

UNESCO-Welterbe

Montanregion Erzgebirge/Krušnohoří

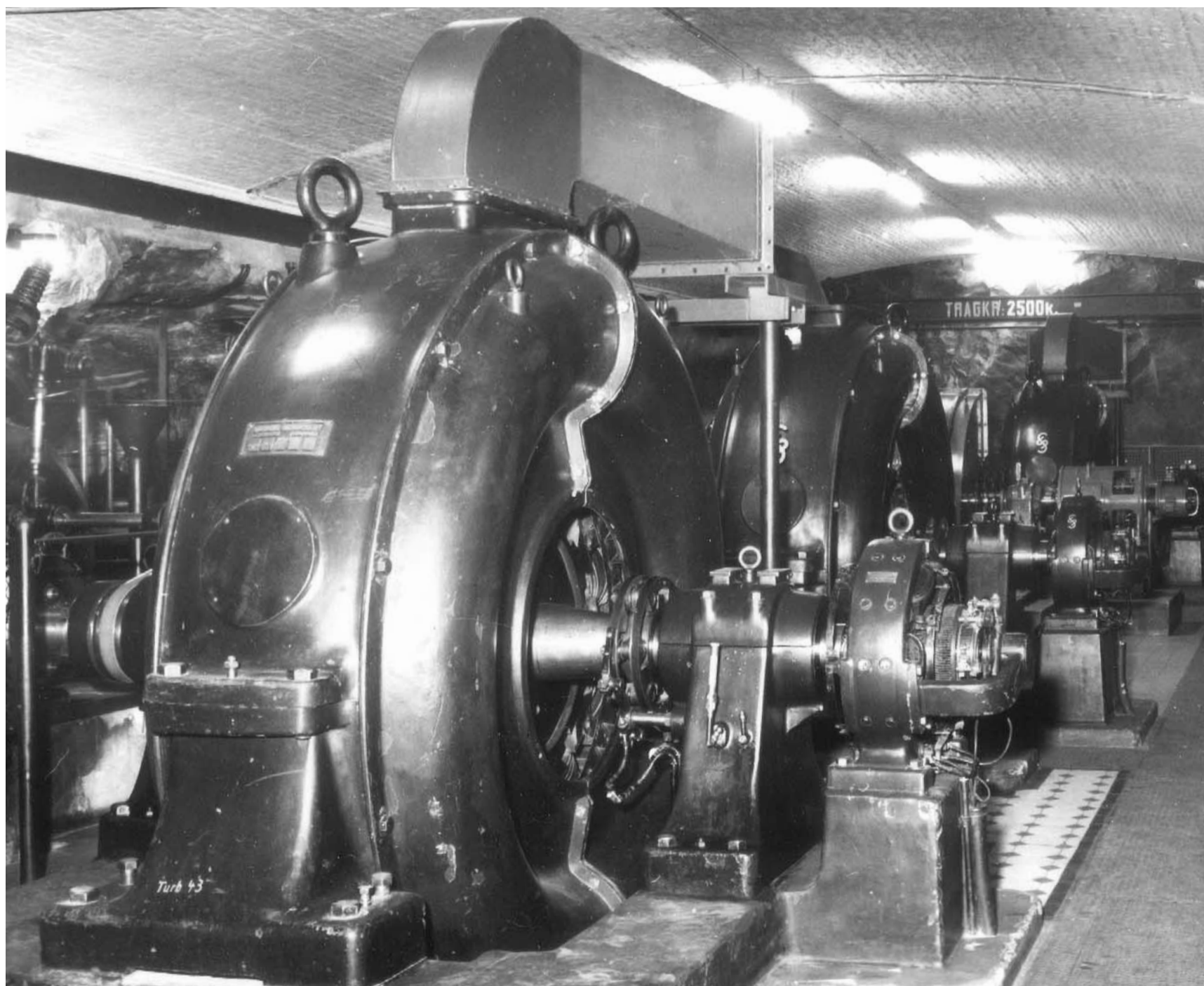
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UNESCO-World Heritage Erzgebirge/Krušnohoří Mining Region



