TENDER DOCUMENT

NIT No DLI/C&E/WI-675/519

FOR

Tender for Design, Engineering, Manufacturing at works, Supply and Supervision of Testing and Commissioning of “3Ph.-N 415V 4000 Amp rectangular non segregated phase, totally enclosed type Aluminium BUS DUCT” for “Augmentation of Fuel & Flux Crushing Facilities (Package-064) at Bhilai Steel Plant, (SAIL)”. 

VOLUME- 2C

(TENDER DRAWINGS)

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
Core-3, Scope Complex, 7,
Lodhi Road, New Delhi-110003
TEL NO: 011-24361666 FAX NO. 011- 24363426
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<th>SUB-VENDOR NAME</th>
<th>ADVANCE POWER CONTROLS LIMITED</th>
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<th>APPROVAL</th>
<th>INFORMATION</th>
<th>REFERENCE</th>
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<th>CONSTRUCTION</th>
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| CLIENT:          | SAIL, BHILAI STEEL PLANT, BHILAI, CHATTISGARH, 7.0 MTPA EXPANSION. |
| CLS CONSULTANTS: | MECON LIMITED |
| CONTRACTOR:      | ENGINEERING PROJECTS (INDIA) LTD. (A Government of India Enterprise) |

<table>
<thead>
<tr>
<th>PACKAGE DESCRIPTION</th>
<th>AUGMENTATION OF FUEL &amp; FLUX CRUSHING FACILITIES (PACKAGE 064)</th>
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| TITLE:              | G. A. DRAWING +B.O.M & GENERAL NOTES FOR PCC-1 (LTSS-1) CHP (LOCATION-SUB STATION-1) |

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1 OF 11 1
### GENERAL NOTES

1. **ALL DIMENSIONS ARE IN MM** (UNLESS SPECIFIED OTHERWISE).
2. **THE PANEL SHALL BE INDOOR, FLOOR MOUNTING DUST AND VERMIN PROOF FREE STANDING COMPARTMENTALIZED AND EXTENSIBLE AT BOTH END.**
3. **THE PANEL SHALL BE SUITABLE FOR 415V +10% -15%, 3-PHASE, 4-WIRE, 50HZ +4% -6% AC SUPPLY.**
4. **THE PANEL SHALL BE FABRICATED WITH 2.0MM CRCA SHEET FOR LOAD BEARING MEMBERS, AND NON LOAD BEARING MEMBERS, THE BASE CHANNEL SHALL BE 75X40X3MM ISMC & GLAND PLATE SHALL BE OF 2.0MM (GLAND PLATE SHALL BE UNDRILLED REMOVABLE TYPE).**
5. **ALL HINGED DOOR SHALL BE EARTHED WITH GREEN COLOR COPPER WIRE.**
6. **THE PANEL DOOR NOCK SHALL BE PROVIDED ON EACH DOOR.**
7. **NEOPRENE RUBBER GASKET SHALL BE PROVIDED FOR ALL THE DOORS, REMOVABLE COVER & BETWEEN ADJACENT PANEL. LIFTING HOOKS SHALL BE PROVIDED FOR THE PANEL. DOOR SHALL HAVE CONCEALED HINGES TO MAKE THE PANEL DUST & VERMIN PROOF.**
8. **THE PANEL SHALL BE POWDER COATED AFTER SURFACE TREATMENT SEVEN TANK PROCESS WITH PAINT SHADE INTERIOR OFF WHITE & EXTERIOR PAINT SHADE NO.-221 AS PER RAL-5 BRILLIANT GREEN COLOR WITH THICKNESS OF 30-50 MICROMS. MOUNTING PLATE SHALL BE IN DEEP ORANGE COLOR AND BASE FRAME SHALL BE PAINTED IN BLACK COLOR.**
9. **BUS BAR SUPPORT INSULATOR SHALL BE NON HYDROSCOPIC, FLAME RETARDANT, TRACK RESISTANT, HIGH STRENGTH SHEET MOULDED COMPOUND, POLYESTER FIBER GLASS MOULDED TYPE.**
10. **HORIZONTAL BUS BAR TO BE PROVIDED THROUGHOUT THE LENGTH OF THE PANEL AND PROJECTED AT BOTH END WITH ONE HOLE FOR CUSTOMER EARTH CONNECTION & EARTH BUS BAR IS ALSO EXTENSIBLE AT BOTH END.**
11. **BUS BAR SHALL BE INSULATED WITH HEAT SHRINKABLE COLORFUL PVC SLEEVES, RED, YELLOW, BLUE & BLACK FOR PROPER IDENTIFICATION.**
12. **CABLE ENTRIES AND EXIT SHALL BE FROM BOTTOM ONLY AND BUSDUTC ENTRY SHALL BE FROM TOP ONLY.**
13. **CONTROL WIRING SHALL BE CARRIED OUT WITH 1100V GRADE PVC INSULATED COPPER FLEXIBLE WIRE WITH FOLLOWING COLOR STANDARD:**
   - A – P.T CIRCUIT - 1.5 SQMM COLORED (RED)
   - B – C.T CIRCUIT - 2.5 SQMM COLORED (BLACK)
   - C – AC CONTROL WIRING - 1.5 SQMM BLACK
