

CHECK LIST FOR VENDOR REGISTRATION BY QUALITY CONTROL WING
Form-F3

Application Form No. :

I. PRODUCTION CAPACITY

A. DEVICES

i. Power Transformer

Production capacity declared are available for following

- | | | |
|-----------------------------------|------------------------------------|----------------------------------|
| <input type="checkbox"/> 500 MVA | <input type="checkbox"/> 315 MVA | <input type="checkbox"/> 160 MVA |
| <input type="checkbox"/> 100 MVA | <input type="checkbox"/> 80 MVA | <input type="checkbox"/> 50 MVA |
| <input type="checkbox"/> 31.5 MVA | <input type="checkbox"/> 10/16 MVA | <input type="checkbox"/> 15 MVA |
| <input type="checkbox"/> 250KVA | <input type="checkbox"/> 100kVA | |

ii. Reactor

Production capacity declared are available for following

- | | |
|----------------------------------|---|
| <input type="checkbox"/> 50 MVAR | <input type="checkbox"/> 63 MVAR |
| <input type="checkbox"/> 80 MVAR | <input type="checkbox"/> 125 MVAR & above |

iii. Circuit Breaker

Production capacity declared are available for following

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 420kV | <input type="checkbox"/> 245kV | <input type="checkbox"/> 145kV |
| <input type="checkbox"/> 36kV | | |

iv. Isolator

Production capacity declared are available for following

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 400kV | <input type="checkbox"/> 220kV | <input type="checkbox"/> 132kV |
| <input type="checkbox"/> 33kV | | |

v. Current Transformer

Production capacity declared are available for following

- | | | |
|--------------------------------|-----------------------------------|--------------------------------|
| <input type="checkbox"/> 400kV | <input type="checkbox"/> 220kV | <input type="checkbox"/> 132kV |
| <input type="checkbox"/> 33kV | <input type="checkbox"/> 33kV NCT | |

vi. Potential Transformer

Production capacity declared are available for following

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 400kV | <input type="checkbox"/> 220kV | <input type="checkbox"/> 132kV |
| <input type="checkbox"/> 33kV | | |

vii. Capacitor Voltage Transformer

Production capacity declared are available for following

- 400kV 220kV 132kV

viii. Surge Arrester

Production capacity declared are available for following

- 400kV 220kV 132kV
 33kV

ix. Battery Sets

Production capacity declared are available for following

- 220V, 415AH 200V, 200AH 200V,100AH
 48V, 400AH 48V, 250 AH 48V, 200AH
 48V, 300AH

x. AC DC Distribution Board and Battery Chargers

Production capacity declared are available for following

- 220V, 200AH 220V, 100AH 48V,200A
 48V, 150A 48V, 100A 48V, 50A
 48V, 35A

xi. Insulators

Production capacity declared are available for following

- Disc Solid core SRC
Insulators Insulators

xii. Hardware

Production capacity declared are available for following

- Panther Zebra Moose
 Ground wire OPGW Clamps
 Others, Specify:

xiii. Capacitor Bank

Production capacity declared are available for following

- 132kV 33kV

xiv. Telecom Equipment

Production capacity declared are available for following

- | | | |
|---|--|---|
| <input type="checkbox"/> Plesiochronous Digital Hierarchy (PDH) Equipment | <input type="checkbox"/> Synchronous Digital Hierarchy Equipment | <input type="checkbox"/> EPAX Exchange |
| <input type="checkbox"/> EPABX Exchange | <input type="checkbox"/> Multiplexer | <input type="checkbox"/> Digital Distribution Frame |

xv. Automation Hardware

a. Production capacity declared are available for following SAS C&R Panels

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 400kV | <input type="checkbox"/> 220kV | <input type="checkbox"/> 132kV |
| <input type="checkbox"/> 33kV | | |

b. Production capacity declared are available for following SAS C&R Panels components

