

The Power of Hydro

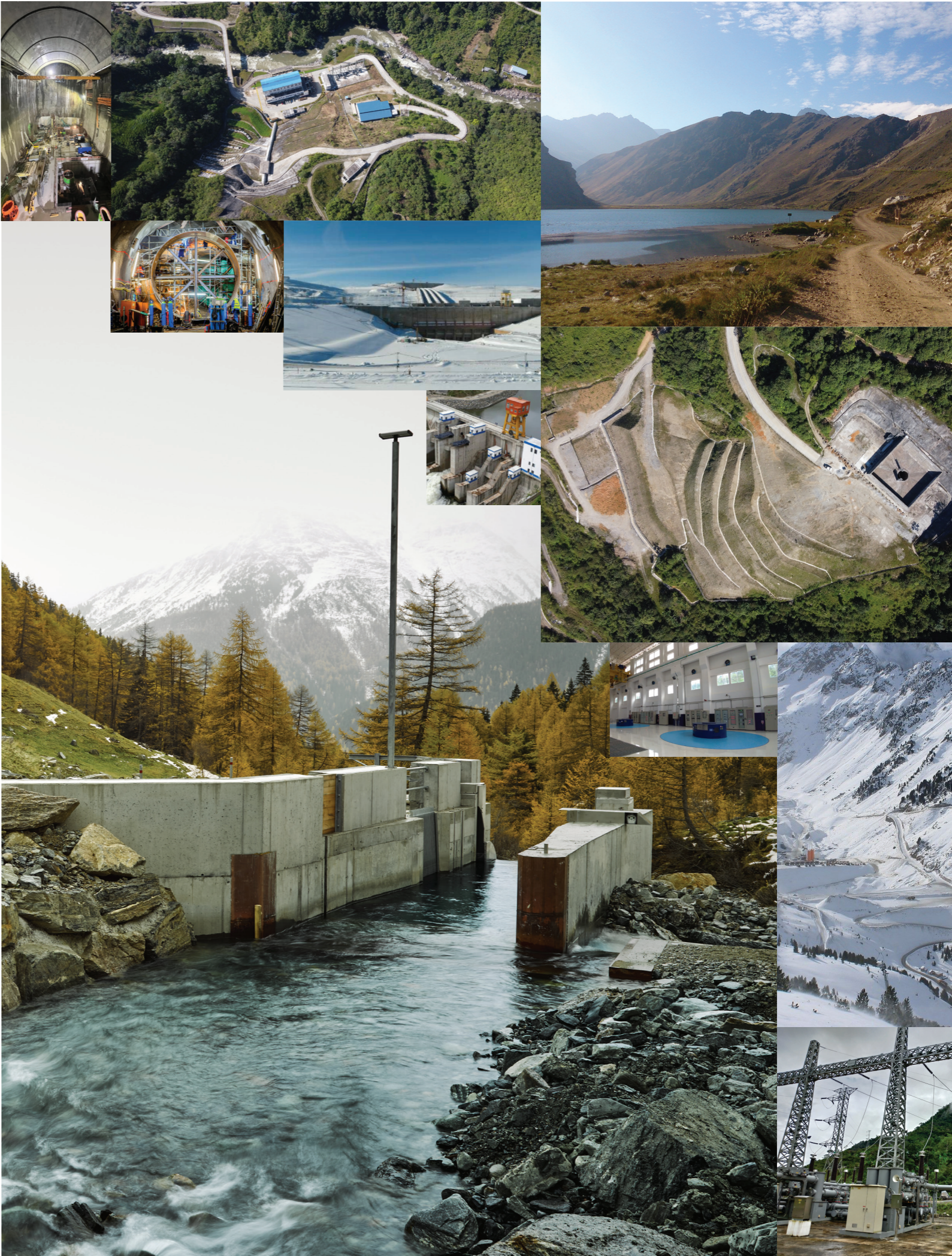
Business Line
Hydropower



From the Swiss Alps to the World

Switzerland's tradition in hydroelectric power has roots dating back to the 19th century. Since then, the sector has experienced steady growth, with increasing investments that have concurrently elevated the general know-how of the companies involved in the design.

Pini Group leverages this long-standing tradition and its network of capabilities to export expertise in the hydropower sector worldwide today.