   - D – DC CONTROL WIRING - 1.5 SQMM GREY
14. **FEEDER INSRIPTION/NAME PLATE SHALL BE BLACK ENGRAVED ALUMINIUM LABEL PLATES SHALL BE PROVIDED FOR EACH FEEDER, PANEL ITSELF AND AT BACK SIDE WITH LETTER SIZE OF 5mm FOR FEEDER AND 25mm FOR MAIN PLATE AS PER GS-03.**
15. **BUS BAR SIZES SHALL BE AS PER SLD. NEUTRAL BUSBAR RATING SHALL BE 50% OF PHASE BUSBAR RATING.**
16. **ALL LIVE ACCESSIBLE PARTS SHALL BE SHROUDED & FINGER TOUCH PROOF.**
17. **DEGREE OF PROTECTION SHALL BE IP-53.**
18. **SHORT CIRCUIT WITH STANDBY CAPACITY OF ALL THE PANELS/Power S1 BAR SHALL BE 50KA FOR 1 sec. AND RATED PEAK WITH STAND CURRENT SHALL BE 2.1 TIME MEANS 105KVA.**
19. **MINIMUM & MAXIMUM OPERATING HEIGHT BETWEEN 450-1800MM.**
20. **MAIN VERTICAL & HORIZONTAL BUS BAR SHALL BE HIGH CONDUCTIVITY ELECTROLYTIC ALUMINUM ALLOY CONFORMING TO GRADE B916 AS PER IS-5082-1981.**
21. **CLEARANCE IN BUS BAR PHASE TO PHASE-25.4mm. PHASE TO NEUTRAL/EARTH-U0mm.**
22. **MAXIMUM TEMP. RISE OF THE BUS SHALL NOT EXCEED 40°C ABOVE AMBIENT TEMP. OF 50°C. SUCH SUITABLE DERATING FACTOR SHALL BE CONSIDERED.**
23. **RATED INSULATION VOLTAGE SHALL BE 1100V, POWER FREQUENCY WITHSTAND VOLTAGE FOR POWER CIRCUIT SHALL BE 2.5KV & 2.5KV FOR CONTROL CIRCUIT AND IMPULSE WITHSTAND VOLTAGE 4KV**
24. **ALL CONTROL TERMINAL SHALL BE SCREW TYPE (NON BEACREABLE POLYAMIDE, CT TERMINAL SHALL BE DISCONNECTING TYPE) WITH MINIMUM 20% SPARE CONTROL TERMINAL SHALL BE PROVIDED.**
25. **CONTROL BUS OF 25X3 CL, PH. & N.**
26. **ALL THE LIVE PARTS INSIDE THE BOARD SHALL BE COVERED WITH 1.0mm THICK FRILS POLY-CARBONATE SHEET IN ALL COMING THROUGH & OUTGOING FEEDERS.**
27. **DANGER NOTICE BOARD SHALL BE PROVIDED ON BOTH SIDE OF THE SWITCH BOARD IN SEVEN LANGUAGE INCLUDING, ENGLISH, HINDI, URDU, PUNJABI, TELGU, MALAYALAM & KANAREE.**
28. **ALL WIRING FERRULES IN WHITE COLORS WITH BLACK LETTER.**
29. **SUFFICIENT CABLE SUPPORT CLAMPS SHALL BE PROVIDED IN CABLE ALLEY FOR EASY TERMINATION OF CABLES.**
30. **INTERLOCKING: MODULE DOOR INTERLOCKED WITH MAIN POWER ISOLATING DEVICE, POWER CIRCUIT ISOLATION DEVICE TO HAVE PAD LOCKING IN THE OFF POSITION WITH DOOR CLOSED**
31. **ALL BUS BAR JOINTS SHALL BE BOLTED (WITH CADMIUM COATED BOLTS WITH PLAIN AND SPRING WASHER & NUTS WITH ANTI OXIDE GREASE FOR ALL BUS BAR CONNECTION TO BE APPLIED.**
32. **ALL THE PANELS SHALL HAVE END COVER AT BOTH END FOR FUTURE EXTENSIONS OF THE HORIZONTAL BUS BAR.**
33. **MINIMUM RATING OF CONTROL TERMINAL SHALL BE 16A AND CONTROL TERMINAL SHALL BE SUITABLE CONNECT MINIMUM TWO CORE OF 2.50SMM. WIRE.**
34. **SEPARATE TERMINAL BLOCK SHALL BE PROVIDED FOR ALL TB'S LIKE POWER TB & CONTROL TB'S AND ALL OF THEM SHALL HAVE SEPARATE TERMINAL STRIP NAME.**
35. **NO. BREAKER HANDLING TRUCK FOR WITHDRAWING THE BREAKER FROM SWITCH BOARD WITH ADJUSTABLE HEIGHT SHALL BE SUPPLIED WITH EACH PCC PANEL.**
36. **CUSTOM COMPRESSION TYPE BRASS CABLE GLAND AND CRIMPING TYPE TINNED HEAVY DUTY COPPER LUGS SUITABLE FOR TYPE, SIZE AND NUMBER OF CABLES SHALL BE SUPPLIED ALONG WITH SWITCHBOARD FOR ALL THE LT POWER & CONTROL CABLES (SCOPE OF SUPPLY ECP)**
37. **DATA SHEET AND CATALOGUE FOR MAIN COMPONENTS IN LINE WITH GTS INCLUDING ALL MAJOR FEATURES LIKE A.CB, RELAYS, MPF, BUS BAR SIZE CALCULATION FOR S/C & TEMP.**
38. **IN CASE OF MISINFORMATION OF ANY FEEDER, THE SAME SHALL BE INCORPORATED BEFORE PANEL MANUFACTURING WITH CONFIRMATION FROM M/S EPL.**
39. **THE COMMUNICATION PROTOCOL FOR BREAKER RELEASE AND METER METERS SHALL BE NOBUS.**
40. **ALL THE CABLE SIZES INDICATED ARE TENTATIVE ONLY.**

