

**The 13<sup>th</sup> International Workshop on Electric Power Control Centers  
Bled, Slovenia, May 17-20, 2015**

## **SCADA/EMS/AGC Refurbishment and Upgrade Project in Croatian TSO**

**Ante Martinić, Ph.D.,**

**Končar – Inženjering za energetiku i transport d.d., Croatia**

### **Abstract**

The main aim of SCADA/EMS/AGC Refurbishment and Upgrade Project of the Croatian TSO was the implementation of ICT systems supporting Transmission System Operator business processes that ensured a safe and economically optimal power system management in Croatia. ICT systems supported power system planning, real-time management, settlement and billing processes. The project started at the end of 2007 and implemented systems were fully operational by the end of 2013.

SCADA/EMS/AGC Refurbishment and Upgrade Project in the Croatian TSO was a complex and significant ICT project that covered nearly all business processes in Croatian TSO (HOPS). The project included: upgrading and implementation of new technologies and functionalities of existing systems, integration of new functionalities for power systems control, implementation of new systems and development of the network infrastructure for data transfer at all the control levels. The project included the following systems: SCADA (Supervisory Control And Data Acquisition), EMS (Energy management System), AGC (Automatic Generation Control), operator simulator system, intelligent alarm processing, atmospheric discharges location system, wind power plant planning system, Market Management System (MMS), and data warehouse system that included all available data in order to support advanced reporting and business decision making. All implemented systems complied with EU 3rd Energy Package and ENTSO-E requirements and guidelines.

SCADA/EMS/AGC Refurbishment and Upgrade Project in Croatian TSO was the most significant ICT project implemented in Croatian TSO for the past two decades. This project, resulting from a collaboration of HOPS, Končar and some other Croatian companies and scientific institutions provided for a significant contribution to the operational safety and efficiency of the Croatian power system management representing solid foundations for any further development and improvement of the entire Croatian power system.