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 400kV | <input type="checkbox"/> 220kV | <input type="checkbox"/> 132kV |
| <input type="checkbox"/> 33kV | | |
- Bay control Unit (BCU)
 - Bay control & protection Unit (BCPU)
 - Bay protection Unit (BPU)
 - Data Concentrator
 - Gateway for remote control
 - Gateway interface
 - GPS Clock, Antenna with time display unit
 - Intelligent Electronic Devices(IEDs)
 - 3kVA Inverter (RS485 Compatible)
 - Ethernet switches
 - Human machine Interface (HMI)

c. Relays

Production capacity declared are available for following Relays

- Distance relay
- Differential relay
- Over flux relay

- Over current relay
- Earth Fault relay
- DC supply Supervision relay
- Restricted Earth fault relay
- Auxiliary relay

d. Production capacity declared are available for the following Remote Terminal Unit (RTU) components

- RTU
- Digital input card
- IP relays
- Digital output card
- Power supply unit
- Analog card
- CPU

e. IT Equipment

Production capacity declared are available for following

- Desktop PC
- UPS
- Laptop
- Server
- Printers

f. Hard ware Components of Computer

Production capacity declared are available for following

- CPU
- Mouse
- Monitor
- RAM
- Keyboard
- Hard Disk Drive

g. Servers

Production capacity declared are available for following

i. RAM

- 8GB
- Others, Specify:
- 16GB
- 32GB

ii. Cores

- 18
- Others, Specify:
- 28
- 32

iii. Speed

- 2.5GHz
- Others, Specify:
- 2.6GHz
- 2.7GHz

iv. Hard Disk Drive

- 500GB 1TB 1.5TB
 Others, Specify:

v. Space

- Rack Tower Blade

vi. Power supply

- Single A.C Dual A.C

xvi. Software development capacity declared is available

- Supervisory Control and Data Acquisition (SCADA)
 Substation Automation System (SAS)
 Energy Management System
 Enterprise Resource planning (ERP)
 Asset management
 Others, Specify:

B. STRUCTURES

Tower parts & Structures

Production capacity declared are available for following

- 400kV 220kV 132kV
 33kV

C. CIRCUIT SEGMENTS

i. Conductor

Production capacity declared are available for following

- Panther Zebra Moose
 Others,
Specify:

ii. Underground XLPE cable

Production capacity declared are available for following

- 400kV 220kV 132kV
 33kV

iii. Earth wire

Production capacity declared are available for following

HTGS

iv. Power & Control Cables

Production capacity declared are available for following

Power Cable Control Cables Optical
Fibre Cable

v. OPGW

Production capacity declared are available for following

24 Fibre 48 Fibre

D. METERS

Energy meters

Production capacity declared are available for following

0.2 Class 0.2s class Any other,
Specify:

E. Others,
Specify:

II. TESTING FACILITIES

A. DEVICES

1. Power Transformers

Testing facilities available for the following

i. Main Tank & Conservator tank

- Dimensional verification
- Pressure test
- Vacuum test
- Aircel Dimensional verification
- Aircel Leakage test
- Pressure withstand test

ii. Bushings(400kV/220kV/132kV/33kV)

- Dimensional verification
- Impulse tests (LI & SI)
- Capacitance & Tan delta test (Before and after HV tests)
- Power frequency withstand voltage test

- Pressure test
- Any other tests as per latest IS
- iii. Core (CRGO)
 - Dimensional verification
 - Ageing test
 - Specific loss test (before and after aging tests)
- iv. Paper Insulated copper Windings (PICC)
 - Dimensional Verification
 - Mechanical Elongation test
 - Resistance Test
 - Any other tests as per latest IS
- v. Radiators
 - Dimensional verification
 - Pressure test
 - Leakage test (Before painting at Manufacture's place)
 - After painting, Paint thickness test
- vi. Insulating oil
 - Oil break down voltage test
 - Kinematic Viscosity test
 - Density test
 - Pore point test
 - Water content (ppm)
 - Dielectric dissipation factor (Tan δ)
 - Carbon composition test
 - Acidity test
 - Sludge test
 - Interfacial tension test
 - Sulphur content test
 - Flash point test
 - PCB content test
 - Any other test as per IS/IEC
- vii. Low Voltage tests
 - Measurement of Ratio & Polarity check