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| GENERAL NOTES FOR PCC-1 (LTSS-1) CHP (LOCATION-SUB STATION-1) |
|-------------------|-----------------|
| NAME | SIND DATE |
| ADVANCE POWER CONTROLS LIMITED | A-191, SECTOR-63, NOIDA (U.P.) INDIA |
| 1673 | SHEET |

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**Client:**
SAI, BHILAI STEEL PLANT, BHILAI, CHATTISGARH, 7.0 MTPA EXPANSION.

**Consultants:**
MECON LIMITED

**Contractor:**
ENGINEERING PROJECTS (INDIA) LTD.
(A Government of India Enterprise)

**Package Description:**
AUGMENTATION OF FUEL & FLUX CRUSHING FACILITIES (PACKAGE 864)

**Design:**
G. A. DRAWING +B.O.M & GENERAL NOTES FOR PCC-2 (LTSS-2) CSP (LOCATION-SUB STATION-2)

**Drawing Information:**
- **EPI-BSP-064-03-DE-03295**
- **EPI-DRAWING No.**
- **PROJECT DRAWING No.**
- **BSP-EPI-02-064-02-010-29-DE-03295**

**Sheet:**
A4

**Rev.:**
1 OF 11
GENERAL NOTES
3. All dimensions are in mm (unless specified otherwise).
4. The panel shall be suitable for 415V +10% -15%, 3 PHASE, 4 WIRE, 50Hz 4-6%, AC supply.
5. The panel shall be fabricated with 2.0mm CRCA SHEET for load bearing members, and non-load bearing members,
   the base channel shall be 75x40x55MM ISMC & GLAND PLATE shall be of 3.0mm (GLAND PLATE shall be unbrilled removable type).
6. All hinged door shall be fitted with green color copper wire.
7. Neoprene rubber gasket shall be provided for all the doors, removable cover & between adjacent panel. Lifting hooks shall be provided for the panel. Door shall have concealed hinges
   to make the panel dust & vermin proof.
8. The panel shall be powder coated after surface treatment seven tank process with paint shade interior 'off white' & exterior paint shade No.-221 as per IS-5 brilliant green color
   with thickness of 50-60 Microns. Mounting plate shall be in deep orange color and base frame shall be painted in black color.
9. Bus bar supporting insulator shall be non-organic, hygroscopic, flame retardant, track resistant, high strength sheet moulded compound, polyester fiber glass moulded type.
10. Horizontal earth bus to be provided throughout the length of the panel and projected at both ends with one hole for customer earth connection & earth bus bar is also extendable at both end.
11. Bus bar shall be insulated with heat shrinkable colored PVC sleeves, red, yellow, blue & black for proper identification.
12. Cable entries and exit shall be from bottom only and busduct entry shall be from top only.
13. Control wiring shall be carried out with 1100v grade PVC insulated copper flexible wire with following color standard.
   A - P.T CIRCUIT  1.5 SQMM color coated.
   B - C.T CIRCUIT  2.5 SQMM color coated.
   C - AC CONTROL WIRING  1.5 SQMM black.
   D - DC CONTROL WIRING  1.5 SQMM grey.
14. Feeder Inscription/name plate shall be black engraved aluminium label plates shall be provided for each feeders, panel itself and at back side with letter size of 5mm for feeder and 25mm
   for main plate as per GS-03.
15. Bus bar sizes shall be as per SLD. Neutral busbar rating shall be 50% of phase busbar rating.
16. All live accessible parts shall be shruded & finger touch proof.
17. Degree of protection shall be IP-53.
18. Short circuit with stand capacity of all the panels/power bus bar shall be 50KA for 1 sec and rated peak with stand current shall be 2.1 time means 105KVA.
19. Minimum & maximum operating height between 450-1500mm.
20. Main vertical & horizontal bus bar shall be high conductivity electrolytic aluminium alloy confirming to grade 1214 as per IS-5062-1981.
21. Clearance in bus bar phase to phase-25.4mm & phase to neutral/earth -10mm.
22. Maximum temp. rise of the bus shall not exceed 40°C above ambient temp. of 50°C & suitable deration factor be considered.
23. Rated insulation voltage shall be 1100V, power frequency withstand voltage for power circuit shall be 2500V & 2500V for control circuit and implus withstand voltage 4KV
24. All control terminal shall be screw type (non breakable polyamide, CT terminal shall be disconnecting type) with minimum 20% spare control terminal shall be provided.
25. Control bus of 25x3.5 Cu Ph. & N.
26. All the live part inside the panel shall be covered with 1.0mm thick PIR 50Poly-carbante sheet in white color & outgoing feeders.
27. Danger notice board shall be provided on both side of the switch board in seven language including, English, Hindi, Urdu, Punjabi, Telugu, Malayalam & Kannarees.
28. All wiring ferrules in white colors with black letter.
29. Sufficient cable support clamps shall be provided in cable alley for easy termination of cables.
30. Interlocking: Module door interlocked with main power isolating device. Power circuit isolation device to have pad locking in the off position with door closed.
31. All bus bar joints shall be bolted (with cadmium coated bolts with plain and spring washers & nuts with anti oxide grease for all bus bar connection to be applied.
32. All the panels shall have end cover at both end for future extensions of the horizontal bus bar.
33. Minimum rating of control terminal shall be 10A and control terminal shall be suitable connect minimum two core of 2.5sq.mm. wire.
34. Separate terminal block shall be provided for all to like power & control to's and all of them shall have separate terminal strip name.
35. One No. Breaker handling truck for withdrawing the breaker from switch board with adjustable height shall be supplied with each PCC Panel.
36. Double compression type brass cable gland and crimping type tinned heavy duty copper lugs suitable for type, size and number of cables shall be supplied along with switchboard for all the LT power & control cables (scope of supply EPL).
37. Data sheet and catalogue for major components in line with GTS including all major features like ACR, RELAYS, MFP, bus bar size calculation for S/C & TEM.
38. RISE & HEAT LOSS DATA ARE ATTACHED IN SEPARATE SHEET AS ANNEXURE-I TO ANNEXURE-6.
39. The communication protocol for breaker release and MFP meters shall be modbus.
40. All the cable sizes indicated are tentative only.
GENERAL NOTES:
1) ALL DIMENSIONS ARE IN MM.
2) SHEET STEEL - LOAD BEARING MEMBERS: 2.0mm CRCA
NON LOAD BEARING MEMBERS: 2.0mm CRCA
GLAND PLATE: 3.0mm THICK.
3) PAINT SHADE:
   PANEL: INTERIOR : OFF WHITE
   EXTERIOR: BRILLIANT GREEN
   PAINT SHADE: 2:1 AS PER IS 5-5.
4) MOUNTING PLATE: ORANGE
   BASE FRAME: BLACK
   BUS BAR ALL: PM - 2x3x(150x6)x1 M
   N - 1x3x(150x5) M
5) SIZE OF VERTICAL DROPPER:
   a) 1/C 4000 A
   b) 0/4 1600A+800A: 3x(80x10)mm
   c) 0/4 800A: 2x(80x10)mm
6) NEUTRAL BUS BAR WILL BE 50% OF PH.
7) EARTHING BUS BAR ALL: > 50x10mm
8) CONTROL BUS BAR CT: > 25x3mm
9) CABLE ENTRY & EXIT - BOTTOM ONLY.
10) QTY. - 1NO.
11) SHIPMENT - 5 TRANSPORT SECTION.
12) DEGREE OF PROTECTION - IP-52.
REAR VIEW

7800 (TOTAL LENGTH)

TRANSPORT SECTION 1
TRANSPORT SECTION 2
TRANSPORT SECTION 3
P1
P2
P3
P4
P5
P6

LIFTING RING
GENERATOR DOOR RINGER
DOOR BOLT
DANGER PLATE
HOGRIS LOCK
EARTH BUS WITH CENTERING TERMINAL BOX SET
BASE FRAME
TRANSOM
**EPI-DRAWING No.**: BSP-EPI-02-064-02-010-29-DE-03298

**SIZE**: A4

1 OF 11

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**TITLE**: G. A. DRAWING + B.O.M

