

## 10.0 SMELTER II SUBSTATION

### Project Objective

A number of thermal plants are either being constructed or planned for implementation in the Tema and Kpone area with an envisaged installed capacity of 1,768 MW. The Ghana Grid Company Ltd. intends to construct a 161/34.5kV substation to facilitate the evacuation of power from these plants into the national grid.

The project seeks to achieve amongst others the following purposes:

- Termination of the Volta – Smelter lines such that power can directly be injected at the new substation to make use of the power transfer capacity of the existing seven (7) lines between Volta and Smelter.
- Provide an adequate and alternative power evacuation route for the three power plants connected directly to the New Tema substation – Siemens, MRP, TT1P, and Tema Osono Power Project (TOPP) and the proposed steam turbine plant in the future.
- Provide enhanced reliability for the evacuation of power from the Sunon Asogli Power and Cen Power plants
- Provide a more reliable transformer substation for ECG at Tema and reduce the dependence on the New Tema substation as the only BSP for Tema and its environs.
- Facilitates power evacuation from the proposed power plant to be built by VALCO in future.

### Scope of Works

The scope of works shall include the following:

- Design and construction of approximately 10km of 161kV transmission line on steel lattice structures to direct existing lines into the substation.
- Design and construction of 161/34.5kV substation configured as a breaker-and-half bus bar arrangement with eleven (11) complete diameters for the termination of eleven (11) pair of lines and installation of two (2) 161/34.5kV, 50/66MVA Power Transformers. This will involve the design, supply and installation of balance of plant made up of 161kV dead tank circuit breakers with three (3) CT cores on each side, 161kV disconnects, 161kV current and potential transformers, 161kV post insulators, 161kV gantries and 34.5kV Feeder equipment, complete.
- Protection, control and metering equipment and all the relevant accessories for the transformers and lines.

- Auxiliary power equipment including battery banks, DC and AC systems, bus bar systems, grounding systems, etc
- Supply and installation of 2No. 161/34.5kV, 50/66MVA Power Transformers and 2No. 34.5/0.433-0.25kV, 250kVA Grounding/Auxiliary Transformers,
- Associated civil works including the construction of control building/offices, foundation works and boundary works such as fencing and storm drains,
- Provision of water supplies at the substation.
- Supply and installation of teleprotection and fibre optic telecommunications systems compatible with existing GRIDCO facilities.
- Upgrade and provision of SCADA facilities at Volta and Smelter Substations and the Systems Control Centre at Tema.
- Supply and installation of PLC equipment at the Smelter II Substation similar to the ones in GRIDCO system.

The works also include other related works at Volta and Smelter (old) Substations involving the coordination of the line protections at Volta and existing Smelter Substations with the New Smelter Substation.

#### **Duration for Contract Implementation**

The duration for contract implementation shall be 18 months.