

# Germany

## Renewable energy resources are up and coming

Area	357,021 km <sup>2</sup>
Population	82,431,390
Most populated city	Berlin, approx. 3.5 million inhabitants

### Key economic data


GDP (purchasing power parity)	\$ 2.5 trillion
GDP (official exchange rate)	\$ 2.8 trillion
GDP real growth rate	0.8%
GDP per capita (purchasing power parity)	\$ 29,700
Inflation rate (consumer prices)	2.0%
Unemployment rate	11.6%

Source: CIA World Factbook 2005

## Landshut Fortress above the Mosel River

**Dr. Dominik Godde**  
Managing Director of E.ON Wasserkraft, Germany

**“We are impressed by the high flexibility  
and the excellent teamwork of Andritz.”**

A large industrial facility, likely a pumped storage plant, featuring three massive hydraulic machines in a row. The machines are painted in vibrant blue and red colors. The facility has a high ceiling with a balcony and a tiled floor. The machines are arranged in a line, receding into the distance. The blue parts of the machines are the main body, while the red parts are the large, curved, segmented covers. The floor is made of light-colored tiles, and there are some electrical cabinets and pipes visible near the machines.

In 2005, Andritz successfully concluded the reconstruction of E.ON Wasserkraft's pumped storage plant at Reisach. It contains three machine sets with an output capacity of 105 MW.

# “WE CAN RELY ON ANDRITZ TECHNOLOGY AND SUPPORT.”

## Interview with Dr. Dominik Godde

Managing Director of E.ON Wasserkraft, Germany

**E.ON Wasserkraft (EWK), with its headquarters in Landshut, Germany, operates more than 130 hydropower stations producing 9 TWh of electrical energy per year – thus making it the largest German operator of run-of-river power stations. Since the construction of new hydropower stations in Germany is limited due to environmental and economic hurdles, the emphasis has shifted to modernizing and rehabilitating existing stations. In 2005, Andritz successfully completed the modernization of the EWK pumped storage power plant Reisach. Dr. Dominik Godde, Managing Director of EWK, talks about the role of hydropower and Andritz’s performance at Reisach.**

### Background

My background is in the construction industry. Before joining EWK, I was the Chief Executive of a branch responsible for construction of power plants and hydro projects for Hochtief AG, one of the world’s largest construction companies. I joined E.ON in 2004 as Managing Director of E.ON Wasserkraft.

### Customer requirements

Our customers require “quality power” supply from EWK. Quality means high reliability, low costs, and the ability to meet their demand requirements – even during peak demands. We accomplish this by producing the base-load power with our run-of-river power stations and the peak power with our pumped storage power plants. To meet our customers’ demands, we need high availability of the technical equipment in our stations.

### Pumped storage power plants

Pumped storage power plants give us flexibility in meeting power demands. During times of high power consumption, the water from a reservoir is fed through our turbines. During off-peak times, the water is pumped back to the higher level basin. This enables primary and secondary control of power production and ensures stability of the European power grid.

### The Reisach power plant

The Reisach station was started up in 1955 with two machine sets, and a third was added in 1961. The plant’s rated output in turbine operation mode is 105 MW, and in pump operation mode it is 81 MW. Each horizontal machine set consists of a Francis spiral turbine with a high-pressure spherical shutoff valve, a two-stage double-flow storage pump, and a Pelton starting turbine with toothed wheel coupling for rapid changeovers to pumped storage operation.

### Refurbishments and upgrades

The mechanical equipment is designed to have a very long life. Refurbishment occurs very infrequently – every 12 to 20 years – primarily to decrease maintenance expenses. Refurbishment also aims at increasing plant safety (e.g. improving bearing lubrication, replacing guide vane shear pins, etc.). The most recent refurbishment of the pumped storage set R2 was in 1986.

Upgrades normally involve the changing out of components which are near to the end of their life-time – especially electronic control equipment. This enables the equipment to operate safely while unattended. In 1993-94, the entire Reisach automation and control room equipment was upgraded to the state-of-the-art.

### Why Andritz?

We were familiar with Andritz as a manufacturer of large bulb turbines. Our contacts with Austrian power station operators, and the knowledge that Andritz was actively moving into the service business, led to our getting in touch with the company. We investigated their capabilities and references and started inviting them in 2001 to bid on our projects. We placed our first order with Andritz in 2003 for repair work on a pumped storage set and shutoff valves at Tanzmühle. In 2004, Andritz got the order for refurbishing the R2 pumped storage set at Reisach.

### Andritz performance

We found Andritz to be a very flexible company, with competent technical staff. The technicians were involved early in the bidding phase to answer our questions and to convince us of their professional skills.

While Andritz had three teams (technical, manufacturing, and erection) executing the project, this fact was never obvious to us. We had a single point of contact right from the start. This avoided duplication of effort and loss of information.

The quality of the workmanship was very high. Andritz suggested to machine two turbine covers on their lathe. This helped to avoid any alignment errors and eliminated extensive measurement work. Their documentation of the machine component handling has been outstanding.

We discussed all the important milestones together and they contributed to a trouble-free installation – in spite of the very challenging time schedule.

The start-up was very smooth. Interlocking of the project phases was completely without problems. This is noteworthy because the machine controls and mechanical protection devices were part of another project.

### Safety

Worker safety is a very important aspect for EWK. The common goal of EWK and Andritz was to finish the project without any accidents. We achieved this thanks to the excellent communication and cooperation between the Andritz team and the EWK team.