**CATEGORY OF Dwg.**: DRAWING

**REFERENCE**: SAIL, BHILAI STEEL PLANT, BHILAI, CHATTISGARH, 7.0 MTPA EXPANSION

**CONSULTANTS**: MECON LIMITED

**CONTRACTOR**: ENGINEERING PROJECTS (INDIA) LTD.

**PACKAGE DESCRIPTION**: AUGMENTATION OF FUEL & FLUX CRUSHING FACILITIES (PACKAGE 064)
1. **GENERAL NOTES**

1. **ALL DIMENSIONS ARE IN MM (UNLESS SPECIFIED OTHERWISE).**
2. **THE PANEL SHALL BE INDOOR, FLOOR MOUNTING DUST AND VERMIN PROOF FREE STANDING COMPARTMENTALISED & EXTENSIBLE AT BOTH END.**
3. **THE PANEL SHALL BE SUITABLE FOR 415V+10%-15%, 3PHASE, 4WIRE, 50HZ +/-4%-6%, AC SUPPLY.**
4. **THE PANEL SHALL BE FABRICATED WITH 2.0MM CRCA SHEET FOR LOAD BEARING MEMBERS, AND NON LOAD BEARING MEMBERS, THE BASE CHANNEL SHALL BE 75X40X3MM ISMC & GLAND PLATE SHALL BE OF 3.0MM (GLAND PLATE SHALL BE UNDRILLED REMOVABLE TYPE).**
5. **ALL HINGED DOOR SHALL BE EARTHED WITH GREEN COLOR COPPER WIRE.**
6. **THE PANEL DOOR KNOB SHALL BE PROVIDED ON EACH DOOR.**
7. **NEOPRENE RUBBER GASKET SHALL BE PROVIDED FOR ALL THE DOORS, REMOVABLE COVER BETWEEN ADJACENT PANEL, LIFTINGHOOKS SHALL BE PROVIDED FOR THE PANEL, DOOR SHALL HAVE CONCEALED HINGES TO MAKE THE PANEL DUST & VERMIN PROOF.**
8. **THE PANEL SHALL BE POWDER COATED AFTER SURFACE TREATMENT SEVEN TANK PROCESS WITH PAINT SHADE INTERIOR 'OFF WHITE' & EXTERIOR PAINT SHADE NO.-221 AS PER IS-5-11979 BRILLIANT GREEN COLOR WITH THICKNESS OF 50-60 MICRONS, MOUNTING PLATE SHALL BE IN DEEP ORANGE COLOR AND BASE FRAME SHALL BE PAINTED IN BLACK COLOR.**
9. **BUS BAR SUPPORTING INSULATOR SHALL BE NON, HYDROSCOPIC, FLAME RETARDANT, TRACK RESISTANT, HIGH STRENGTH SHEET MOLDED COMPOUND, POLYESTER FIBER GLASS MOLDED TYPE.**
10. **HORIZONTAL BUS TO BE PROVIDED THROUGH OUT THE LENGTH OF THE PANEL AND PROJECTED AT BOTH END WITH ONE HOLE FOR CUSTOMER EARTHCORD AND BUS BAR IS ALSO EXTENSIBLE AT BOTH END.**
11. **BUS BAR SHALL BE INSULATED WITH HEAT SHRINKABLE COLORED PVC SLEEVES, RED,YELLOW,BLUE & BLACK FOR PROPER IDENTIFICATION.**
12. **CABLE ENTRIES AND EXIT SHALL BE FROM BOTTOM ONLY AND BUSDUCT ENTRY SHALL BE FROM TOP ONLY.**
13. **CONTROL WIRING SHALL BE CARRIED OUT WITH 1100V GRADE PVC INSULATED COPPER FLEXIBLE WIRE WITH FOLLOWING COLOR STANDARD.**
   - A - P.T CIRCUIT - 1.5 SQMM COLOR COATED.
   - B - G.T CIRCUIT - 2.5 SQMM COLOR COATED.
   - C - AC CONTROL WIRING - 1.5 SQMM BLACK.
   - D - DC CONTROL WIRING - 1.5 SQMM GREY.
14. **FEEDER INSCRIPTION/NAME PLATE SHALL BE BLACK ENGRAVED ALUMINIUM LABEL PLATES SHALL BE PROVIDED FOR EACH FEEDERS, PANEL ITSELF AND AT BACK SIDE WITH LETTER SIZE OF 5mm FOR FEEDER AND 25mm FOR MAIN PLATE AS PER GS-03.**
15. **BUS BAR SIZES SHALL BE AS PER SLD. NEUTRAL BUSBAR RATING SHALL BE 50% OF PHASE BUSBAR RATING.**
16. **ALL LIVE ACCESSIBLE PARTS SHALL BE SHROUDED & FINGER TOUCH PROOF.**
17. **DEGREE OF PROTECTION SHALL BE IP20.**
18. **SHORT CIRCUIT WITH STAND CAPACITY OF ALL THE PANELS/POWER BUS BAR SHALL BE 50ka FOR 1 SEC AND RATED PEAK WITH STAND CURRENT SHALL BE 2.5 TIME MEANS 105kVA.**
19. **MINIMUM & MAXIMUM OPERATING HEIGHT BETWEEN 450-1800MM.**
20. **MAIN VERTICAL & HORIZONTAL BUS BAR SHALL BE HIGH CONDUCTIVITY ELECTROLYTIC ALUMINIUM ALLOY CONFIRMING TO GRADE E912 AS PER IS-5082-1981.**
21. **CLEARMANCE IN BUS BAR PHASE TO PHASE-25.4mm & PHASE TO NEUTRAL/EARTH -10mm.**
22. **MAXIMUM TEMP. RISE OF THE BUS SHALL NOT EXCEED 40°C ABOVE AMBIENT TEMP. OF 50°C & SUITABLE DERATING FACTOR SHALL BE CONSIDERED.**
23. **RATED INSULATION VOLTAGE SHALL BE 1100V, FREQUENCY WITHSTAND VOLTAGE FOR POWER CIRCUIT SHALL BE 2.5kV & 2.0kV FOR CONTROL CIRCUIT AND IMPOUSE WITHSTAND VOLTAGE 4kV**
24. **ALL CONTROL TERMINAL SHALL BE SCREW TYPE (NON BREAKABLE POLYAMIDE, CT TERMINAL SHALL BE DISCONNECTING TYPE) WITH MINDIMUM 20% SPARE CONTROL TERMINAL SHALL BE PROVIDED.**
25. **CONTROL BUS OF 25x2 CU. MM. PH. & N.**
26. **ALL THE LIVE PARTS INSIDE THE PANEL SHALL BE COVERED WITH 1.0mm THICK MILS POLY-CARBONATE SHEET IN ALL INCOMING & OUTGOING FEEDERS.**
27. **DANGER NOTICE BOARD SHALL BE PROVIDED ON BOTH SIDE OF THE SWITCH BOARD IN SEVEN LANGUAGE INCLUDING, ENGLISH, HINDI, URDU, PUNJABHI, TELUGU, MALAYALAM & KANARIES.**
28. **ALL WIRING FERRULES IN WHITE COLORS WITH BLACK LETTER.**
29. **SUFFICIENT CABLE SUPPORT CLAMPS SHALL BE PROVIDED IN CABLE ALLEY FOR EASY TERMINATION OF CABLES.**
30. **OVERLOCKING MODULE DOOR INTERLOCKED WITH MAIN POWER ISOLATING DEVICE, POWER CIRCUIT ISOLATION DEVICE TO HAVE PAD LOCKING IN THE OFF POSITION WITH DOOR CLOSED.**
31. **ALL BUS BAR JOINTS TO BE BOLTED WITH (CADMIUM COATED) WASHERS & NUTS WITH ANTI OXIDE GREASE FOR ALL BUS BAR CONNECTION TO BE APPLIED.**
32. **ALL THE PANELS SHALL HAVE END COVER BOTH END FOR FUTURE EXTENSIONS OF THE HORIZONTAL BUS.**
33. **MINIMUM RATING OF CONTROL TERMINAL SHALL BE 10A AND CONTROL TERMINAL SHALL BE SUITABLE CONNECT MINDIMUM TWO CORE OF 2.5kcm² WIRE.**
34. **SEPARATE TERMINAL BLOCK SHALL BE PROVIDED FOR ALL TB'S LIKE POWER TB & CONTROL TB'S AND ALL OF THEM SHALL HAVE SEPARATE TERMINAL STRIP NAME.**
35. **ONE No. BREAKER HANDLING TRUCK FOR WITHDRAWING THE BREAKER FROM SWITCH BOARD WITH ADJUSTABLE HEIGHT SHALL BE SUPPLIED WITH EACH PCC PANEL.**
36. **DOUBLE COMPRESSION TYPE BRASS CABLE CLAMP AND CRIMPING TYPE TINNED HEAVY DUTY COPPER LUGS SUITABLE FOR TYPE, SIZE AND NUMBER OF CABLES SHALL BE SUPPLIED ALONG WITH SWITCHBOARD FOR ALL THE LT POWER & CONTROL CABLES (SCOPE OF SUPPLY EPIL).**
37. **DATA SHEET AND CATALOGUE FOR ALL COMPONENTS IN LINE WITH THATS INCLUDING ALL MAJOR FEATURES LIKE ACB, RELAYS, MMF, BUS BAR SIZE CALCULATION FOR S/C & TEMP.**
38. **RISE & HEAT LOSS DATA ARE ATTACHED IN SEPARATE SHEET AS ANNEXURE-1 TO ANNEXURE-6.**
39. **IN CASE OF MISSING OF ANY FeEDER, THE SAME SHALL BE MANUFACTURED BEFORE PANEL MANUFACTURING WITH CONFIRMATION FROM M/S EPIL.**
40. **THE COMMUNICATION PROTOCOL FOR BREAKER RELEASE AND MMF METERS SHALL BE MODBUS.**

