

## **5.0 KINTAMPO SUBSTATION PROJECT (KSP)**

### **Background**

Kintampo is located about 60km north of the Techiman substation along the Techiman-Tamale 250km line and is presently served predominantly from the single phase shieldwire scheme. This is a non-conventional single phase system, with a minimal capacity for three-phase affected by the insulation and energization of the shieldwires on top of the transmission lines towers. The total power demand for Kintampo has now grown beyond the capability of the shieldwire system, apart from the inability to serve many large 3-phase loads. Furthermore, it has not been possible to extend supply to areas surrounding Kintampo. This has resulted in considerable amount of un-served demand and unreliable supply of electricity.

There is the need to develop a conventional substation at Kintampo. This was already envisaged at the time the Northern Electrification Project was initiated.

It is expected that the development of the Kintampo substation will result in the following”

- Pick-up about 2MVA of power presently being supplied from Techiman.
- Ability to supply more reliable power to towns around Kintampo from either the shieldwire schemes or the conventional scheme.
- Supply power to the area between Kintampo and Bamboi, which hitherto is not served with electricity.
- Improve upon the operation of the northern system.
- Serve the integration of the Bui power into the grid.
- Future landing point for the 330kV line from Kumasi to Wa.  
The Kintampo substation would also serve two main system reinforcement projects:
- Termination of one feeder from the Bui Hydroelectric Project.
- Expansion of the substation for the termination of the Kumasi-Kintampo-Wa 330kV line.

### **Project Objective**

The Ghana Grid Company intends to construct a 161/34.5kV substation at Kintampo to meet the growing demand for power at Kintampo and its environs. A 161kV transmission line from the Bui hydro switchyard is to be connected to this substation. Furthermore, the Kintampo substation will also connect to the 330kV transmission network through 330/161kV autotransformers in the future to improve on the overall system reliability and security within the northern transmission network. The project is expected to be implemented in phases.

### **Scope of Works**

The substation would be configured as a breaker-and-half bus arrangement, with six (6) diameters.

The envisaged scope of work for the phase 1 of the project is as follows:

- Construction of a new 161/34.5/11.5kV substation at Kintampo by breaking into the existing 161kV Techiman-Tamale line. The works will involve the design, supply and installation of balance of plant including but not limited to 161kV circuit breakers, 161kV disconnect switches, 161kV current and voltage transformers, 161kV surge arrestors, 34.5kV feeder equipment complete, protection and control system, AC/DC station auxiliary, metering equipment, buswork, associated civil work, etc.
- Installation of (2Nos) 161/36/11.5kV, 20/12.5/12.5MVA Power Transformers to be relocated from the Tamale Substation to the Kintampo substation.
- Installation of two (2Nos) 250kVA Auxiliary transformers and two (2No) 250kVA Grounding transformers to be relocated from the Tamale Substation to the Kintampo Substation.
- Installation of a 161kV, 8.5—17MVar Line Reactor to be relocated from the Techiman Substation to the Kintampo Substation.
- Provision of a communication and SCADA system for the Kintampo Substation and upgrade of the SCADA and Communication systems at Techiman and Tamale Substations.
- All civil works associated with the above works including but not limited to survey, substation site clearing, leveling, filling and compaction, control building, gatehouse, drainage, fencing with gates, equipment plinths, etc.

Provision shall be made for the construction of a 330kV substation at the Kintampo substation to facilitate transfer of power between the 161kV and 330kV transmission networks.

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

The duration for contract implementation shall be 18 months.

#### **Project Status**

Preliminary designs, preparation of technical specifications and bidding documents about 90% completed.

#### **Funding**

No funding has been secured for this project. GRIDCo is awaiting some other sources of funding for the project.