Sv. PETKA
HYDRO POWER PLANT

Design, Engineering services, Equipment supply

INVESTOR
ELEM Elektrostopanstvo na Makedonija
Skopje, Republic of Macedonia

CONTRACTOR
RIKO d.o.o, Bizjanova 2, Ljubljana, Slovenia

2006 - 2013
**SCOPE OF WORK**

HPPP Sveta Petka is a new power plant, located near Skopje, the capital city of the Republic of Macedonia, on the Treska River. It consists of 64 m high concrete arch dam with associated facilities and power plant with installed capacity of 36.4 MW and average annual generation of 66 GWh. HPP Sveta Petka is designed to be a unmanned power plant.

The works comprise the main design, construction, delivery, installation, testing and commissioning of the power plant, on the turn key basis, as well as financing of the project. The supply and installation of equipment started in 2009, commissioning of the plant was finished in 2012. Main electrical equipment was installed between 2011 and 2012. Commissioning of all systems in order to start the power plant from SCADA was completed in July 2012, official opening of the power plant was held on 1st of August 2012.

The main contractor is RIKO d.d., Slovenia, with Korona as their sub-supplier undertaking the following scope of works:
- complete design services
- technical coordination of mechanical and electrical equipment
- electrical equipment supply and commissioning
DETAILED DESCRIPTION

Detailed description of the supplied and installed equipment:

1- Two Step-up transformers (115/10.5 kV; 20 MVA). Transformers are oil immersed and forced cooled.

2- Generator Voltage (10.5 kV) equipment consisting two neutral point cubicles and two measurement and breaking cubicles between generators and step-up transformers.

3- 110 kV switchyard consisting of two transformer bays, two OHL bays and one measurement bay. 110 kV switchgear is placed on the concrete plate above the tailrace water channel with very sophisticated and complex design and erection of earthing system.

4- Control system of the power plant including two unit controllers, one auxiliary controller, one 110 kV switchyard controller with local SCADA on each controller and master SCADA running on servers at the Control room of the HPP. Power plant is fully automated due to the demand of the client to be unmanned facility, operated from the regional centre at HPP Kozjak.

5- Cascade control system for regulating three power plants: HPP Kozjak, HPP Sveta Petka and HPP Matka. Cascade software with local SCADA and all equipment is installed at HPP Kozjak. Both HPP Kozjak and HPP Sveta Petka can controlled from local SCADA of Cascade software of from National Dispatch Centre in Skopje, owned by state’s TSO MEPSO. This Cascade software is first of a kind installed and operating in Republic of Macedonia.
6- Protection system of the entire power plant consisting two generator and transformer protection, 110 kV OHL lines protection and 35 kV lines and transformers protection. Scope of supply and services included supply of equipment, cubicles, protection coordination studies and commissioning of protection system.

7- 35 kV switchgear for auxiliary power supply with combined 35 kV cable and OHL connection to the existing S/S in length of 2 km.

8- Auxiliary transformers (3x630 kVA) with complete auxiliary power supply and cabling to all consumers of the HPP, consisting of two 220 VDC VRLA batteries sets, two chargers, two inverter systems, fully automated AC and DC distributions with diesel generating set equipped with season tank and telecommunications power supply system.

9- Earthing and lightning system of the entire plant, concrete dam, and auxiliary facilities with very complex and sophisticated calculation and design models and erection process due to the rocky mountainous and dry terrain.

10- Lighting and small power of the entire plant, concrete dam, access roads and all other auxiliary facilities.

11- Supply and installation of cable trays for all signalling and power cables inside the power house building, on the dam structure and all other facilities.

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