---

**REFERENCE DRAWINGS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Drawing No.</th>
<th>Title</th>
<th>Notes</th>
<th>Scale</th>
<th>Revision</th>
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</table>
| 1   | APL01        | EPIL-EPIL/PPC-4-1673/1-14-15/054-03 | APL01 | APL01 | 1673/1-14-15/054-03 | 1

---

**GENERAL NOTES**

- **FOR PCC-4 (LTS-4)-C-LINE (LOCATION-SUB STATION-1)**
- **DESIGN: ADVANCE POWER CONTROL LIMITED**
- **NAME: INDIPW-03**
- **DATE: 13-01-2015**

---

**REFERENCE DRAWINGS**

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<th>Scale</th>
<th>Revision</th>
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</thead>
</table>
| 1   | APL01        | EPIL-EPIL/PPC-4-1673/1-14-15/054-03 | APL01 | APL01 | 1673/1-14-15/054-03 | 1

---

**EPIL-PPC-04-0A**
GENERAL NOTES:-
1) ALL DIMENSIONS ARE IN MM.
2) SHEET STEELS-
   LOAD BEARING MEMBERS- 2.0mm CRCA
   NON LOAD BEARING MEMBERS- 1.2mm CRCA
   GLAND PLATE- 3.0mm THICK.
3) PAINT SHADE-
   PANEL : INTERIOR - OFF WHITE
   EXTERIOR - BRILLIANT GREEN
   PAINT SHADE-221
   AS PER IS-5
   MOUNTING PLATE- ORANGE
   BASE FRAME- BLACK
4) BUS BAR ALU.-PI - 2 x 500 x (150+5) MM
   N - 1 x 500 x (150+5) MM
5) SIZE OF VERTICAL DROPPER-:
   a) I/C 4000 A
      : 2 x 300 x (150+5) mm
   b) O/G 1600 A + 800 A
      : 2 x (80 x 10) mm
   6) NEUTRAL BUS BAR WILL BE 50% OF PHASE

7) EARTHING BUS BAR ALU.- > 50 x 10 mm
8) CONTROL BUS BAR CU. - > 20 x 3 mm
9) CABLE ENTRY & EXIT - BOTTOM ONLY.
10) QTY. - 1 NO.
11) SHIPMENT - 5 TRANSPORT SECTION.
12) DEGREE OF PROTECTION-IP-52.

FEEDER DESCRIPTION

FEEDER INSCRIPTION PLATE (TYPICAL)

CATEGORY OF INS.

DELIVERY DATE: APRIL 2015
C.L.O.E.

ADVANCE POWER CONTROLS LIMITED
A-191, SECTOR-63, NOIDA (U.P.) INDIA

P R O J E C T  D E S I G N

ADVANCE POWER CONTROLS LIMITED
P.O. No.
LOT-02-04/66/46/1-D/PD/2015

DESIGNED

MECON LIMITED

NOMENCLATURE

CONSULTANTS

SAIL, BHILAI STEEL PLANT, BHILAI
CHATTISGARH, 7.5 MTPA EXPANSION.

ENGINEERING PROJECTS (INDIA) LTD.

AGGREGATION OF FUEL & FLUX
CRUSHING FACILITIES (PACKAGE 844)