- Magnetic Balance and Magnetizing Current at low voltage
 - Vector group Verification
 - Measurement of insulation Resistance & Determination of Polarization Index
 - Check of core & Frame insulation for liquid immersed Transformer
 - Measurement Winding Resistance
 - Measurement of Short Circuit Impedance at Low voltage
- viii. High Voltage Tests
- Separate Source Voltage withstand test
 - Line Terminal AC Voltage withstand Test
 - Induced over Voltage with Partial Discharge measurement
 - Measurement of Capacitance and Tan-Delta
- ix. No load losses
- Measurement of No-load Loss & Current
 - Measurement of No-load Current at low voltage
 - Measurement of Harmonics of No Load Current
- x. Type Tests
- Temperature Rise Test
 - Hot Winding Resistance
 - Determination of noise/sound level
 - Measurement of Zero Sequence Impedance
 - Test on On-Load Tap changer
 - Determination of Transient Voltage transfer Characteristics
 - Measurement of Power taken by fans & liquid pump motors
 - Measurement of Load Loss & Impedance Voltage
- xi. Special Tests
- Switching Impulse Test
 - Lighting Impulse Test
 - Measurement of frequency Response Analysis

2. Reactors

Testing facilities available for the following

- i. Main Tank & Conservator tank
- Dimensional verification
 - Pressure test

- Vacuum test
 - Air cell Dimensional verification
 - Air cell Leakage test
 - Pressure withstand test
- ii. Bushings(400kV/220kV/132kV/33kV)
- Dimensional verification
 - Impulse tests (LI & SI)
 - Capacitance & Tan delta test (Before and after HV tests)
 - Power frequency withstand voltage test
 - Pressure test
 - Any other tests as per latest IS
- iii. Core (CRGO)
- Dimensional verification
 - Aging test
 - Specific loss test (before and after aging tests)
- iv. Paper Insulated copper Windings (PICC)
- Dimensional Verification
 - Mechanical Elongation test
 - Resistance Test
 - Any other tests as per latest IS
- v. Radiators
- Dimensional verification
 - Pressure test
 - Leakage test (Before painting at Manufacture's place)
 - After painting, Paint thickness test
- vi. Insulating oil
- Oil break down voltage test
 - Kinematic Viscosity test
 - Density test
 - Pore point test
 - Water content (ppm)
 - Dielectric dissipation factor (Tan δ)
 - Carbon composition test

- Acidity test
- Sludge test
- Interfacial tension test
- Sulphur content test
- Flash point test
- PCB content test
- Any other test as per IS/IEC

vii. Low Voltage tests

- Measurement of Ratio & Polarity check
- Magnetic Balance and Magnetizing Current at low voltage
- Vector group Verification
- Measurement of insulation Resistance & Determination of Polarization Index
- Check of core & Frame insulation for liquid immersed Transformer
- Measurement Winding Resistance
- Measurement of Short Circuit Impedance at Low voltage

viii. High Voltage Tests

- Separate Source Voltage withstand test
- Line Terminal AC Voltage withstand Test
- Induced over Voltage with Partial Discharge measurement
- Measurement of Capacitance and Tan-Delta

ix. No-load losses

- Measurement of No-load Loss & Current
- Measurement of No-load Current at low voltage
- Measurement of Harmonics of No Load Current

x. Type Tests

- Temperature Rise Test
- Hot Winding Resistance
- Determination of noise/sound level
- Measurement of Zero Sequence Impedance
- Test on On-Load Tap changer
- Determination of Transient Voltage transfer Characteristics
- Measurement of Power taken by fans & liquid pump motors