Welterbe Montanregion
Erzgebirge/Krušnohoří
— ⚒ — Freiberg

Drei-Brüder-Schacht – a hydroelectric power station in the mountain

revolutionary and sustainable



Drei-Brüder-Schacht – 
ein Wasserkraftwerk im Berg
revolutionär und nachhaltig



Drei-Brüder-Schacht – 
vodní elektrárna v hoře
revoluční a udržitelná





Revolutionary and sustainable: a hydroelectric power plant in the mountain

The Drei-Brüder-Schacht: Silver was mined here for almost 100 years. But after the decline of the silver mining industry, this pit did not remain empty and unused. On the contrary, an engineering masterpiece for the generation of electrical energy: Europe's first cavern power plant and one of the first in the world. Today it is a technical monument in which straw was not once turned into gold, but water did turn into electricity.

Here, too, water has been considered both a blessing and a curse over time. Because everywhere in the mining industry, it caused increasing problems in the ever greater depths where the valuable silver was sought. But miners have always risen to the challenge: The technological masterpieces of the Freiberg miners and smelters set the standards in European mining for centuries. The mining industry not only shaped cooperation, but above all inventiveness and entrepreneurship. The Drei-Brüder-Schacht is wonderful proof of this.

Here, in 1791, the two pits "Beschert-Glück-Fundgrube" and "Segen Gottes Herzog August" joined forces to tackle the mine drainage so that

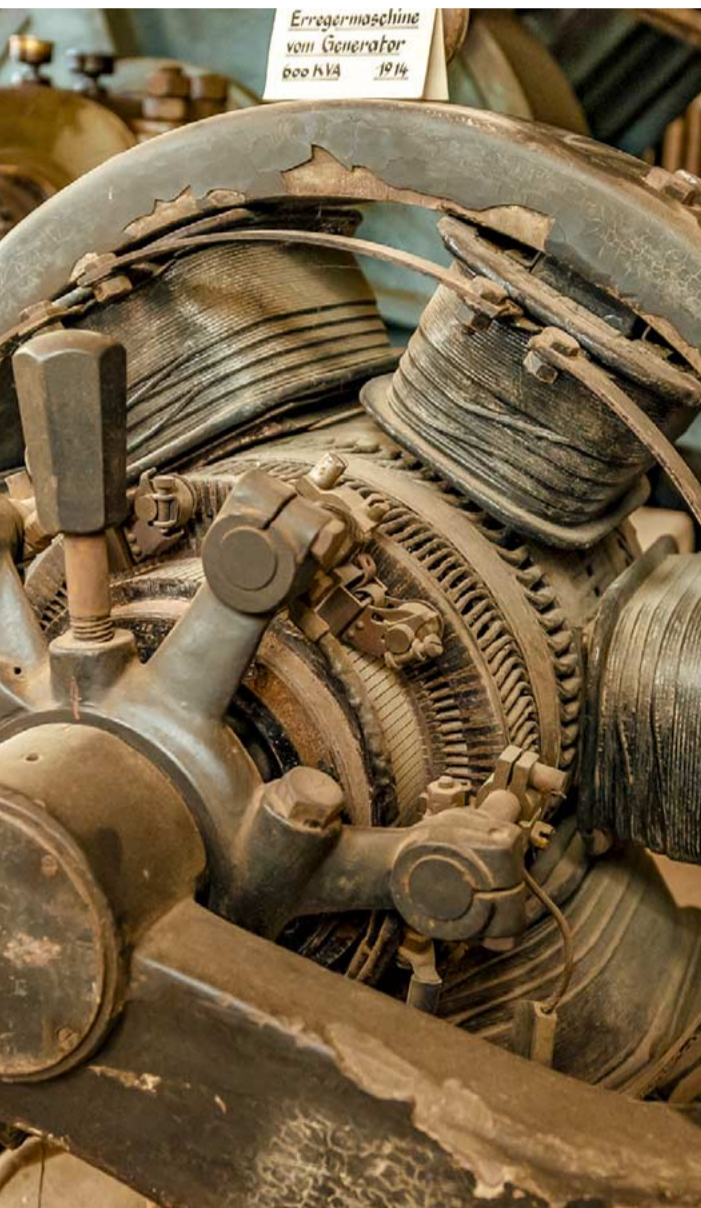


Photo above: exciter: direct current generator for generating the magnetic field in the rotary current generator