A. G. DRAWING
FOR
PCC-4 (LTSS-4) C-LINE
(LOCATION-SUBSTATION)

GECO-11

10/04/15

SIGN

C-LINE

53

APPL/EPFL/PCC-4/18/73/14-15/40A

1

APPL/EPFL/PCC-4-064-02-010-29-DC-03301

APPL/EPFL/PCC-4-064A

2

1

10/04/15

SIGN

C-LINE

53

APPL/EPFL/PCC-4/18/73/14-15/40A

1

APPL/EPFL/PCC-4-064-02-010-29-DC-03301

APPL/EPFL/PCC-4-064A

2

1
GENERAL NOTES
1. ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED OTHER WISE.
2. THE PANEL SHALL BE INDOOR, FLOOR MOUNTING DUST AND VERMIN PROOF FREE STANDING CATERPILLARIZED & EXTRUSIBLE AT BOTH END.
3. THE PANEL SHALL BE SUITABLE FOR 415V-10- 15%, 3PHASE, 4WIRE, 50HZ 14% -6% AC SUPPLY.
4. THE PANEL SHALL BE FABRICATED WITH 2.0MM CRCA SHEET FOR LOAD BEARING MEMBERS, AND NON LOAD BEARING MEMBERS.
   THE BASE CHANNEL SHALL BE 75X40X35MM ISMC & GLAND PLATE SHALL BE OF 3.0MM (GLAND PLATE SHALL BE UNDRILLED REMOVABLE TYPE).
5. ALL HINGED DOOR SHALL BE EARTHED WITH GREEN COLOR COPPER WIRE.
6. THE PANEL DOOR KNOB SHALL BE PROVIDED ON EACH DOOR.
7. NEOPRENE RUBBER GASKET SHALL BE PROVIDED FOR ALL THE DOORS, REMOVABLE COVER & BETWEEN ADJACENT PANEL. LIFTING HOOKS SHALL BE PROVIDED FOR THE PANEL DOOR SHALL HAVE CONCEALED HANDLES TO MAKE THE PANEL DUST & VERMIN PROOF.
8. THE PANEL SHALL BE POWDER COATED AFTER SURFACE TREATMENT SEVEN TANK PROCESS WITH PAINT SHADE INTERIOR "OFF WHITE" & EXTERIOR PAINT SHADE NO.-221 AS PER IS-5-5 BRILLIANT GREEN COLOR WITH THICKNESS OF 50-50 MICRONS. MOUNTING PLATE SHALL BE IN DEEP ORANGE COLOR AND BASE FRAME SHALL BE PAINTED IN BLACK COLOR.
9. BUS BAR INSULATION SUPPORTING INSULATION SHALL BE NON, HYDROSCOPIC, FLAME RETARDANT, TRACK RESISTANT, HIGH STRENGTH SHEET MOULDED COMPOUND, POLYESTER FIBER GLASS MOULDED TYPE.
10. HORIZONTAL EARTH BUS TO BE PROVIDED THROUGHOUT THE LENGTH OF THE PANEL AND PROJECTED AT BOTH END WITH ONE HOLE FOR CUSTOMER EARTH CONNECTION & EARTH BUS BAR IS ALSO EXTRUSIBLE AT BOTH END.
11. BUS BAR SHALL BE INSULATED WITH HEAT SHRINKABLE COLORED PVC SLEEVES, RED,YELLOW,BLUE & BLACK FOR PROPER IDENTIFICATION.
12. CABLE ENTRIES AND EXIT SHALL BE FROM BOTTOM ONLY AND BUSDUCENT ENTRY SHALL BE FROM TOP ONLY.
13. CONTROL WIRING SHALL BE CARRIED OUT WITH 1X100V GRADE PVC INSULATED COPPER FLEXIBLE WIRE WITH FOLLOWING COLOR STANDARD.
   A - PT CIRCUIT - 1.5 SQMM COLOR COATED.
   B - CT CIRCUIT - 2.5 SQMM COLOR COATED.
   C - AC CONTROL WIRING - 1.5 SQMM BLACK.
   D - DC CONTROL WIRING - 1.5 SQMM GREY.
14. FEEDER INSCRIPTION/NAME PLATE SHALL BE BLACK ENGRAVED ALUMINIUM LABEL PLATES SHALL BE PROVIDED FOR EACH FEEDER, PANEL ITSELF AND AT BACK SIDE WITH LETTER SIZE OF 5MM FOR FEEDER AND 25MM FOR MAIN PANEL AS PER GS-03.
15. BUS BAR SIZES SHALL BE AS PER SLD. NEUTRAL BUSBAR RATINGS SHALL BE 50% OF PHASE BUSBAR RATING.
16. ALL LIVE ACCESSIBLE PARTS SHALL BE SHROUD & FINGER TOUCH PROOF.
17. DEGREE OF PROTECTION SHALL BE IP 54.
18. SHORT CIRCUIT WITH STAND CAPACITY OF ALL THE PANELS/POWER BUS BAR SHALL BE 50KA FOR 1 SEC. AND RATED PEAK WITH STAND CURRENT SHALL BE 2.1 TIME MEANS 105KVA.
19. MINIMUM & MAXIMUM OPERATING HEIGHT BETWEEN 450-1800MM.
21. CLEARANCE IN BUS BAR PHASE TO PHASE-25.4MM & PHASE TO NEUTRAL/EARTH -19MM.
22. MAXIMUM TEMP. RISE OF THE BUS SHALL NOT EXCEED 40°C ABOVE AMBIENT TEMP. OF 50°C. & SUITABLE DERATING FACTOR SHALL BE CONSIDERED.
23. RATED INSULATION VOLTAGE SHALL BE 1100V, POWER FREQUENCY WITHSTAND VOLTAGE FOR POWER CIRCUIT SHALL BE 2.5KV & 2.8KV FOR CONTROL CIRCUIT AND IMPULSE WITHSTAND VOLTAGE 4KV.
24. ALL CONTROL TERMINAL SHALL BE SCREW TYPE (NON BREAKABLE POLYAMIDE, CT TERMINAL SHALL BE DISCONNECTING TYPE) WITH MINIMUM 20MPA SPARE CONTROL TERMINAL SHALL BE PROVIDED.
25. CONTROL BUS OF 2X25 CU. PH. & N.
26. ALL THE LIVE PART INSIDE THE BOARD SHALL BE COVERED WITH 1.0MM THICK FR5 POLY-CARBONATE SHEET IN ALL INCOMING & OUTGOING FEEDERS.
27. DANGER NOTICE BOARD SHALL BE PROVIDED ON BOTH SIDE OF THE SWITCH BOARD IN SEVEN LANGUAGE INCLUDING, ENGLISH, HINDI, URBID, PUNJABI, TELUGU, MALAYALAM & KANARRE.
28. ALL WIRING FERRULES IN WHITE COLORS WITH BLACK LETTER.
29. SUFICIENT CABLE SUPPORT CLAMPS SHALL BE PROVIDED IN CABLE ALLEY FOR EASY TERMINATION OF CABLES.
30. INTERLOCKING: MOOD DOOR INTERLOCKED WITH MAIN POWER ISOLATING DEVICE, POWER CIRCUIT ISOLATION DEVICE TO HAVE PAD LOCKING IN THE OFF POSITION WITH DOOR CLOSED.
31. ALL BUS BAR JOINTS SHALL BE SOLID (WITH CADMIUM COATED BOLTS WITH PLAIN AND SPRING WASHERS & NUTS WITH ANTI OXIDE GREASE FOR ALL BUS BAR CONNECTION TO BE APPLIED.
32. ALL THE PANELS SHALL HAVE END COVER AT BOTH END FOR FUTURE EXTENSIONS OF THE HORIZONTAL BUS BAR.
33. MINIMUM RATTING OF CONTROL TERMINAL SHALL BE 10A AND CONTROL TERMINAL SHALL BE SUITABLE CONNECT MINIMUM TWO CORE OF 2.50MM WIRE.
34. SEPARATE TERMINAL BLOCK SHALL BE PROVIDED FOR ALL TB'S LIKE POWER TB & CONTROL TB'S AND ALL OF THEM SHALL HAVE SEPARATE TERMINAL STRIP.
35. ONE NO. BREAKER HANDLING TRUCK FOR WITHDRAWING THE BREAKER FROM SWITCH BOARD WITH ADJUSTABLE HEIGHT SHALL BE SUPPLIED WITH EACH PCC PANEL.
36. DOUBLE COMPRESSION TYPE BRASS CABLE CLAMP AND CRIMPING TYPE TENNED HEAVY DUTY COPPER LUGS SUITABLE FOR TYPE, SIZE AND NUMBER OF CABLES SHALL BE SUPPLIED ALONG WITH SWITCHBOARD FOR ALL THE LT POWER & CONTROL CABLES (SCOPES OF SUPPLY EPL).
37. DATA SHEET AND CATALOGUE FOR MAJOR COMPONENTS IN LINE WITH OTS INCLUDING ALL MAJOR FEATURES LIKE A/C, RELAYS, MPM, BUS BAR SIZE CALCULATION FOR S/C & TEMP.
38. RISE & FALL LOSS DATA ARE ATTACHED IN SEPARATE SHEET AS ANNEXURE-1 TO ANNEXURE-6.
39. IN CASE OF MISSING OF ANY FEEDER, THE SAME SHALL BE INCORPORATE BEFORE PANEL MANUFACTURING WITH CONFIRMATION FROM I/S EPL.
40. THE COMMUNICATION PROTOCOL FOR BREAKER RELEASE AND HMF METERS SHALL BE MODBUS.