- Measurement of Load Loss & Impedance Voltage

xi. Special Tests

- Switching Impulse Test
- Lighting Impulse Test
- Measurement of frequency Response Analysis

3. Circuit Breakers

Testing facilities available for the following

Routine/Acceptance tests

- Visual & Dimensional verification
- HV test (70 kV on Power circuit) for 1 minute
- HV test of 1 kV on auxiliary circuit
- Electrical & Mechanical operation
- Mechanical Endurance Test
- Power frequency voltage withstand tests (wet & dry)
- Lightning Impulse withstand test
- Basic short circuit tests, short line fault test duties and out of phase switching tests
- Short time withstand current and peak withstand current tests
- Line and cable charging current tests
- Capacitive current switching tests

Type Tests

- Partial discharge
- Temperature rise test
- Seismic withstand test
- RIV (Radio Interference) Voltage Test. (for 220 kV & 132 kV SF6 Circuit Breakers only)

4. Isolators

Testing facilities available for the following

- Visual and Dimensional Check
- Voltage Test on Control and Auxiliary Circuits
- Measurement of Resistance of Main Circuit

- Mechanical Operation Test
- Sequence of Operation of Isolator
- Sequence of Operation of Earth Switch
- Test on Galvanizing Components
- Temperature rise test

5. Instrument Transformers (CTs/PTs/CVTs)

Testing facilities available for the following

Routine/Acceptance tests

- Short time current test
- High voltage power frequency wet withstand voltage test
- Tests for accuracy
- Temperature Coefficient Test
- Partial Discharge measurement
- Thermal stability test
- Tan Delta and capacitance Test
- Power frequency voltage with stand tests on primary terminals
- Power frequency voltage with stand tests between sections, if applicable
- Power frequency voltage with stand tests on secondary terminals
- Tests on accuracy
- Inter-turn over voltage test
- Test for winding resistance, rated knee point E.M.F and exciting current at rated knee point E.M.F for all ratios
- Verification of terminal marking and polarity
- Determination of the instrument security factor (FS) of measuring current transformer at all ratios

Type Tests

- Temperature –rise test
- Impulse voltage withstand test on primary terminals

6. Surge Arresters (LAs)

Testing facilities available for the following

Insulation withstand Test

- Lightning Impulse

- Power frequency
- Switching Impulse (For 400 KV)

Routine/Acceptance tests

- Residual Voltage Test
- Steep Current Impulse
- Test to verify long term stability under COV
- Repetitive charge transfer withstand
- Heat dissipation behavior verification of test sample
- Switching surge operating duty test
- Power Frequency voltage Vs Time Curve
- Short circuit test
- High Current
- Low Current
- Bending Test(Cantilever Strength)
- Seal Leakage Test
- Test to verify the dielectric withstand test
- Test of internal grading components
- IP-67 test on surge Monitor
- test on silicon rubber as per standard IEC-61462
- Uniformity of Zinc coating for metal parts
- Lightning Impulse Residual voltage test
- Partial discharge test
- Tests on discharge counter
- Leakage check rate test for a duration of 24 hrs.

Type Tests

- Radio interference voltage test & Corona inception & extinction voltage
- Weather ageing test
- Salt fog test 1000 h
- UV light test 1000 h
- TERT (Tracking & Erosion resistance test)
- Degree of Protection test on counter/surge monitor

7. Battery Sets

Testing facilities available for the following

- Test for capacity and test for voltage during discharge.

- Ampere hour and Watt hour efficiency tests.
- Test for loss of capacity on storage.
- Endurance test.

