

Scope of Work for Supply, Delivery, Retrofitting, Testing & Commissioning of 420kV SF6 CBs at Satna sub station

The scope of work involves complete engineering, supply, delivery of all the materials/items mentioned in BOQ, dismantling of existing CBs, erection of newly supplied CBs on the existing foundation and commissioning of newly supplied CBs **along with terminal connectors** (Expansion type Suitable for 4" or 4.5" IPS) as per POWERGRID Technical Specifications (Section: Switchgear-CB, REV.11, Section: Switchyard Erection Revision – 10), GTR and submission of drawing, O&M manual etc.

Following are the details of Present scope of work:

1. **Site Survey:** Bidder is advised to visit the site to get a better understanding of the work being carried out. The necessary permission for the same shall be provided by POWERGRID.
- a) **Supply & Delivery:** Supply, Delivery (at site as per instruction of Officer I/c) of all the materials/items (not limited to following list) suitable to retrofit existing a) 06 Nos. 420kV, 3150A, 50kA for 01 Sec, 3-ph SF6 Circuit Breakers **with PIR**, 03 Nos., 420kV, 3150A, 50KA for 01 Sec, 3-ph SF6 Circuit Breakers **without PIR** and 05 Nos. 245 kV, 3150 Amps, 50 kA for 01 sec, along with SF6 gas as per POWERGRID TS, complete in all respects.
- b) Support structure with Stool for matching existing foundation & existing height of IPS tube (if required) along with suitable ladder, Platform for safe working during O&M.
- c) Both side terminal connectors (Expansion type Suitable for 4" or 4.5" IPS)
- d) All necessary Inter-pole Cables are included in Scope. Control and power cable termination at CB MB end panel includes the scope.
- e) Supply of Consumables like Glands, lugs, TBs, 100mm PVC pipes including bends etc in line with approved POWERGRID make as per requirement shall also be in the scope of bidder.
- f) Earthing material (75X10 mm GS Flat) for Structure earthing along with consumables like nut-bolts, washers/cleats etc.
- g) As the Agency needs to match existing foundation & elevation, therefore any item shall be within the scope of work.

Note: - The support structure shall be designed for the worst combination of dead load, live load, wind load, seismic force and short circuit forces as per the relevant IS/IEC.

Any other material not mentioned in BOQ but required for successful retrofitting & commissioning of the existing Circuit Breaker shall be considered within scope of this work.

2. Erection, Testing & Commissioning

- a) **Dismantling:** shall include:
 - (i) Dismantling of total 14 nos. CB including IPS tube, terminal connectors etc. (existing 06 Nos., 420kV, 3150A. 40KA for 01 Sec, 3-ph SF6 Circuit Breakers with PIR, 03 Nos., 420kV, 3150A, 40KA for 01 Sec, 3-ph SF6 Circuit Breakers without PIR and 05 Nos. 245 kV, 2500 Amps, 40 kA for 01 sec along with SF6 gas, Inter-pole cables & Existing MOM boxes etc. at site).
 - (ii) Dismantling of existing Structures along with earthing flats/materials.
- b) **Erection:** shall include:
 - (i) Bending of Aluminum/IPS tube (if required) shall be within scope of work & should be done by a bending machine and through cold bending only. Bending shall be such that the inner diameter of pipe is not reduced.

- (ii) All welding done at site for equipment/ structures, shall be painted with zinc rich paint immediately to avoid corrosion.
- (iii) All types of blanking plates, arrangement of cutting, drilling, welding if required and any other item/tools etc, if required for complete successful commissioning will be within the scope of work.
- (iv) Civil work for grouting/ finishing of foundation for CB/Ladders/ MB as per site requirement.

c) **Cabbling:** shall include

- (i) Inter-pole Cabling of new CBs including Glanding, Lugging, Crimping & Termination of cable.
- (ii) All inter-pole cables (both power and control), shall be laid in PVC pipes which shall be buried in the ground at a depth of 250mm below finish ground level or cable trench as per applicability. All civil works for laying PVC pipes/cable trench etc. shall be considered within scope of work.
- (iii) Separate PVC pipes shall be laid for control and power cables.
- (iv) Control cable inside MB/CMB boxes, Relay & control panels shall be neatly bunched, clamped and tied with nylon strap or PVC perforated strap to keep them in position.
- (v) All types of blanking plates, arrangement of cutting, drilling in motor operating mechanism if required and any other item/tools etc., if required for complete successful commissioning will be within the scope of work.
- (vi) Printed Cross ferrules shall be used for control cable cores at all terminations, as per direction of Officer I/c.

