

	BHARAT COKING COAL LIMITED (A Subsidiary of Coal India Limited) Office of the General Manager(MM) Materials Management Department Commercial Block L-III , Koyla Bhawan : Koyla Nagar Dhanbad : 826005(Fax No- 0326-2230183) Web site: www.bccl.gov.in
SUPPLY /PURCHASE ORDER	Under Jurisdiction Of Dhanbad Court And Jharkhand High Court Only.

Ref. No: BCCL/PUR/111073/Starter/11-12/E-TDR/57/134 Dt. 08-10-2012

To
M/s. VOLGA ENGINEERING CO.PVT.LTD.
1, Tarpan Ghat Road,
Kolkata – 700 053.

REGD. POST
(Fax No: 033- 2403 1952)

VENDER CODE: 1/12/M/T/080

**Ref.- Our Tender # BCCL/PUR/111073/Starter/11-12/E-TDR/57/
Opened on 29-08-2011**

Your Off-line documents submitted vide letter no. **VEC/158/2011-12**,
Dt: 17-08-2011 and subsequent Correspondence on the above subject.

With reference to the above, we, for and on behalf of BCCL, hereby place PURCHASE ORDER on you for supply of following items as per rate , terms and conditions indicated below :

1. SCOPE OF SUPPLY : "FLP Starter 550 V 100 HP & 3300 V 400 HP

SL	Description	Tender Qty (No's)	Unit Rate /No.	Extended Value
1	FLP Starter 550V, 150HP with detailed specification as per Annexure-“	16	103500.00	1656000.00
2	FLP 3300V, 400 HP with detailed specification enclosed as Annexure-“A”	10	2,14,000.00	2140000.00
	Sub-Total(Rs.)			3796000.00
	E.D. & Cess @12.36%			469185.60
	CST @ 2% against Form “C”			85303.71
	Freight @ Rs. 1000.00/No. For Item No 1			16000
	Freight @ Rs. 2500.00/No. For Item No 2			25000
	Sub Total			4391489.31
	CMPDIL Inspection Charge @ 0.8% Of F.O.R. Destination value			35131.91
	Service Tax on CMPDIL Inspection charge @12.36%			4342.30
	Total Landed Value			4430963.53
	Round-Off			4430964.00

(Rs. Forty Four Lakhs Thirty Thousand Nine Hundred Sixty Four Only)
(Detailed Technical specification will be as per Annexure “A” at Page : 6-11)

22. TOTAL ORDER VALUE : The total procurement value comes out to **Rs 44,30,964.00 (Rs Forty Four Lakhs Thirty Thousand Nine Hundred Sixty Four Only y)** on F.O.R. Destination basis inclusive of all taxes & duties and inspection charges with service tax payable to CMPDIL.

3. PRICE- Firm and FOR Destination.

4. E.D. & Cess – Payable Extra as applicable within delivery schedule at actual on documentary evidence, Present rate of E.D. & Cess is 12.36 % .

5. CST: Payable Extra as applicable within delivery schedule at actual on documentary evidence, Present rate of CST is @ 2 % against Form "C"(To be provided by the consignee.

6. PAYMENT TERM:- 100% within 21 days of receipt and acceptance of the materials by the consignee or from the date of receipt of bill whichever is later by the consignee.

7. PACKING & FORWARDING CHARGE: Nil .

8. FREIGHT :- Maximum as indicated above item wise

9. TRANSIT INSURANCE CHARGES : Nil.

10. MODE OF DISPATCH : By Road on F.O.R. Destination ,Freight paid basis

NOTE : You will ensure safe & sound delivery of stores at consignee's end .

11. ROAD PERMIT : Road permit , if required , may be obtained directly from the consignee under intimation to this office .

12 .DELIVERY PERIOD : Commencing within 2-3 months and completion by another 13-14 months thereafter.

However, keeping in view of our urgency, earliest delivery will be appreciated.

Delivery period shall be reckoned from 10th day of placement of order.

Any increase in the rate of taxes & duties beyond delivery period will be on your account.