All the cable sizes indicated are tentative only.
TRANSFORMER

SPECIFICATION REF.
EIC: 60728, IS:11177 & 2026

KVA. 2000
RATED HV 6900
VOLTAGE(V) LV 433
TYPE INDOOR
RATED HV 174.95
TYPE OF COOLING AN
CURRENT(A) LV 256.88
RATED FREQ.(Hz) 50
O.D.A ORG.NO. SC-14-103
IMPEDANCE 6.208 +
MAKER'S SLNO. SC-14-103
W.T. G.O & WGO 4950
NO. OF PHASES 1N-3 S-1 LV 340
TOTAL WEIGHT 6150
YEAR OF MFG. 2015
INS. LEVEL HV 72/72/7200 V TP
MAX. TEMP. RISE WGO 75°C AMBI 50°C LV 31.8 RMS

* SERIAL NO., IMPEDANCE & YEAR OF MANUFACTURING WILL BE PUNCHED AT THE TIME OF DISPATCH

PLATE MATERIAL ALUMINIUM ANODISED
PLATE THICKNESS 1.5mm
LETTER SILVER/BLACK
PROCESS ETCHING/ENGRAVING

MADE IN INDIA BY
SUDHIR TRANSFORMERS LIMITED

Bhilai Steel Plant, Bhilai, Chhattisgarh
7.0 MTPA Expansion
Consultant MECON Limited

Augmentation of Fuel & Flux Crushing Facilities (Package 06)

Rating and Diagram Plate

Sudhir Transformers Limited
Plot No. 44/A, Industrial Area, Saidnagar, Shyam Bardhan

Scale: 1:50

Work Order No.
GSC-14-103

Approved Risks

Date 20-03-2015

Reference: SC-14-103

Design Risks

Drawn By

This drawing is confidential and should not be disclosed, copied or lent to a third party without written consent of Engineering Projects (I) Ltd. Except for the purpose of construction, operation and maintenance of the system for which the drawing is meant.

REFERENCES NOTES REVISIONS
1 4 3 2

Produced by an Autodesk Educational Product
NOTE: 1. CABLE BOX SUITABLE FOR 2x30x185 Sqmm 11kV (U) XLPE CABLES.
   2. CABLE BOX PROTECTION CLASS: IP 55.

DETAILS OF HV BUSHING
- RATED VOLTAGE: 12kV
- RATED CURRENT: 250A
- TYPE: PORCELAIN
- TOTAL CABLE DISTANCE: 348mm
- STEM: M12
- POWER FREQ WITHSTAND VOLTAGE: 35kV
- TOTAL WEIGHT: 3.5kg

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>SL NO</th>
<th>ACCESSORIES</th>
<th>RATING</th>
<th>QTY</th>
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<td>2</td>
<td>HV CABLE BOX (AIR FILLED)</td>
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<td>3</td>
<td>HV DISCONNECTING CHAMBER (AIR FILLED)</td>
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<tr>
<td>4</td>
<td>EARTHING TERMINALS (TO TAP HOLES)</td>
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<tr>
<td>5</td>
<td>LIFTING LUG</td>
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<td>6</td>
<td>GLAND PLATE (UNDILLED REMOVABLE)</td>
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<td>3MM THICK CIRC. SHT.</td>
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<td>7</td>
<td>FRONT COVER WITH HANDLE</td>
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<td>8</td>
<td>INSPECTION WINDOW WITH COVER</td>
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<td>9</td>
<td>RESIN CAST SUPPORT INSULATOR 12kV</td>
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<td>10</td>
<td>DISCONNECTING LINK</td>
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<td>12</td>
<td>CONNECTING LUG</td>
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<td>13</td>
<td>SURGE ARRESTOR 9kV/25kA</td>
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<td>14</td>
<td>SURGE ARRESTOR EARTH BUSHING 1.1kV/250A</td>
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This drawing is confidential and should not be disclosed or lent to a third party without written consent of Sudhir Transformers Limited. Except for the purpose of construction, operation and maintenance of the system for which the drawing is meant.

