

BULGARIA

# HYDRO POWER

## **DOLNA ARDA REHABILITATION AND NEW HYDROPOWER PROJECT TSANKOV KAMAK**

Environmentally friendly electricity from hydropower to ensure national power supply

Rock formation at Belogradcik, Bulgaria

**'THE ANDRITZ VA TECH HYDRO  
MACHINES AND SYSTEMS HAVE  
FAULTLESS OPERATION.'**

**LUBOMIR VELKOV**

Chief Executive Director, NEK

Natsionalna Elektricheska Kompania EAD (NEK) of Bulgaria is the state-owned company dealing with electricity generation, transmission, and sales. It owns the transmission network and has its own generation assets – including 29 hydropower and pumped storage hydropower plants with 2,563 MW total installed capacity. Lubomir Velkov, NEK's Chief Executive Director, talks about the role of renewable energy production in the EU's newest member country, and his company's long relationship with Andritz VA TECH HYDRO.



# NEW POWER FOR EU'S NEWEST MEMBER

Interview with **Lubomir Velkov**,  
Chief Executive Director, NEK

## Experience

I graduated from the Moscow Energy Institute. I worked as a designer for Energoprojekt EAD for seven years, followed by six years as an expert in the Bulgarian Nuclear Safety Authority. In 2001, I joined the national electricity company NEK as Head of the Investments and Development Division and later became Director of that division. In November 2005, I was appointed Chief Executive Director of the company.

## NEK and new market forces

NEK is in a new era with energy market liberalization. The traditional monopoly in energy generation and supply is shifting into a competitive, open market. Our tasks at NEK are to remain a leader in the services we offer, while meeting the new market demands. We also have to ensure the security of our national power supply.

## The role of hydropower

On average, 7% of Bulgaria's electricity comes from hydropower, which is utilized mostly for peak load coverage and to regulate the load on our power system. We operate 29 hydropower plants, with the 14 largest being part of four major hydropower cascades. Hydropower helps us produce environmentally friendly electricity from renewable resources. Our focus is on maximizing the utilization of our existing plants and building new, smaller hydro plants on running water.

## Experience with Andritz VA TECH HYDRO

Andritz VA TECH HYDRO is a company with great experience in the construction and rehabilitation of hydropower plants. They offer equipment on a world-quality level. NEK has had a long relationship with Andritz VA TECH HYDRO, dating back to 1910. More than 45 hydropower turbines and replacement runners with a total output of 850 MW have been delivered by Andritz VA TECH HYDRO. Their machines and systems have faultless and reliable operation. Equally important are the human aspects of working with them. They have a staff of excellent experts who work with us as a team member. Their attitude towards their clients is open and flexible.

In the period 2002–2005, our Devin and Teshel hydropower plants were rehabilitated by Andritz VA TECH HYDRO. The units were completely renovated with new excitation systems, relay protection, and control systems. This extended the plants' lives by more than 30 years. The excellent results from these projects contributed to the selection of Andritz VA TECH HYDRO for the Dolna Arda rehabilitation and the extension of the Studen Kladenets hydropower plant.

## Dolna Arda rehabilitation

Currently, we are rehabilitating the Dolna Arda hydropower cascade. When this project is completed in 2010, we will have upgraded all 14 of our biggest hydropower plants. The project includes three hydropower plants in the cascade: Kardjali (four units), Studen Kladenets (four units), and Ivailovgrad (three units).

The Studen Kladenets 60 MW power plant was commissioned in 1958. Andritz VA TECH HYDRO will increase the turbine efficiency at the plant, and a fifth unit with a capacity of another 16 MW will be installed. An additional small turbine (1 MW) will process waters that are returned to the river, which will have a positive impact on the river ecosystem. Andritz VA TECH HYDRO is responsible for the electromechanical work, including the supply of the new hydro units. After the rehabilitation is completed, the improved efficiencies of the units plus the new capacity at Studen Kladenets will increase the total cascade capacity from its current 270 to 331 MW.

## Tsankov Kamak hydropower plant

The new hydropower project Tsankov Kamak is the first project within the framework of the Kyoto Protocol's flexible mechanisms. Based upon our information, approximately 200,000 tons emission reduction units will be generated each year. Euromoney/Trade Finance magazine recognized the financing of this project as the 'Deal of the Year' in 2003. The project is managed and financed by NEK without a state guarantee in a complex structure with many resources, including banks and export credit agencies.

The Tsankov Kamak plant is on the Vacha River, one of the biggest in Bulgaria. Currently, there are six hydropower plants in operation on the river with 446 MW total installed capacity. The new site will include a dam and a new 80 MW power plant capable of generating 185 million kWh each year. Andritz VA TECH HYDRO is providing all the electromechanical equipment and installation for the new hydropower plant. ○

**ANDRITZ VA TECH HYDRO  
HAS SUPPLIED OVER 45 WATER  
TURBINES AND REPLACEMENT  
RUNNERS WITH A TOTAL  
OUTPUT OF 850 MW TO NEK.**

[1] For NEK's Aleko hydropower plant, Andritz VA TECH HYDRO upgraded the mechanical power station equipment, including the turbines (3 x 25.8 MW) and governors. Photo: Machine hall, turbine level

[2] For NEK's Belmeken hydropower plant, Andritz VA TECH HYDRO supplied runners of 76 MW output each for a total of three turbines. Photo: Belmeken HPP

[3] Shut-off device at the Aleko HPP

[4] Machine hall (generator level) at the Aleko HPP



[1]



[2]



[3]



[4]