13. Consignee:	14. Paying Authority
The Depot Officer, Central Stores, Ekra, B.C.C.L.	The General Manager (F)MM , Purchase Finance, Koyla Bhawan, B.C.C.L. , Dhanbad

15.SUBMISSION OF BILL: 100% value of bill duly stamped, signed & pre-receipted in quadruplicate , as per terms of the order should be submitted for payment to the paying authority through consignee. Bill should be submitted along with challan, Consignment note (if required), packing list if any, guarantee/warranty certificate, fitment / Test certificate if required , proof of payment of freight charges if freight is claimed, documentary evidence of Excise duty payment if claimed, Price Certificate, Copy of Inspection Note of CMPDIL (If required) and other documents as per order.

(Note – All documents to be submitted shall be duly authenticated)

(No payment will be made without submission of performance Bank Guarantee & security deposit)

THE DESIRED INFORMATION FOR RAISING VAT/CENVAT INVOICE		
	SUPPLIER	CONSIGNEE
Name & Address Of Area:		Ekra Central Store, Block – II Area, BCCL, Nawagarh, Dhanbad, Jharkhand – 828306
Tin No.:		20821500736
JST No.:		KT – 651 (R)
CST No:		KT – 254 (C)
Circle / Sub		Katras Circle Katras
Service Tax Regd. No:		AAACB7934MST 009
Central Excise Duty Regd. No:		AAACB7934MEM 007
Range (Code):		Dhanbad - Code - 02

Division (Code)		Dhanbad - Code - 02
Commissionerate (Code):		Ranchi - Code - 87
PARTICULARS OF BANK ACCOUNT:	M/s Volga Engineering Co. Pvt. Ltd. 1, Tarpan Ghat Road, Kolkata-700053	
Name of the Bank.	CITIBANK NA	
Name of the Branch with complete address.	41, Chowringhee Road, Kanak Building, Kolkata-700071	
Party's Account Style.	M/s Prabhu industrial Udyog Pvt. Ltd.	
Party's nature of Account.	Current Account	
Party's Account Number.	0274946334	

16. GUARANTEE /WARRANTY : The supplier shall guarantee for the satisfactory performance of the complete equipment/ stores for a period of 12 months from the date of commissioning or 18 months from the date of dispatch, whichever is earlier, against any manufacturing defects / workmanship / inferior quality. Any defect observed on this account shall be attended immediately and replace the materials within 30 days free of cost.

17. PRICE CERTIFICATE: You should submit a certificate along with bill as stated below:

"The rates of the stores under this contract are the lowest at which we are selling to any other Customer / Govt. Deptt./ Subsidiaries of CIL/ Other PSUs . If the materials are sold at any lower rate than that mentioned in this contract to any other agency , the same will automatically be applied to this contract from that date"

18. SECURITY DEPOSIT: Waived as being NSIC Registered.

19. INSPECTION – Pre-dispatch inspection of each consignment shall be carried out by M/s. Central Mine Planning & Design Institute Ltd(CMPDIL), Ranchi/their Regional Office as per the terms and conditions indicated hereunder:

Pre-dispatch inspection shall be carried out by M/s.CMPDIL(the above firm) as per their methodology. The third Party Inspection shall include examination of raw material, test certificate verification, continuous monitoring of quality assurance by manufacturer which will include regular and surprise visits. In brief, the scope and condition of inspection by M/s.CMPDIL will be as follows :

Checking and approval of test procedures/quality assurance plans. Verification of records and documents of your works. Verification of documents and test certificate of bought out items and cross checks.

You shall provide facilities for carrying out all necessary tests as required in the specification at your works else these will be carried out at an independent test house at your cost. Final testing and checking of materials as per specifications.

M/s.CMPDIL will have full and free access to the premises of manufacturer during the process of manufacturing and during inspection activities.

Inspection fee @ 0.80% of total F.O.R. Destination price with service Tax of 12.36%, is to be paid to M/s.CMPDIL alongwith inspection call letter payable by DD which will be reimbursed subsequently by BCCL together with consignment billing.

