Gall Zeidler Consultants
Geotechnics | Tunnel Design | Engineering

Cheves Hydropower Plant
SN Power

Location:	Rio Huaura, 250 kilometers (155 miles) north of Lima, Peru
Date:	2012 – 2015
Structure:	Hydropower plant with Powerhouse, Transformer Cavern and Headrace, Surge and Tailrace Tunnels
Length:	Powerhouse: 60 meters (197 feet); Transformer Cavern: 27.5 meters (90 feet); Headrace Tunnel: 9,882 meters (32,421 feet); Adit 1 Headrace Tunnel: 894 meters (2,993 feet); Surge Tunnel: 702 meters (2,303 feet); Tailrace Tunnel: 3,250 meters (10,666 feet)
Cross-Section:	Powerhouse Cavern: Width: 15.5 meters (50.8 feet) Height: 32 meters (105 feet) Transformaer Cavern: Width: 11.2 meters (36.7 feet) Height: 14 meters (46 feet) Tunnels: Varies
Geology:	Granodiorite, Hornfels, Sandstone, Shale, Coal; Rock bursts in hard, brittle Granodiorite and Hornfels
Cost:	Approximately $ 145 Million
Client:	Constructora Cheves S.A.C. (a JV between Hochtief Construction AG, Empresa Constructora Tecsa S.A. and ICCGSA Ingenieros Civiles y Contratistas Generales S.A.)
Owner:	SN Power

Tunnel Design and Site Support Services:

The Cheves Hydropower project is located on Rio Huaura, about 130 kilometers (80 miles) by air north of Lima, Peru. Construction on the project began in 2011 and completed in 2015. This plant will add 168 MW / 837 GWh to the interconnected Peruvian hydroelectric system once operational. The prevailing geology is comprised of hard, brittle granodiorite and hornfels and has an overburden of up to 1,500 meters (4,920 feet). A high in situ stress component has lead to rock bursts in the caverns, the surrounding tunnels and the headrace tunnel. Gall Zeidler Consultants (GZ) provided expert consulting services to the contractor, including the assessment of areas with rock bursts. The geological conditions required both a support and a field classification system to identify the risk of rock bursts.

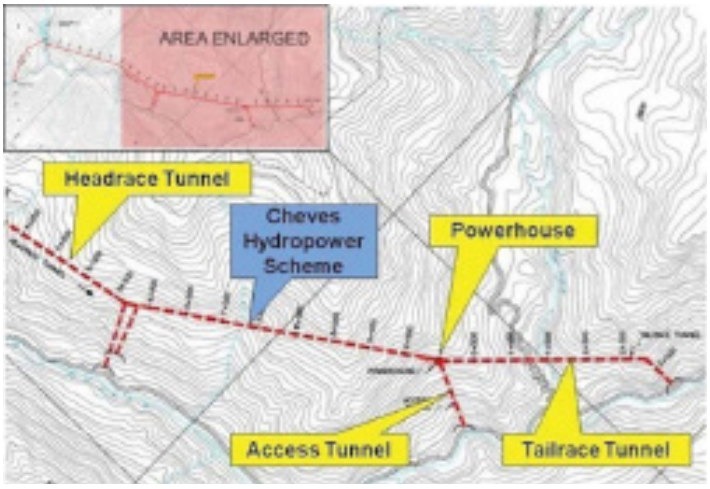

Figure 1. Alignment of the Cheves Hydropower scheme along the Rio Huaura.

Figure 2. Powerhouse cavern with crane beam.