8. AC DC Distribution Boards and Battery Chargers

Testing facilities available for the following

- Insulation Resistance Test
- High Voltage Test
- Annunciation Verification
- DC output voltage regulation
- Efficiency at full load
- Power factor
- DC output voltage ripple
- Battery path current limit
- Battery Low Trip Setting
- Protection against short circuit
- Ripple Test
- IP 54/IP 55 test

9. Insulators

Testing facilities available for the following

- Verification of Dimensions
- Verification of the tightness of the interface between end fittings and insulator housing
- Verification of the locking System
- Verification of the SML
- Galvanization Test
- Brittle Fracture Resistance Test
- Temperature cycle Test
- Hydrophobicity test
- Dye Penetration test
- N.D.T
- Glass Content test

10. Hardware (Both Conductor & Insulators)

Testing facilities available for the following

Tests for both suspension and tension hardware

- Visual examination
- Verification of dimensions
- Galvanizing test / Electroplating
- Mechanical strength test on each component
- Mechanical strength test of welded joint
- Test on locking device for ball and socket coupling
- Chemical Analysis, hardness tests grain size
- Magnetic particle inspection of forgings and casting

Tests for Suspension Hardware

- Clamp slip strength Vs torque test for suspension clamp
- Shore hardness test of elastomer cushion for AG suspension clamp
- Bend test for armour rod set
- Resilience test for armour rods set
- Conductivity test for armour rods set

Tests for tension Hardware

- Slip strength test for dead-end assembly
- On Mid-Span Compression Joint for Conductor and Earth Wire
- Visual examination
- Dimensional verification
- Galvanizing test
- Hardness Test

Tests on Flexible Steel Bond

- Visual examination
- Dimensional verification
- Slip strength test

Tests on Flexible Copper Bond

- Visual examination
- Dimensional verification
- Slip strength test

Tests on Vibration Damper for Power Conductor

- Visual examination
- Dimensional verification
- Galvanizing test
- Verification of Resonance frequencies
- Clamp slip test
- Clamp bolt torque test
- Strength of the messenger cable
- Mass pull off test
- Fatigue Test

Tests on Earth Wire suspension & tension clamp Assembly

- Visual Examination and Dimension Verification
- Galvanizing Test
- Clamp Slip Strength Test
- Mechanical Strength test on each component
- Hardness Test for Tension clamp

11. Capacitor Banks

Testing facilities available for the following

- Measurement of capacitance
- Voltage test between terminals
- Test between line terminals and container
- AC voltage test between terminals & containers
- Test of discharge device
- Capacitor loss tangent measurement
- Sealing test

12. Telecom Equipment

Testing facilities available for the following

- a. Optical Line Terminal Equipment (Plesiochronous Digital Hierarchy (PDH)/ Synchronous Digital Hierarchy(SDH))
 - Power Supply Test
 - BER test at E1 interface
 - BER test at STM-4 Interface
 - Out Inter for E1 Interface

- Output jitter at STM level Interface
- Input jitter Tolerance for E1 Interface
- Input jitter Tolerance for STM level
- Pulse mask Measurement at E1 Interface
- Optical Power Measurement
- Optical Receiver sensitivity Measurement
- Network management Interface performance through Remote login
- Simulation of failure condition and fail over or each redundant unit
- Ethernet Performance Test

b. Multiplexer/Digital Distribution Frame

- Electrical Interface – 2M loop back test
- Cross Connection function Measurement
- E1 Pulse space shape
- Framing signaling, operational and maintenance test
- Data Channel BER Measurement on N*64k bit/sec
- E & M Gain level Measurement
- E & M/Idle Channel Noise Measurement
- Exch/Sub Frequency level Measurement
- Exch/Sub – Idle Channel Noise Measurement
- Power Supply unit Redundancy check
- 1+1 Control Card Redundancy

c. EPAX

- Power supply test
- Protection test
- Engage pulse timing test
- Priority timing test
- Digital pulse timing test
- Interdigit pulse timing test
- Releasing pulse timing test

Test calls

- Subscriber to Subscriber
- Subscriber to Trunk

Trunk to Trunk

d. EPABX

Power supply test

Protection test

Digital pulse timing test

Interdigit pulse timing test

Releasing pulse timing test

Test calls

Subscriber to Subscriber

Subscriber to Junction

DID facility

13. Automation Hardware

Testing facilities available for the following

a. SAS Control & Relay Panels

Physical Verification Panel

BOM Verification

AC and DC Circuit

IR Value before HV Test (500V DC)

