



## Pressure Tunnel Schwarza-Witznau, Berau (DE) Sealing Grouting Works

<b>Country</b>	Germany
<b>Type</b>	Hydropower
<b>Client</b>	Schluchseewerk AG
<b>Main Contractor</b>	Schluchseewerk AG
<b>Designer/Site Supervision</b>	ILF Beratende Ingenieure AG, Switzerland
<b>Execution of the work</b>	Renesco GmbH, Dept. Marti Geotechnik
<b>Construction Period</b>	2025
<b>Contract Sum</b>	3.600.000 €

## Project Description

The nine-kilometer-long Schwarza-Witznau pressure tunnel with an inner diameter of 5m was built in the thirties and connects the Schwarza basin of the Haeusern power plant with the Witznau basin of the Witznau power plant. Its rehabilitation is scheduled for 2025. Initial preparatory measures for this have already been successfully completed.

From the Schwarza basin, the tunnel has a concrete lining over a length of 8.4 kilometers, which is also covered with a layer of plaster. The remaining 600 meters to the Witznau power station are secured by steel reinforcement. In the section between the Eichholz gallery and the surge shaft "Berau", test injections were carried out in 2020, which results serves as a basis for the following rehabilitation works.

## Grouting Works

In order to ensure the continued safety of the Schwarza-Witznau tunnel and the machines, the first part of the tunnel is to be renovated by grouting measures using a cement suspension approved during the test section performed in 2020. The rehabilitated section will have an approximate length of 1,800 meters. The radial boreholes for the contact grouting will be drilled with a specially adapted drilling rig.

## Scope of Services

- Creation of the entire infrastructure for the supply of electricity and water as well as the water treatment.
- Execution of boreholes with a depth of 2 meters for shots – approx. 30 pcs.
- Execution of boreholes with a depth of 0,7 meters for contact grouting – approx. 4'000 pcs.
- Injection cement suspension: approx. 450,000 litres
- Rehabilitation works on the concrete

The construction site is supplied via an access tunnel and the 70-meter-deep surge shaft "Berau." The infrastructure inside the tunnel for power and water supply was planned and implemented by Renesco. Cleaning water and groundwater mixed with cement suspension, seeping from the tunnel lining, are collected using barriers and pumped through a pipeline of up to 1,000 meters in length to the water treatment plant.



1. Drill rig, specially adapted
2. In-situ mix plant on surface level
3. Grout equipment and mixing station underground