Minimum 7 calendar days notice shall be given by you to M/s.CMPDIL for arranging inspection within valid delivery period as per contract. The ultimate responsibility for supply of correct materials as per requirement of relevant specification lies solely with you inspite of clearance/acceptance by inspection authority i.e. M/s.CMPDIL. The manufacturer will be required to replace the material free of cost if found defective/unserviceable/not according to relevant specifications. The charges for third party inspection and the cost of materials that would be required for destructive tests, if any, shall be reimbursed by BCCL together with the consignment billing. Such cost shall be reimbursed only if it is duly certified by M/s.CMPDIL.

Please send inspection call to M/s.CMPDIL, Ranchi/ their Regional Office as indicated above. Final inspection shall be arranged by the consignee after receipt of the material at our destination. The purchaser shall, at its discretion, have the right to test the ordered material in a Government Test House or in a test house nominated by the purchaser. In case of failure of the material after testing the cost of tests as well as of the material shall have to be borne by the supplier. Final inspection shall be arranged by the consignee after receipt of the material at our destination.

The purchaser shall, at its discretion, have the right to test the ordered material in a Government Test House or in a test house nominated by the purchaser. In case of failure of the material after testing the cost of tests as well as of the material shall have to be borne by the supplier.

20. PERFORMANCE BANK GUARANTEE – PBG on schedule/Nationalized Bank in India valid for three months beyond the expiry of Guarantee/Warranty period for 10 % value of the order (order value means FOR destination price including taxes, duties, transportation & insurance charges & other charges if any) shall have to be submitted to MM Division, BCCL, Koyla Bhawan on or before commencement of supply. PBG may be submitted either for the entire order quantity at a time or each equipment wise/lot wise.

21. PENALTY FOR FAILURE TO SUPPLY IN TIME

The bidders will confirm their acceptance of the following **Liquidated Damage Clause:**

In the event of failure to deliver the equipment/stores within the stipulated date/period to effect supply in accordance with the terms and conditions and the specifications mentioned in the supply order and in the event of breach of any of the terms and conditions mentioned in the supply order, Bharat Coking Coal Ltd., shall be entitled at its option either to enforce the following:

- a) To recover from the successful bidder as agreed liquidated damages, a sum of 0.5%(Half Percent) of the price of any stores which the successful tenderer has not been able to supply as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to **10% (Ten Percent)** and where felt necessary by BCCL it may be increased up to 15 %.
- b) To cancel the supply order or a portion thereof, and if so desired to purchase the stores at the risk and expenses of the defaulting supplier and also/or
- c) To purchase elsewhere after notice to the successful tenderer on the account and at the risk of the defaulting supplier, the equipment/stores not supplied or others of similar description without canceling the supply order in respect of the consignment not yet due for supply/or
- d) To extend the period of delivery with or without liquidated damages as may be considered fit and proper. The liquidated damages if imposed, shall not be more than the agreed liquidated damages referred to in CLAUSE 14 (a) above except in case of force majeure condition.
- e) Whenever under this contract any sum of money is recoverable from and payable by the supplier, Bharat Coking Coal Ltd., shall be entitled to recover such sum by appropriating in part or in whole by deducting any sum or which at any time thereafter may become due to the successful tenderer in this or any other contract, should this sum be not sufficient to recover the full amount recoverable. The successful tenderer shall pay to Bharat Coking Coal Ltd., the balance amount on demand of the remaining balance. The supplier shall not be entitled for any gain on any such purchase.
- f) To forfeit the security deposit fully or in part.

22. PRICE FALL CLAUSE :

- i) The price charged for the Stores / Equipment supplied against the order, if placed, shall in no event exceed the lowest price at which the bidder shall sell or offer to sell the Stores /

Equipment of identical description to its any other customer during the pendency of the Contract / Supply Order. If the successful tenderer at any time during the pendency of the Contract / Supply Order sells or offers to sell such stores to any customer, at a price lower than the price stipulated in the Contract / Supply Order placed by BCCL, the successful tenderer shall forthwith notify to BCCL such reduction in sale price of stores / equipment supplied after such reduction coming into force shall stand correspondingly reduced.

