.M on the same day.

Yours sincerely,



MANAGER