

**Annexure-I****( Specifications for Energy Storage Capacitors )****Item 1: Specifications for Energy Storage Capacitors (178µF, 15kV)**

Qty: 27 Nos.

S. No.	Parameter	Specification
1.	Rated Capacitance	178µF
2.	Tolerance	±10%
3.	Charging Voltage	15KV
4.	Total Energy at rated voltage	20KJ ±10%
5.	Maximum discharge peak Current	150KA or more
6.	Voltage reversal	>=80%
7.	Internal Inductance	~70nH
8.	Rated time on charge	>= 1minute
9.	Repetition rate	>=1 Shot in every 10 minutes

**Item 2: Specifications for Energy Storage Capacitors (100µF, 15kV)**

Qty: 12 Nos.

S. No.	Parameter	Specifications
1.	Rated Capacitance	100µF
2.	Tolerance	±10%
3.	Charging Voltage	15KV
4.	Total Energy at rated voltage	11.25KJ ±10%
5.	Maximum discharge peak Current	150 KA or more
6.	Voltage reversal	>=80%
7.	Internal Inductance	~70nH
8.	Rated time on charge	>= 1minute
9.	Repetition rate	>=1 Shot in every 10 minutes

**Other requirements:**

Quotation should indicate acceptance of the following conditions:

- I. Following Test Certificates are necessarily needed to be submitted at the **time of delivery** for each set of capacitors (Item 1 & 2) :
  - i. Tightness test at 65 degree Celsius for >10 hours
  - ii. Capacitance and tangent delta measurement at ambient
  - iii. Withstand Voltage test at 1.2 times of rated Charging Voltage for more than or equal to 1 minute.
  - iv. Discharge test at rated charging Voltage (5 shots)
  - v. Inductance Measurement of a single capacitor
- II. Pre-dispatch inspection will be carried out by purchaser at the supplier/manufacturer's site. The supplier/manufacturer should accordingly have all the facilities and make arrangements for the tests outlined below.
- III. The "Acceptance Tests" during PDI will include:
  - i. Charge/discharge cycle tests
  - ii. Visual examination
  - iii. Sealing Test
  - iv. Test for capacitance
  - v. Insulation Resistance Test
  - vi. Voltage test between terminals
  - vii. Voltage test between terminals and containers
  - viii. Measurement of dissipation factors

**Note:** All the above tests will be performed and the items should qualify as per procedures and standards laid down by Bureau of Indian Standards IS 13666: 1993 (Reaffirmed 2008). Any other recognized International Standard if prescribed by the vendor may be allowed at the discretion of the buyer.
- IV. The order for Item 1 & 2 may be split after commercial evaluation. Parties should quote for each item separately.
- V. It is preferable that the bidder provide the reference of at least one earlier order for similar capacitors (with Name, year and contact details of the buyer/organization) to establish that the party has the capability to carry out the order. Alternately the purchaser should be allowed to visit and inspect the facilities of the manufacturer, prior to awarding the contract, to ensure that infrastructure and production facility is satisfactory. Assessment of bidder's credentials and manufacturing capability is the sole discretion of the purchaser.