All other terms & conditions along with Technical Specifications and Scope of supply will strictly be as per our NIT and company’s norms.

ALL DISPUTES ARE SUBJECT TO DHANBAD COURT AND JHARKHAND HIGH COURT JURISDICTION ONLY.

This contract is concluded with the issuance of this order. Two copies of the order is being sent to you. You are advised to acknowledge the receipt and acceptance of the order by returning one copy duly signed and stamped to this office positively within 15 days, failing which this order shall be deemed to have been accepted by you for execution.

Encl.: Annexure “A”

INDENT & BUDGET CERTIFICATION REFERENCE

Indent no. and Date	BC &FC No. & dt.
BCCL/CGM(E&M)/F-Central Indent(Elect)/2010-11/38 dated: 30-03-2011 IR No. 111073 (11-12) ,Dated: 22-06-2011	BCCL/C&B/Cap/12-13/P&M/HQ/121/99/249 e-BC Dt: 27-09-2012 For Rs. 1,57,73,517.00 e-FC no 97 Dt: 29-09-2012 (HQ P&P) For Rs.1,57,73,517.00

Copy to:

1. Depot Officer, Ekra Central Stores.
2. G.M.(F)(MM), MM DIV, Koyla Bhawan.
3. CGM(E&M), Koyla Bhawan.
4. C.M.(MM)(Tech Cell), MM Div, Koyla Bhawan.
5. CGM(E&M), CMPDIL, Gondwana Place, Kanke Road, Ranchi
6. CGM(MM)/GM(MM), CCL / WCL/ SECL / MCL / ECL.
7. Master File/Office Copy
8. Special Cell, CMPDIL, Gondwana Place, Kanke Road, Ranchi
9. Sri D. Bandopadhay, IAS (Retd.),G.D.- 89, Sector-III, Salt lake , Kolkata-700016

Yours faithfully,
For & on behalf of Bharat Coking Coal Ltd.

(Niraj Kumar)
Manager(Excvn)MM

(A. K. Choudhary)
CM (MM)

ANNEXURE-“A”

SPECIFICATION OF FLP STARTER (550 V)

1.0 SCOPE

This specification covers the requirement for three phase FLP star delta starter for 550 V motors. The standard shall comply with the requirement of IS 13947 part – 4 for 550V motors except where modified or extended by the provision of this specification and with the relevant parts of standard mentioned in clause 2.0. Any material and component not specifically stated in this specification but necessary for trouble free operation of the equipment and the accessories specified herein shall be deemed to be included.

2.0 OTHER RELEVANT STANDARDS

The other relevant standards applicable as under

- IS 5142 Continuous variable voltage auto transformers
- IS 11171 Dry type transformers
- IS 5553 Current limiting reactor
- IS 13118 General requirement for circuit breakers for voltage exceeding 1000V
- IS 13947 (Part-3) Fuse switch units not exceeding 1000V A.C.
- IS 9920 HT Isolators and switches
- IS 13947 (Part-5) Rotary switch not exceeding 1000V A.C.
- IS 10624 High Voltage fuse link for motor circuit application
- IS 9385 (Part -1) High voltage fuses (current limiting fuses)
- IS 9385 (Part – 3) Application guide for high voltage fuses
- IS 9385 (Part – 5) High voltage fuses . Type & dimensions of fuse link for current limiting fuses
- IS 13703(Part1-4) LV Fuses not exceeding 1000V A.C.
- IS 12021 Specification for control transformers for voltages not exceeding 1000 V A.C.
- IS 13974 AC Contactors not exceeding 1000V A.C.
- IS 9046 AC Contactors above 1000V upto and including 11000V A.C.
- IEC 470 HV AC Contactors(Vacuum)
- IS 2705 Current Transformer
- IS 6949 Core balance transformer
- IS 3156 Voltage transformer
- IS 1766 Time switch
- IS 8588 Thermostatic bimetals
- IS 3842 Electric relays for AC system
- IS 722 AC Electricity meters
- IS 1248 Indicating instruments
- IS 1901 Indicating lamps
- IS 2419 Dimensions of measuring instruments
- IS 2147 Degree of protection provided by industrial enclosure
- IS 2148 FLP Enclosure for electrical apparatus
- IS 1554 PVC Insulated heavy duty cables for working voltage not exceeding 11000V
- IS 2274 Electrical wiring of installations
- IS 3043 Code of practice for earthing
- IS 732 Code of practice for electrical wiring
- IS 3072 Code of practice for installation and maintenance of switch gears

