

### Kafue Gorge – Hydroelectric Plant and 330kV High-voltage Distribution

**LOCATION:** Kafue Gorge, Zambia

**SERVICES:** Commissioning, Project management, Quality assurance, Site management, Documentation, As-built status and data recording, Pre-project planning and tendering, Basic-engineering and pre-engineering, Detail engineering, Installation supervision

**INDUSTRY BRANCH/TYPE OF PLANT:** Green Energy, Transmission & Distribution, Power plants

**CLIENT:** Zesco, Zambia, through Comelex and ABB High Voltage

**PROJECT SIZE:** > SFR 1 M

**ACTIVITY PERIOD:** 2004 - 2007

#### Project description

The power plant switch gears and high-voltage systems in Kafue Gorge are the largest energy provision systems in central Africa. The Kafue Gorge hydroelectric plant and the 330kV high-voltage distribution system began operations in the early seventies, making them over 30 years old. On the high voltage side, in the early nineties, a power grid system was added, and in the mid-nineties, a new high-voltage control system; at the beginning of the millennium, a new high-voltage protection system was commissioned. No renovations had been made to the primary systems since the plant was built. On the power plant side, a new power plant controls system was also commissioned in the mid-nineties. No renovations had been made to the generator switch, the power plant switching system, the power transformers, or the generator protection system since the plant was commissioned. The operating company, ZESCO, Zambia, had decided on a general overhaul of the high-voltage primary system and the power plant switching system, as part of the general overhaul of the power plant turbines. Some of the individual system components were also to be completely renovated, and some only modified. With the help of our consultant, SwedPower, ZESCO generated the concept for converting the plants, and contracted with a consortium for its implementation via an international request for proposals. INP took on the project planning of the open-air switchyard, and part of the power plant switch gears, as a sub-contractor of a consortium partner (ABB). The project planning job included all associated planning and renovation phases, as well as site and installation management, startup of the primary side components of the high-voltage equipment. In the course of project implementation, INP took on the role of an external consultant, and pointed out to the operating company, ZESCO, and to the customer consultant SwedPower, weak points in the project planning and execution of the secondary side system components, as well as problems with interfaces. INP then generated a new concept for all of the secondary side systems, taking into consideration which sub-systems could be re-used, and which required replacement.

#### POINTS OF CONTACT



**Thomas Jäger**  
Geschäftsführer  
INP Schweiz AG  
Spinnereistrasse 3  
5300 Turgi  
Schweiz  
Tel. +41 56 552 19 00  
[thomas.jaeger@inp-e.com](mailto:thomas.jaeger@inp-e.com)  
[www.inp-e.com](http://www.inp-e.com)