Key numbers

Over

60000

PSPP MW

More than

60

HPP projects

Footprint

18

countries

Over

21 GW

1st

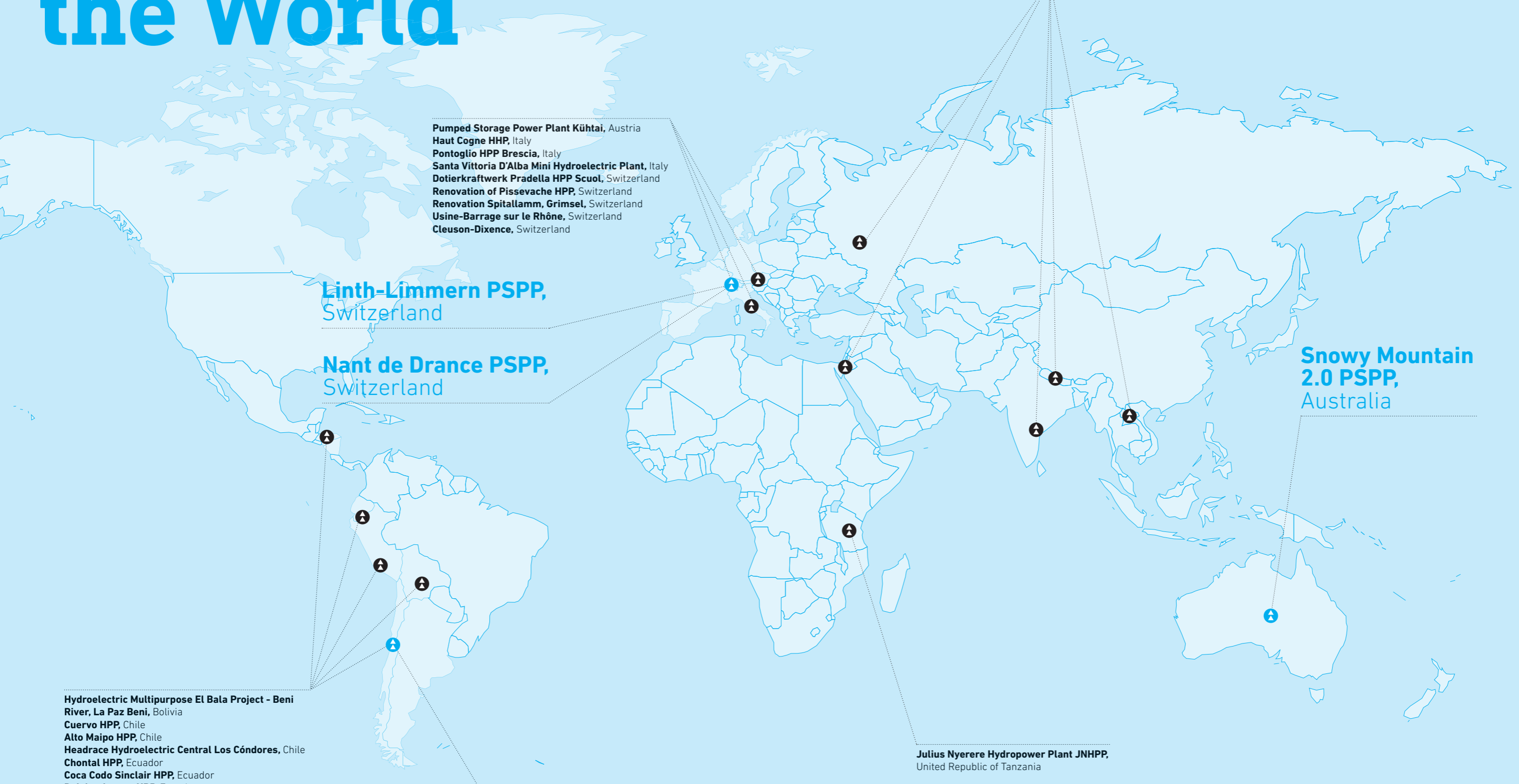
target:
sustainability

Over

600

km of headrace
tunnels and
waterways

Energy around the World



Pumped Storage Power Plant Kühtai, Austria
Haut Cogne HHP, Italy
Pontoglio HPP Brescia, Italy
Santa Vittoria D'Alba Mini Hydroelectric Plant, Italy
Dotierkraftwerk Pradella HPP Scuol, Switzerland
Renovation of Pissevache HPP, Switzerland
Renovation Spitalamm, Grimsel, Switzerland
Usine-Barrage sur le Rhône, Switzerland
Cleuson-Dixence, Switzerland