The equipment covered under this specification shall comply with all the latest applicable statutory rules , regulations , acts and safety codes which may be in force during the period of execution and which are related with design construction and operation of equipment in the locality where equipment is to be installed .

3.0 Service condition :

- a) Ambient temperature : Maximum 45°C for FLP Motors
- b) Location : Heavily polluted atmosphere with coal dust and Degree three gassy mine for FLP

4.0 Design

4.1 Electrical :

- a) Starter shall be designed for over load, short circuit , and earth leakage protection
- b) Over load and short circuit protection by relays . Range of current adjustment 50% to 150 % of full load current and Instantaneous setting 200% to 600 % of full load current .
- c) Earth leakage relay :-
 - (i) For 550V – The starter should be provided with dual earth leakage relay with an option to use one at a time. The trip current value of earth leakage should have current setting 50 mA to 250mA having set values of 50,80,100,150,200,250 mA. with time lag between 0 to 1 second in steps of 100 m second for option 1 and 750 mA to 5A with time lag between 0 to 1 second in case of option 2.
 - (ii) Earth leakage relay shall be of high quality and subjected to relevant test as per the Indian standard or IEC to ensure satisfactory performance, the report of standard test house for same should be submitted.
- d) Star delta starter shall be designed for auto change over by 30 seconds
- e) All Starter shall be designed to prevent sudden starting after the restoration of power supply.
- f) All Starter shall be designed for protection against single phasing (current sensing)

4.2 Mechanical :

- a) All starter shall be designed to with stand the thermal and electromagnetic stresses due to over load and short circuit faults .
- b) All Starter shall be designed for easy accessibility to components for inspection and maintenance .
- c) All Starter shall be designed for safety interlock to ensure opening of the door only when the isolator is off.

5.0 Construction :

5.1 Electrical :

- a) All power contactors of starters shall be AC – 3 in accordance with relevant codes. Air break contact for 550V starter . The make of contactor will be L & T / Semen's / ABB / Tele mechanics ,or any reputed make..
- b) HRC fuse on starters shall be current limiting type. HRC fuse shall be cartridge type mounted on compatible fuse base .
- c) Starter shall have ON/OFF/RESET push buttons .
- d) Starter shall have glow lamp for each phase .
- e) Starter shall have ammeter with selector switch ..
- f) Starters shall have CT for protection & metering and have CBT for Earth leakage protection.
- g) Star – Delta Starters shall have timers. The setting shall be between 2 to 60seconds.
- h) The off load interlocked reversing isolator of capacity 300% of full load current shall be provided.
- i) The bus bar shall be through going electrolytic copper with shrink fit PVC sleeved.
- j) Single phase preventer shall be provided.

5.2 Mechanical :

- a) Starters shall have FLP enclosure .
- b) Starters shall be free standing floor mounted skid type.