Photos below f.l.t.r.: Power meter, control elements, voltage adjuster for remote transmission at a depth of 272 metres





they could penetrate further into the depths in the pit.

However, efficient mine drainage could not change the fact that the hoped-for rich ore was not found at greater depths. And so, after only 100 years of mining everything changed: At 270 metres, where for a long time the Rothschönberger Stolln diverted the water from the Drei-Brüder-Schacht to prevent it from sinking, a hydroelectric power plant was established: the Drei-Brüder-Schacht cavern power plant. It went into operation on Christmas Eve 1914. Together with its sibling power station in the „Constantin-Schacht“, it supplied around 10,000 households of today's standards.

In the mid-1940s, the power plant was the most powerful hydroelectric power station in Saxony at the time, with an output of 6 MW.

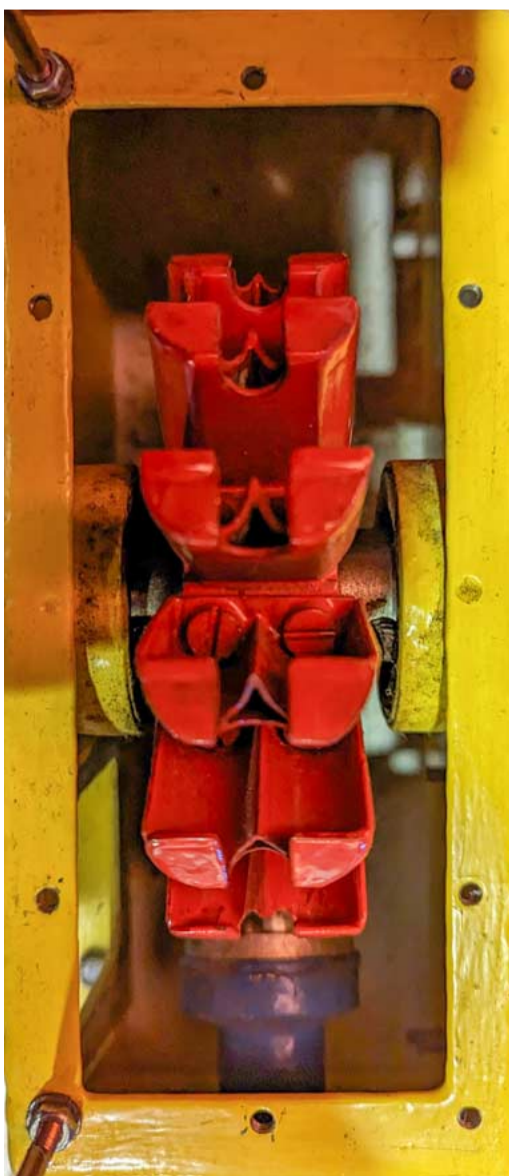
However, due to the resumption of active mining in 1948, the underground reservoirs could no longer be used. In 1953, a direct water supply