HV Test (2KV AC, 1mm)

IR Value after HV Test (500V DC)

Leakage Current

CT/PT Check

Protection Only

Backup Relay

BCU

BCPU

Trip Circuit Supervision

Annunciator Circuit

Closing/Tripping Circuit

Interlock Circuit/AUX Relay circuit

MIMIC/SLD

Paint Shade and Thickness

b. Testing facilities available for Control IEDs and Communication Equipment of SAS C&R Panels

Power Input

- Auxiliary Voltage
- Current Circuits
- Voltage Circuits
- Indications

Accuracy Tests

- Operational Measured Values
- Currents
- Voltages
- Time resolution

Insulation Tests

- Dielectric Tests
- Impulse Voltage withstand Test

Influencing Quantities

- Limits of operation
- Permissible ripples
- Interruption of input voltage

Electromagnetic Compatibility Test

- 1 MHZ. burst disturbance test
- Electrostatic Discharge Test
- Radiated Electromagnetic Field Disturbance Test
- Electrical Fast transient Disturbance Test
- Conducted Disturbances Tests induced by Radio Frequency Field
- Magnetic Field Test
- Emission (Radio interference level) Test.
- Conducted Interference Test

Function Tests

- Indication
- Commands
- Measured value Acquisition
- Display Indications

Environmental tests

- Cold Temperature
- Dry Heat
- Wet heat
- Humidity (Damp heat Cycle)
- Vibration
- Bump
- Shock

Other tests

- Hardware Integration test
- Integrated System test
- Factory Acceptance test

c. Relays

Testing facilities available for the following

Insulation test

- Dielectric test
- Insulation Resistance Measurement Test
- Impulse Voltage withstand test
- Tests for thermal and mechanical requirements
- Tests for rated burden
- Contact performance test
- High frequency disturbance test
- Fast transient test
- Relay characteristics, performance and accuracy test
- Steady state Characteristics and operating time
- Dynamic Characteristics and operating time for distance protection relays and current differential protection relay
- Disturbance recorder and Event logger only performance tests are intended under this item
- 5kV Impulse Peak voltage Test
- Vibration test
- Overshoot time test

d. Remote Terminal Unit

- Surge Immunity test
- Electrical fast transient burst test
- Damped Oscillatory wave test

- Electrostatic discharge test
- Radiated Electromagnetic field test
- Damped Oscillatory Magnetic field test
- Power frequency magnetic field test
- Power frequency Voltage withstand test
- 1.2/50µsec impulse Voltage withstand test
- Insulation resistance test
- Dry heat test
- Damp heat test
- Functional test
- RTU & Panel power up
- RTU start up and shutdown
- Verification of CPU IP address
- Verification of dual LAN
- Verification of CPU dual ports
- Verification of Configuration download
- Verification of Configuration Upload
- Verification of IEC60870-5-104 Slave protocol
- IEC60870-5-104 Redundancy check
- RTU Time synchronization check
- Verification of System diagnostics
- RTU power consumption test
- Event logging buffer & Memory test
- Power Supply unit Redundancy check
- CPU Redundancy check for control Central & Slave device (Energy Meter)
- Reporting to multiple masters

e. Testing facilities available for following IT Equipment

- Desktop PC Laptop Printers
- UPS

f. Testing facilities available for following Hard ware Components of Computer

- CPU Monitor Keyboard
- Mouse RAM Hard Disk Drive

g. Testing facilities available for Servers

Testing facilities available as per the declaration

14. Other Devices as per relevant standards

| Sl.No. | Equipment/Product/ Material | Type test during last 5 years | Relevant standard | Year of test |
|--------|--------------------------------|-------------------------------------|----------------------|-----------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

