The Croatian Smart Grid Experience - building a advanced distribution network

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HEP Group

- group of 15 companies:
  - electricity production, transmission, distribution and supply
  - gas distribution
  - heat supply
- number of employees: 13,990
- total operating income: 1,7 bil. EUR
• ODS is responsible for:
  – energy distribution
  – tariff customer supply

• Grid users structure:
  medium voltage 2,081
  commercial 188,653
  public lighting 20,818
  residential 2,099,133

• number of employees
  9,000

• 21 distribution areas

THE DUBROVNIK ELBOW (51.2 cm) was derived from the length of the right arm of Orlando statue, from the shoulder to the fingertips (1418).
Why Smart Grid?

Reasons for accepting SG ideas in HEP ODS:

• Increase in consumption
• Integration of renewable energy (distributed) sources.
• Creating the preconditions for the active role of customers on electricity market
• Caring for the environment
• Age of transmission and distribution networks (aging infrastructure)
• Increase in price of fossil fuels
Renewable Energy

Balancing production and consumption in an efficient manner requires advanced network and advanced users.

Distributed generation technologies will become competitive before the year 2020 thanks to rapid technological development.

Source: Registar OIEKPP (09/2011)  http://oie.mingorp.hr
Transport & Tourism

In the record weekend 2011th in Croatia has entered a total of 390,000 vehicles and exit 366,000 vehicles.

**Forecasting energy demand for 100,000 electric cars**

**Energy consumption in transport 1988. - 2009.**
Current projects – network control and automation

Continued investment in network and involvement of all remotely controlled and monitored facilities in new SCADA system.

SCADA Info - HEP ODS integrated applications to access data in the revived SCADA systems via an internal web portal.

Integration of devices which have a capability to measure power quality parameters (PQ) into the ICT system.
DSO AMR/AMI System

The total number of measurement points 2.3 million.

Electronic meters 11%

Remote meter reading:
- Measurement of HV, MV, P > 30kW 100%
- Measurement of Enterprise P <= 30kW 1%
- Measurement of Household 0.3%
Energy Efficiency

Continuous work on reducing technical and non-technical losses.

Projects for customers:

House in order - Program for energy efficiency in buildings owned by the Croatian Government

Energy efficiency measures in public lighting:
- investments in multiple projects € 4,3 million
- annual savings € 0,37 million

www.mjerenje.hep.hr
Caring for the environment and network

2007th we started the certification of distribution areas for environmental management system to ISO 14001:2004.

2011th completed important work of removing hazardous substances (PCBs) from old parts of the network.

Annually investment are around € 100,000 in the protection and habitat conservation for birds and small animals.
The next phase of Smart Grid implementation in HEP ODS

Activities of the next phase of SG implementation:

a) increase the level of network automation

- TS 110 / x and 35 / x kV from 80% to 100%
- TS 10 (20) / 0.4 kV from 1% to 5%

b) continue to AMR/AMI and power quality projects

c) to define new guidelines for the development of the network in order to accept distributed generation

d) develop new services based on already constructed infrastructure (Demand Response, etc.)
Preconditions for successful implementation of the concept of advanced distribution network

Establishing a system of incentives.

Defining the business model (roles and responsibilities of participants) and the model of market.

Testing and verification technology. Realization of investments.
Planned Investments in SG Technology for 2011

Planned investments for 2011 year by basic areas:

- automation of distribution network € 1,3 million
- introduction of advanced metering € 3 million

Sources of funding are the tariff items.

The main drivers of SG technology in HEP ODS are legal obligations, age of infrastructure and reduction of operating costs.

The main barrier for SG investment is the lack of adequate regulatory framework.
Public presentation of the project hydropower plant Ombla - Dubrovnik

• 68 megawatts of power
• estimated annual production of 225 GWh (for 45,000 households)
• value HE Omble estimated at 152 million euros,
• construction will last 5 years

One of the most important issues in the discussion was that there is a possibility of destroying a colony of bats!

2011/2012 has been chosen as the Year of the Bat!
Smart Network is a network that is designed, used and maintained in a manner that maximally protects the environment.
Thank You for Your Attention!

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