Linth-Limmern PSPP,
 Switzerland

Nant de Drance PSPP,
 Switzerland

Hydroelectric Multipurpose El Bala Project - Beni River, La Paz Beni, Bolivia
Cuervo HPP, Chile
Alto Maipo HPP, Chile
Headrace Hydroelectric Central Los Córdones, Chile
Chontal HPP, Ecuador
Coca Codo Sinclair HPP, Ecuador
Delsitanisagua HPP, Ecuador
Minas-San Francisco & La Unión HPPs, Ecuador
Los Llanitos HPP, Honduras
Cerro del Águila HPP, Peru

Alto Maipo HPP,
 Chile

Kokhav Hayrden Pumped Storage Power Plant, Israel
Zagorskaya GAES-2, Russia
Bajoli-Holi HPP, India
Nathpa Jhakri HPP, India
Bheri Babai Diversion Multipurpose Project, Nepal
Theun Hinboun HPP, Laos

Snowy Mountain 2.0 PSPP,
 Australia

Julius Nyerere Hydropower Plant JNHPP,
 United Republic of Tanzania



In the Image
Concrete dam of Delsitanisagua
Hydropower Plant in Zamora, Ecuador.

Key data
 Main gravity Dam, 34 m-high and 115 m-long
 Intake tunnel, 376 m-long, 8x7 m wide
 Headrace Tunnel, 8 km-long, 4.1m-dia
 Surge shaft, 76 m-high and 7.1 m-dia
 Pressure shafts by 354 m-high shaft + 898m-long
 horizontal tunnel
 Installed Power 180MW

Amounts
 Construction costs:
 approx. CHF 300 Mln

Timeframe
 2012 – 2018

Client
 CELEC GENSUR E.P.

Pini Group supports the client
in what concerns Design reviewer
and Construction Supervision
Project Management services for the Owner.

Our expertise

A multidisciplinary approach

Thanks to our knowledge and expertise, we provide high-level design quality starting from the needs of the client. This is achieved through a cross-cutting approach to multiple areas of expertise, such as hydrology, geology, the study of local conditions, market and economic analysis, key financial indicators. These are, of course, complemented by the most modern design methodologies and good practice tools, such as Water Transient Analysis, 3D Flood Impact Assessment, GIS Management, 3 and 4D modeling, and BIM modeling.

Context analysis

The understanding of the local context is a fundamental element in our approach to define technical solutions that fit well with the environment, social and political expectations.

Digital Engineering

Land Planning, GIS Management, 3D-4D models are some of the tools we successfully apply in our hydro Project. 3-D coordination models of the main structures of the powerplant are the basis for the incorporation of the whole system in a BIM Model, that can be used by our Client for O&M stage.

Key person



Pierluigi Nionelli
 Head of Business Line Hydropower
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Environmental and social aspects

We have always favored less impactful and more sustainable engineering solutions for proper integration of resilient infrastructure and environment. Awareness of the current state of the situation and prediction of future scenarios, such as climate change, play an indispensable role in successful planning and implementation.

Design of Civil Work and E&M coordination

In every Hydro project Civil, Electromechanical (E&M) and Hydromechanical (H&M) designs are closely connected and integrated: we effectively assist our clients in all development phases from conceptual design to commissioning, with a fully integrated approach.

Project Phases

- Conceptual design & Strategic Planning
- Preliminary design
- Tender design for Contractors
- Final & detailed design
- Construction Management
- Commissioning & Testing

Working in the heart of the Alps

In the image:
Grimsel Dam (Spitalamm)

Key data

Max. dam height 113 m
Crest length 212 m
Crest width 8 m
Max. width of footing 20 m
Concrete volume 223'000 m³

Amounts

Construction costs:
approx. CHF 125 Mln

Timeframe

2023 - 2025

Client

Kraftwerke Oberhasli AG (KWO)

Pini Group supports the client in what concerns Geology related aspects.

The project

Replacement of the existing dam which was originally built in 1932. The new double-curvature arch-gravity dam is built directly in front of the existing dam which is preserved and subsequently flooded while a tunnel next to the old dam wall will ensure that the water level is balanced hydraulically. The new structure has the same crest height as the existing arch-gravity dam and offers the possibility of a height increase at a later stage in order to enlarge Lake Grimsel.

The Grimsel Lake can continue to function throughout the construction period, practically without restrictions.


The construction site is on the road over the Grimsel Pass, at a height of between approx. 1'800 m and 1'950 m above sea level (Grimsel Hospice).



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