B. STRUCTURES

Tower Parts including stubs

Testing facilities available for the following

Galvanizing Test

Mechanical Tests

Yield Load (N)

Yield Stress Test (N/mm²)

Ultimate Load (N)

Ultimate tensile strength (N/mm²)

Percentage Elongation

Bend test

Chemical Test

Carbon %

Silicon %

Manganese %

Phosphorous %

Sulphur %

C. CIRCUIT SEGMENTS

1. Conductor

Testing facilities available for the following

- Break load(KN)
- Resistance(at 20°c ohms/km)
- Wrapping
- Lay-Ratio
- Over all Diameter (mm)
- Elongation (%)
- Wt. of Zinc Coating(g/Sq.m)
- Uniformity of Zinc Coating
- Chemical test on Aluminum strands

2. Underground XLPE cable

Testing facilities available for the following

Type Tests on Cable

- Bending Test
- Partial discharge test after bending test
- Tan δ measurement
- Heating cycle voltage test
- Partial discharge test during and after heating cycle test
- Impulse withstand test
- Power frequency voltage test

Tests on Conductor

- Dimensional verification
- D.C. Resistance at 20°C
- Measurement of thickness of metallic sheets
- Test on concentric metallic service
- Test on combined electrical resistance of copper wire screen and metallic test
- Annealing test after copper

Tests for insulation & sheath

- Thickness and dimensions of insulation and outer sheath
- Tensile strength and elongation at break of insulation & outer sheath
- Thermal ageing in air oven
- Tensile strength and elongation and break of insulation and outer sheath after ageing
- Hot set test for XLPE insulation
- Shrinkage test on XLPE insulation as per IEC
- Resistivity of semi-conducting conductor & insulation screen and at room temperature and at 90°C conductor temperature
- Hot deformation test for PE sheath
- Carbon black content of black PE sheaths
- Pressure test at high temperature on sheath
- Test on concentric metallic screen
- Tests for concentric copper wire
- Tests for concentric copper tape
- Test for combined electrical resistance of copper wire screen and metallic sheath
- Measurement of thickness of metallic sheath as per relevant IEC
- Type tests on accessories as per relevant IEC
- Type Tests on Cable system as per relevant IEC

3. Earth Wire

Testing facilities available for the following

- Breaking Load
- Elongation
- Torsion
- Zinc Coating
- Uniformity of Zinc Coating
- Wrapping Test
- Adhesion
- Over all Strands Breaking Load
- Strand O.D
- Lay ratio
- D.C Resistance of overall Strands at 20°C

4. Power & Control Cables

Testing facilities available for the following

Routine/Acceptance tests

- Annealing test
- Conductor resistance
- Thickness of insulation and sheath
- Tensile strength and elongation at break of insulation and sheath
- Insulation Resistance Test
- High Voltage Test at room temperature
- Conductor resistance test
- High voltage test at room temperature

Optional tests

- Cold bend
- Cold impact

5. OPGW

Testing facilities available for the following

- Attenuation Co-efficient (1310nm, 1550nm)
- Visual material verification and dimensional checks as per approved drawings
- Rated/ultimate Tensile Strength
- Lay length measurements

D. METERS

Energy Meters

Testing facilities available for the following

Test on raw materials

- Component testing as per the relevant component specification
- Circuit card Assembly testing before burn-in
- Circuit Assembly burn-in
- Circuit card Assembly. Testing after burn-in

Routine/Acceptance tests

- AC High voltage tests
- Insulation resistance test

- Burden test
- No-load test
- Test of Accuracy requirement
- Starting current test
- Vibration test
- Test of meter Constant
- Reliability test
- Shock test
- Magnetic Induction of external origin (AC and DC)
- Tamper & Fraud Protection

E. Others,
Specify:

III. FACILITIES AVAILABILITY

- Technical man power is available
- Machinery is available
- R&D facilities are available

III. QUALITY CONTROL DECLARATION

- Pass