- c) Starter shall have two separate earthing terminals on two diagonally opposite corner for earthing of the enclosure.
 - d) Cable terminal box shall have FLP enclosure for incoming outgoing and through going cable sealing/ terminating box, suitable for mining type PVC /PILC, DWA.
 - e) For bottom chamber of starter it should have provision for taking out auxiliary power supply from two auxiliary points . These points should be provided with cable termination arrangement.
- 6.0 Details of ratings in starter :-

Sl. no.	Voltage	H.P.	Quantity Required (no's)	Busbar Rating	Range of Contactor Rating	Type of Starter
1	550 V	150	16	400A	375A – 450A	Star -Delta

7.0 Technical Parameters :

- 1. Reference standard : IS 13947(Part 4) / IS 12661
- 2. Reference standard for enclosure : IS 2148 /IS 2147
- 3. Type of starter : Star Delta
- 4. Rated voltage of starter : 550 V
- 5 Contactor category : AC – 3
- 6 Contactor make : Semen’s / ABB / L & T / Tele mechanics ,or any reputed make
- 7 Type of contactor : Air break for 550V of suitable rating.
- 8. Ammeter & Voltmeter : Required
- 9.Auxiliary contact for
 - Earth leakage protection : Required
 - No volt protection : Required
- 10. Mounting : Floor mounting skid type
- 11. Clearance between phases : 70 mm
- 12. Clearance between phase to phase : 60 mm
- 13.. Successful bidder has to submit self attested copy of all types of routine tests as per relevant Standard.
- 14. Following documents shall have to be submitted at the time of supply :-
 - a) Operation and maintenance manual.
 - b) Spare part list with circuit diagram
 - c) An attested copy of currently valid DGMS approval for FLP starter

SPECIFICATION OF FLP STARTER (3300 V)

1.0 SCOPE
This specification covers the requirement for three phase FLP star delta starter for 3.3 KV motors. The standard shall comply with the requirement of IS 12661 for 3.3 KV motors except where modified or extended by the provision of this specification and with the

relevant parts of standard mentioned in clause 2.0 Any material and component not specifically stated in this specification but necessary for trouble free operation of the equipment and the accessories specified herein shall be deemed to be included .

2.0 OTHER RELEVANT STANDARDS

The other relevant standards applicable as under

IS 5142 Continuous variable voltage auto transformers

IS 11171 Dry type transformers

IS 5553 Current limiting reactor

IS 13118 General requirement for circuit breakers for voltage exceeding 1000V

IS 13947 (Part-3) Fuse switch units not exceeding 1000V A.C.

IS 9920 HT Isolators and switches

IS 13947 (Part-5) Rotary switch not exceeding 1000V A.C.

IS 10624 High Voltage fuse link for motor circuit application

IS 9385 (Part -1) High voltage fuses (current limiting fuses)

IS 9385 (Part – 3) Application guide for high voltage fuses

IS 9385 (Part – 5) High voltage fuses . Type & dimensions of fuse link for current limiting fuses

IS 13703(Part1-4) LV Fuses not exceeding 1000V A.C.

IS 12021 Specification for control transformers for voltages not exceeding 1000 V A.C.

IS 13974 AC Contactors not exceeding 1000V A.C.

IS 9046 AC Contactors above 1000V upto and including 11000V A.C.

IEC 470 HV AC Contactors(Vacuum)

IS 2705 Current Transformer

IS 6949 Core balance transformer

IS 3156 Voltage transformer

IS 1766 Time switch

IS 8588 Thermostatic bimetals

IS 3842 Electric relays for AC system

IS 722 AC Electricity meters

IS 1248 Indicating instruments

IS 1901 Indicating lamps

IS 2419 Dimensions of measuring instruments

IS 2147 Degree of protection provided by industrial enclosure

IS 2148 FLP Enclosure for electrical apparatus

IS 1554 PVC Insulated heavy duty cables for working voltage not exceeding 11000V

IS 2274 Electrical wiring of installations

IS 3043 Code of practice for earthing

IS 732 Code of practice for electrical wiring

IS 3072 Code of practice for installation and maintenance of switch gears

The equipment covered under this specification shall comply with all the latest applicable statutory rules , regulations , acts and safety codes which may be in force during the period of execution and which are related with design construction and operation of equipment in the locality where equipment is to be installed .