Sudhir Transformers Limited

REFERENCES

01 | (X) SUDHIR TRANSFORMERS LIMITED | 02

NOTES

03 | WORK ORDER NO: SC-14-103

REVISIONS

04 | DTD: 20-03-2015

91 | PROJECT DRAWING NO: 91

Produced by AN AUTODESK EDUCATIONAL PRODUCT
1. PAINT: DARK GREY SHADE 632 OF IS: 5
2. 4Sqm Cu CABLE WILL BE USED FOR C.T SECONDARY & ALL OTHER WIRING WILL BE 2.5Sqm Cu CABLE.
3. APPROX. WEIGHT—25KG.
4. DEGREE OF PROTECTION FOR MARSHALLING BOX: IP52
5. MARSHALLING BOX MATERIAL: 2mm THICK CRCA SHEET.
6. LOCATION OF ACCESSORIES MAY CHANGE DURING MANUFACTURING.
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<td><strong>SERIES</strong>: Distribution Transformer (230kV)</td>
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<td><strong>RATING</strong>: 3300kVA</td>
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<td>2.</td>
<td>LV</td>
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<tr>
<td>2.</td>
<td>LV</td>
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<td><strong>RATED FREQUENCY</strong>: 50Hz</td>
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<tr>
<td><strong>HOT AIR CLEARANCE</strong>: 30mm</td>
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<td><strong>HU SECT</strong>:</td>
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<tr>
<td>1.</td>
<td>HVAC</td>
</tr>
<tr>
<td>2.</td>
<td>LV</td>
</tr>
<tr>
<td><strong>SHORT-CIRCUIT CURRENT</strong>: On LV side at terminals considering system up to 3 sec.</td>
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<tr>
<td><strong>PERCENT RATING AT TERMINALS</strong>: 135%</td>
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<tr>
<td><strong>SI 0.4% IN STEPS OF 2.5%</strong></td>
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<tr>
<td><strong>DANGER</strong>: High Voltage</td>
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<td><strong>TYPICAL CLEARANCE BETWEEN PARTS</strong>:</td>
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<td><strong>CONE &amp; WEDGE</strong>:</td>
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<tr>
<td>1.</td>
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<td>1. <strong>DATE</strong>: 22 May 2015</td>
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**REFERENCES**

**NOTES**

**REV.**

**C**

**DEDUCED BY AN AUTODESK EDUCATIONAL PRODUCT**
1. 1 NO. HT BUSHING 11KV/250AMPS. MAKE—CJI
2. 1 NO. HT BUSHING 6.6KV/250AMPS. MAKE—CJI
3. 2 NOS. W.T. SCANNER (DIGITAL) 5A., 240V MAKE—PECON/PRECIMEASURE
4. 2 NOS. GASKETS SETS MAKE—NEW CORCK
TRANSFORMER

SPECIFICATION REF. REC. 0778, IS11171 & 2026
KVA 2000
RATED 11kV
VOLTAGE 11kV
RATED 66kV
CURRENT(A) 63A
O.G.A. DRG.NO. 02C-1-102
M A K E R ' S S L N O. SC-14-102
NO. OF PHASES 3
YEAR OF M F T 2015
MAX. TEMP. RISE WDG 70°C AMH 50°C LV

* SERIAL NO., IMPEDANCE & YEAR OF MANUFACTURING
WILL BE PUNCHED AT THE TIME OF DISPATCH

PLATE MATERIAL ALUMINIUM ANODISED
PLATE THICKNESS 1.5mm
LETTER SILVER/BLACK
PROCESS ETCHING/ENGRAVING

MADE IN INDIA BY SUDHIR TRANSFORMERS LIMITED

---

Bhilai Steel Plant, Bhilai, Chhattisgarh
7.0 MTPA Expansion

Consultant: MECON Limited

Package Description: Augmentation of fuel & flux crushing facilities (Package 064)

Date: 22 May 2015

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---

Electrical - DC & C

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Design: SC-14-102

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References: Notes

---

Produced by AN AUTODESK EDUCATIONAL PRODUCT
NOTE: 1. CABLE BOX SUITABLE FOR 2R×3×185 Sq.m 11kV (UE) XLPE CABLES.
2. CABLE BOX PROTECTION CLASS: IP 55.
1. PAINT: DARK GREY SHADE 632 OF IS: 5
2. 4sqmm Cu CABLE WILL BE USED FOR C.T SECONDARY, ALL OTHER WIRING WILL BE 2.5sqmm Cu CABLE.
3. APPROX. WEIGHT = 25KG.
4. DEGREE OF PROTECTION FOR MARSHALLING BOX: IP52.
5. MARSHALLING BOX MATERIAL: 2mm THICK CRCA SHEET.
6. LOCATION OF ACCESSORIES MAY CHANGE DURING MANUFACTURING.
FOR 11KV, 3NOS.
<table>
<thead>
<tr>
<th>1. Name of Manufacturer</th>
<th>Sudhir Transformers Limited</th>
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<tr>
<td>2. Voltage (kV)</td>
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<td>3. Current (MVA)</td>
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<td>4. Transformer Type</td>
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<td>5. Connection</td>
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<tr>
<td>6. Short Circuit Voltage (Uc)</td>
<td>12%</td>
</tr>
<tr>
<td>7. Short Circuit Current (Ic)</td>
<td>150%</td>
</tr>
<tr>
<td>8. Overload Capacity</td>
<td>150%</td>
</tr>
<tr>
<td>9. Ambient Temperature</td>
<td>40°C</td>
</tr>
<tr>
<td>10. Insulation Class</td>
<td>F</td>
</tr>
<tr>
<td>11. Life Span</td>
<td>20 years</td>
</tr>
</tbody>
</table>

**Electrical Details**

- **Power Factor**: 0.95
- **Efficiency**: 98%
- **No-load Loss**: 2700 W
- **Load Loss**: 6000 W
- **Total Loss**: 8700 W

**Technical Details**

- **Impulse Withstand Voltage**: 69 kV
- **Double Line-to-Line Insulation**: 50 kV
- **Double Insulation**: 36 kV
- **Radial Voltage**: 31 kV

**Marking Details**

- **Model Number**: SC-14-102
- **Manufacturer**: Sudhir Transformers Limited

**References**

- **Scale**: 1:100
- **Date**: 22-05-2015

**Notes**

- **Signatures**:
  - Sudhir Transformers Limited
  - MECON, Ranchi-2

**Revisions**

- **Version**: 1

**Approval**

- **Consultant**: MECON Limited
- **Contractor**: BDH Engg. (India) Pvt. Ltd.
1. 1 NO. HT BUSHING 11KV/250AMPS. MAKE–CJI
2. 1 NO. HT BUSHING 6.6KV/250AMPS. MAKE–CJI
3. 2 NOS. W.T. SCANNER (DIGITAL) 5A., 240V MAKE–PECON/PRECIMEASURE
4. 2 NOS. GASKETS SETS MAKE–NEW CORCK

22 MAY 2015
ELECTRICAL- DC&C
MECON, RANCHI-2

CATEGORY OF DRAW
APPROVAL
REFERENCE
RECORD
CONSTRUCTION

BHILAI STEEL PLANT, BHILAI, CHHATTISAGAR
7.0 MTPA EXPANSION

MECON LIMITED

CONTRACTOR
INDIAN CENTRAL PROJEC\TORS (PRIVATE) LTD.
ENGINEERING PROJECTS INDIAN LTD.
(An undertaker of Vale Engineers)

PACKAGE DESCRIPTION
AUGMENTATION OF FUEL & FLUX CRUSHING
FACILITIES (PACKAGE 084)

DESIGN
DRAK
TITTLE

COMMISSION SPARE

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