Imposing and the heart of the plant: the shaft winding engine from 1888



Photo above: guided tour in the switch room/preserved from 1914

Photo below: Pelton turbine model

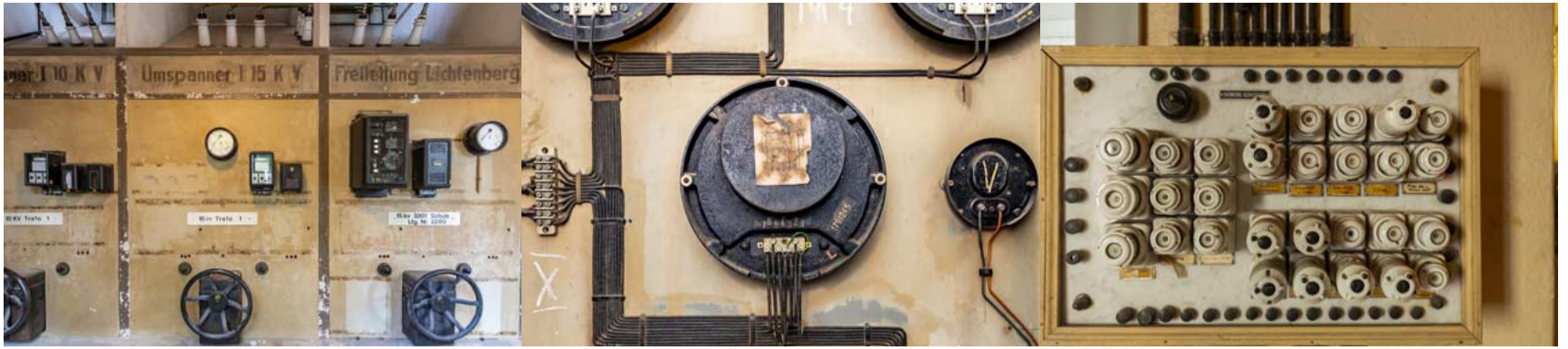


was established between the upper work Constantin-Schacht and the substation in the Drei-Brüder-Schacht. However, this eliminated the large storage space between the upper and lower works. In addition only the water flowing from the surface could be used to generate energy. The mine water flowed away unused.

Until 1953, the power plant and the water supply system within the district water running facility formed a single economic unit. After the separation of the power generation plant (VEB Energieversorgung Karl-Marx-Stadt) from the water supply to the power plant (VEB Wasserwirtschaft Mulde), disputes over the supply and price of water made conditions more difficult.

In addition, the power plant operation has been burdened with high depreciation costs for the Rothschönberger Stolln, even though it had been once financed by the Saxon royal family. This "nonsensical" burden also created an apparent inefficiency. So it was decided to close the power plant in 1968. In 1969 the upper works went out of operation, the substation in the Drei-Brüder-Schacht followed in 1972.

However, the operating team at the substation did not want to resign the closure and hoped for a reactivation. Therefore the sensitive equipment was brought to the surface, and the technology that remained in the cavern was conserved. Thus the underground machines are largely preserved



in their original condition from 1972. The shaft lining, on the other hand, fell into disrepair after closure and with it the access to the power station cavern. A "Sleeping Beauty sleep" set in.

Since the renovation of the Drei-Brüder-Schacht in 2017, it now serves as the southernmost access for the maintenance of the Rothschnöberger Stolln, a gallery over 50 km long - the deepest and most important drainage gallery in the Freiberg mining district. To this day it drains all the mines above the gallery in the Großschirma, Halsbrücke, Freiberg and Brand-Erbisdorf mining areas.

The Drei-Brüder-Schacht e.V. support association, founded in 1992, has succeeded in preserving the building ensemble above ground. One of the aims is to generate electricity in the cavern power plant again one day ...

Photos above f.l.t.r.: voltage transformation substation from 1934, back of the marble control panel, house distribution