3.0 Service condition :

- a) Ambient temperature : Maximum 45°C for FLP Motors
- b) Location : Heavily polluted atmosphere with coal dust and Degree three gassy mine for FLP

4.0 Design

4.1 Electrical :

- a) Starter shall be designed for over load, short circuit , and earth leakage protection
- b) Over load and short circuit protection by relays . Range of current adjustment 50% to 150 %
of full load current and Instantaneous setting 200% to 600 % of full load current .
- c) Earth leakage relay :-
 - (i) For 3.3 KV - Earth leakage protection with suitable CBCT & sensitive earth leakage relays suitable for operation on solid neutral system with trip level range 200 mA to 4A with test & reset facility from outside.
 - (ii) Earth leakage relay shall be of high quality and subjected to relevant test as per the Indian standard or IEC to ensure satisfactory performance, the report of standard test house for same should be submitted.
- d) Star delta starter shall be designed for auto change over by 30 seconds
- e) All Starter shall be designed to prevent sudden starting after the restoration of power supply.
- f) All Starter shall be designed for protection against single phasing (current sensing)

4.2 Mechanical :

- a) All starter shall be designed to withstand the thermal and electromagnetic stresses due to over load and short circuit faults .
- b) All Starter shall be designed for easy accessibility to components for inspection and maintenance .
- c) All Starter shall be designed for safety interlock to ensure opening of the door only when the isolator is off.

5.0 Construction :

5.1 Electrical :

- a) **All power contactors of starters shall be AC – 3 in accordance with relevant codes. Vacuum contactor will have to provide for 3.3 KV starter and air break contact for 550V starter . The make of contactor will be L & T / Semen's / ABB / Tele mechanics ,or any reputed make..**
- b) HRC fuse on starters shall be current limiting type. HRC fuse shall be cartridge type mounted on compatible fuse base .
- c) Starter shall have ON/OFF/RESET push buttons .
- d) Starter shall have glow lamp for each phase .
- e) Starter shall have ammeter with selector switch .
- f) Starters shall have CT for protection & metering and have CBT for Earth leakage protection.
- g) 3.3KV starters shall have voltage transformer for measurement.
- h) Starters shall have timers. The setting shall be between 2 to 60seconds.
- i) The off load interlocked reversing isolator of capacity 300% of full load current shall be provided.
- j) The busbar rating shall be 400 A(through going electrolytic copper with shrink fit PVC sleeved.
- k) Single phase preventor shall be provided.

5.2 Mechanical :

- a) Starters shall have FLP enclosure .
- b) Starters shall be free standing floor mounted skid type.

- c) Starter shall have two separate earthing terminals on two diagonally opposite corner for earthings of the enclosure.
- d) Cable terminal box shall have FLP enclosure for incoming outgoing and through going cable sealing/ terminating box, suitable for mining type PVC /PILC, DWA.

6.0 Details of ratings in starter :-

Sl.no.	Voltage	H.P.	Quantity Required (nos)	Busbar Rating	Contactor Rating
1.	3300 V	400	10	400A	Thrice the full load current

7.0 Technical Parameters :

- Reference standard : IS 13947(Part 4) / IS 12661
- Reference standard for enclosure : IS 2148 /IS 2147
- Type of starter : Star Delta
- Rated voltage of starter : 3.3 KV
- Contactor category : AC – 3
- Contactor make : Semen’s / ABB / L & T / Tele mechanics ,or any reputed make
- Type of contactor : Vacuum Of suitable rating .
- Ammeter & Voltmeter : Required
- Auxiliary contact for
 - Earth leakage protection : Required
 - No volt protection : Required
- Mounting : Floor mounting skid type
- Clearance between phases : 70 mm
- Clearance between phase to phase : 60 mm
- Successful bidder has to submit self attested copy of all types of routine tests as per relevant Standard.
- Following documents shall have to be submitted at the time of bid -
 - An attested copy of currently valid DGMS approval for FLP starter
- Following documents shall have to be submitted at the time of supply :-
 - Operation and maintenance manual.
 - Spare part list with circuit diagram
 - An attested copy of currently valid DGMS approval for FLP starter