d) **Earthing work:** shall include

- (i) Proper Installation of new earthing flats for all the new CB Structures, ladder, Platform, MB/CMB boxes etc. & connecting it with existing earth mat/risers including painting of all joints.

e) **Testing & commissioning:** shall include

- (i) Complete Testing & commissioning of all the CBs along with all accessories shall be done as per pre-commissioning procedure & formats of POWERGRID

f) **Shifting & Stacking of New/Removed Equipment's/Materials:** Shifting, proper stacking of both New & Removed equipment's / materials to the location as per instruction of Officer In-charge at respective site

3. Agency shall depute adequate nos of qualified OEM Engineers, technicians, skilled fitters & labors along with T&Ps for complete execution of work
4. Agency will have to arrange Crane, welding/ gas cutting machine, consumables etc. & drawings and documents during installation and commissioning of CBs.
5. Agency will have to work with due care, so that the existing system will not be disturbed. Rectification to the satisfaction of respective officer I/c, for any damage to the Existing Civil/Electrical/other Infrastructure during execution of scope of work shall be within scope of work.
6. Agency needs to mobilize all the resources for early completion of the work, and only limited shutdown shall be provided for commissioning of the same. Agency needs to carry out maximum possible work under charged/live conditions, for which taking adequate precautions & deputing suitable persons shall be the responsibility of Agency only.
7. POWERGRID shall provide the necessary Shutdown & issue permit to work to carry out the above works.
8. Agency has to undertake all safety precautions and ensure compliance of all safety norms during the execution of the work. Agency shall be wholly responsible for any untoward incident during the execution of the work.

Further, it will be the responsibility of the agency to comply all statutory requirements for which no separate payment shall be made

9. To carry out the above works, the Agency will have to arrange all the activities which are mentioned or not mentioned above but are required to complete the scope of work to the satisfaction of Officer In-charge at respective site.

Scope of Work for Supply, Delivery, Retrofitting, Testing & commissioning of 420kV SF6 CBs at BINA sub station

The scope of work involves complete engineering, supply, delivery of all the materials/items mentioned in BOQ, dismantling of existing CBs, erection of newly supplied CBs on the existing foundation and commissioning of newly supplied CBs **along with terminal connectors** (Expansion type Suitable for 4" or 4.5" IPS) as per POWERGRID Technical Specifications (Section: Switchgear-CB, REV.11, Section: Switchyard Erection Revision – 10), GTR and submission of drawing, O&M manual etc.

Following are the details of Present scope of work:

10. **Site Survey:** Bidder is advised to visit the site to get a better understanding of the work being carried out. The necessary permission for the same shall be provided by POWERGRID.
- h) **Supply & Delivery:** Supply, Delivery (at site as per instruction of Officer I/c) of all the materials/items (not limited to following list) suitable to retrofit existing a) 04 Nos., 420kV, 2000A. 40KA for 03 Sec, 3-ph SF6 Circuit Breakers **without PIR** along with SF6 gas as per POWERGRID TS, complete in all respects.
- i) Support structure with Stool for matching existing foundation & existing height of IPS tube (if required) along with suitable ladder, Platform for safe working during O&M.
- j) Both side terminal connectors (Expansion type Suitable for 4" or 4.5" IPS)
- k) All necessary Inter-pole Cables are included in Scope. Control and power cable termination at CB MB end panel includes the scope.
- l) Supply of Consumables like Glands, lugs, TBs, 100mm PVC pipes including bends etc in line with approved POWERGRID make as per requirement shall also be in the scope of bidder.
- m) Earthing material (75X10 mm GS Flat) for Structure earthing along with consumables like nut-bolts, washers/cleats etc.
- n) As the Agency needs to match existing foundation & elevation, therefore any item shall be within the scope of work.