Photo below: Artificial wheel model

Cover photo: cavern generating plant around 1944

Photos: TUBAF collection (cover), René Jungnickel, Katharina Wegelt

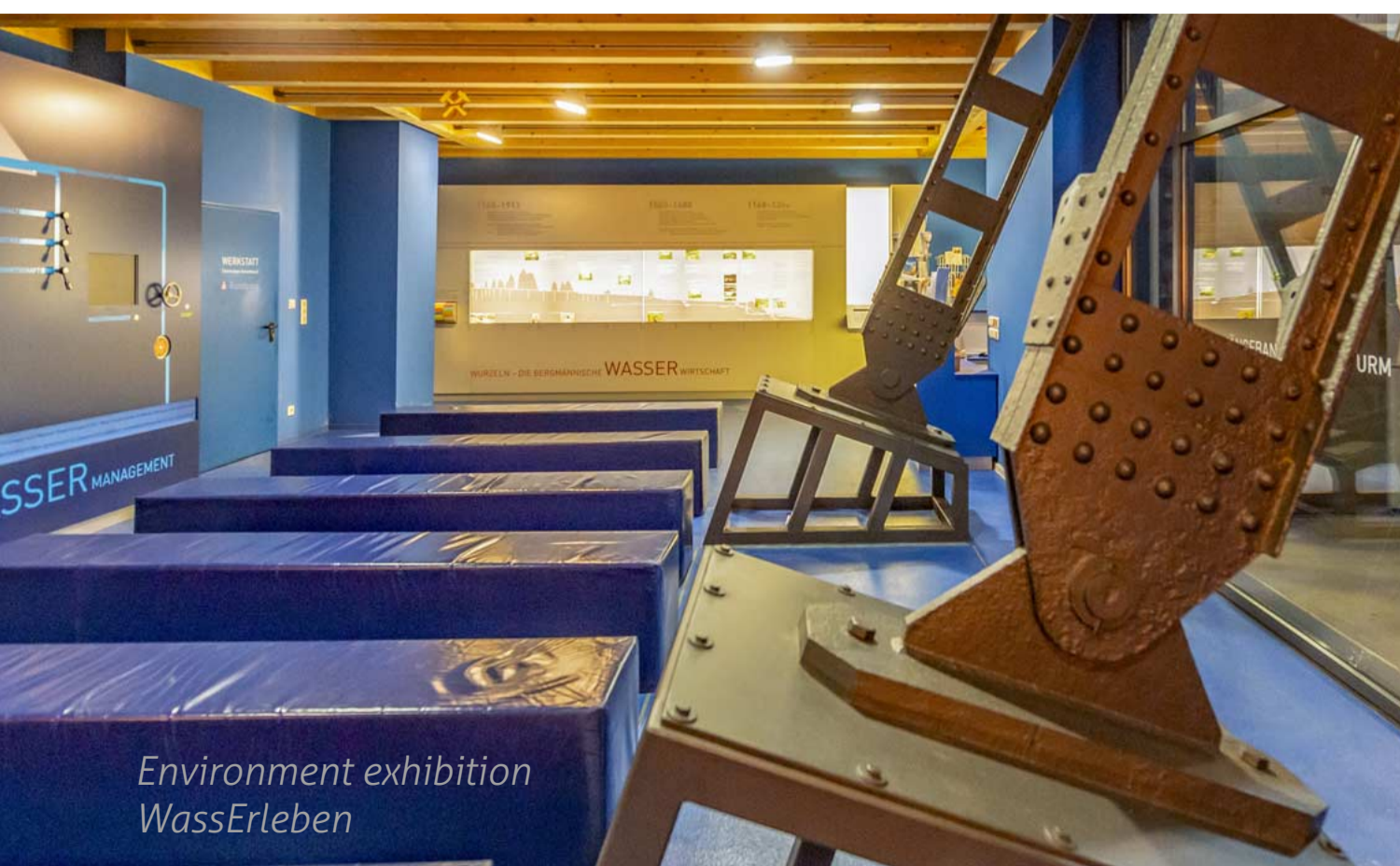


Exhibition

WassErleben (experience water). sponsored by the German Federal Environmental Foundation and the State Ministry for Energy, Climate Protection, Environment and Agriculture. It illustrates the interaction between the district water course and the cavern power plant.

Guided tours

by appointment:
verein@drei-brueder-schacht.de
 and
 from April to October on every third Saturday from 9 a.m. to 12 noon.



*Environment exhibition
WassErleben*



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