Note: - The support structure shall be designed for the worst combination of dead load, live load, wind load, seismic force and short circuit forces as per the relevant IS/IEC.

Any other material not mentioned in BOQ but required for successful retrofitting & commissioning of the existing Circuit Breaker shall be considered within scope of this work.

11. Erection, Testing & Commissioning

- g) **Dismantling:** shall include:

- (i) Dismantling of total 04 nos. CB including IPS tube, terminal connectors etc. (existing, 420kV, 2000A. 40KA for 03 Sec, 3-ph SF6 Circuit Breakers without PIR along with SF6 gas, Inter-pole cables & Existing MOM boxes etc.
 - (ii) Dismantling of existing Structures along with earthing flats/materials.
- h) **Erection:** shall include:
- (v) Bending of Aluminum/IPS tube (if required) shall be within scope of work & should be done by a bending machine and through cold bending only. Bending shall be such that the inner diameter of pipe is not reduced.
 - (vi) All welding done at site for equipment/ structures, shall be painted with zinc rich paint immediately to avoid corrosion.
 - (vii) All types of blanking plates, arrangement of cutting, drilling, welding if required and any other item/tools etc, if required for complete successful commissioning will be within the scope of work.
 - (viii) Civil work for grouting/ finishing of foundation for CB/Ladders/ MB as per site requirement.
- i) **Cabling:** shall include
- (vii) Inter-pole Cabling of new CBs including Glanding, Lugging, Crimping & Termination of cable.
 - (viii) All inter-pole cables (both power and control), shall be laid in PVC pipes which shall be buried in the ground at a depth of 250mm below finish ground level or cable trench as per applicability. All civil works for laying PVC pipes/cable trench etc. shall be considered within scope of work.
 - (ix) Separate PVC pipes shall be laid for control and power cables.
 - (x) Control cable inside MB/CMB boxes, Relay & control panels shall be neatly bunched, clamped and tied with nylon strap or PVC perforated strap to keep them in position.
 - (xi) All type of blanking plates, arrangement of cutting, drilling in motor operating mechanism if required and any other item/tools etc, if required for complete successful commissioning will be within the scope of work.
 - (xii) Printed Cross ferrules shall be used for control cable cores at all terminations, as per direction of Officer I/c.
- j) **Earthing work:** shall include
- (ii) Proper Installation of new earthing flats for all the new CB Structures, ladder, Platform, MB/CMB boxes etc. & connecting it with existing earth mat/risers including painting of all joints.
- k) **Testing & commissioning:** shall include
- (ii) Complete Testing & commissioning of all the CBs along with all accessories shall be done as per pre-commissioning procedure & formats of POWERGRID
- l) **Shifting & Stacking of New/Removed Equipment's/Materials:** Shifting, proper stacking of both New & Removed equipment's / materials to the location as per instruction of Officer In-charge at respective site
12. Agency shall depute adequate nos of qualified OEM Engineers, technicians, skilled fitters & labors along with T&Ps for complete execution of work
 13. Agency will have to arrange Crane, welding/ gas cutting machine, consumables etc. & drawings and documents during installation and commissioning of CBs.
 14. Agency will have to work with due care, so that the existing system will not be disturbed. Rectification to the satisfaction of respective officer I/c, for any damage to the Existing Civil/Electrical/other Infrastructure during execution of scope of work shall be within scope of work.
 15. Agency needs to mobilize all the resources for early completion of the work, and only limited shutdown shall be provided for commissioning of the same. Agency needs to carry out maximum

possible work under charged/live conditions, for which taking adequate precautions & deputing suitable persons shall be the responsibility of Agency only.

16. POWERGRID shall provide the necessary Shutdown & issue permit to work to carry out the above works.
17. Agency has to undertake all safety precautions and ensure compliance of all safety norms during the execution of the work. Agency shall be wholly responsible for any untoward incident during the execution of the work.
Further, it will be the responsibility of the agency to comply all statutory requirements for which no separate payment shall be made
18. To carry out the above works, the Agency will have to arrange all the activities which are mentioned or not mentioned above but are required to complete the scope of work to the satisfaction of Officer In-charge at respective site.