

Pump Storage Power Plant Limmern (1000 MW), Linthal Project Linthal 2015 / Switzerland

Client

Linth-Limmern Power Utilities Ltd.
 c/o Axpo Power Ltd., Baden / Switzerland

Consultant

IM Maggia Engineering Ltd., Locarno
 as lead member of a Consultant group

Construction and Design period

Final Design, 2007-2009
 Application Design 2009-2017

Construction costs

CHF 2'100 Mio.

Engineering services

Final Design, Project approval Design, Call
 for Tenders, Application Design, General Site
 Supervision

Description

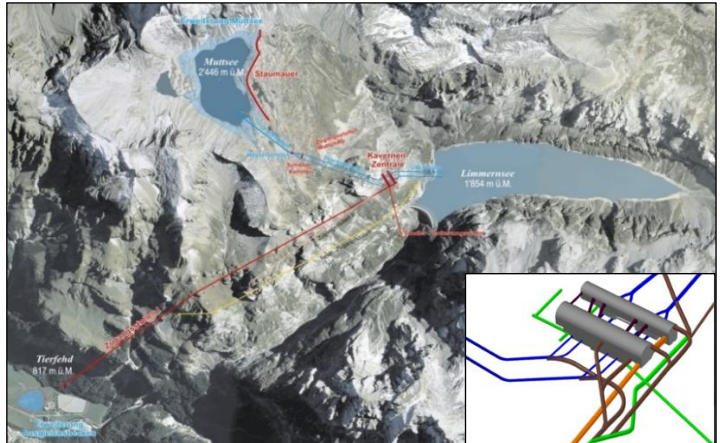
The new Limmern Pump Storage Power Plant (1'000 MW) is a complete underground new Powerplant, which is integrated in the existing Powerplants of Linth-Limmern. The plant is using the enlarged Lake Mutt (2'474 m) as upper reservoir and the existing Lake of Limmernboden arch dam (1'854 m) as lower reservoir.

The Consultant group „IG Alpenstrom“ under the lead of IM Maggia Engineering has designed the whole powerplant with the following structures:

- Lake Mutt Water Intake structure
- Headrace pressure tunnel with prestressed concrete lining, $\varnothing_i = 8$ m, conv.ex cavation with blasting method
- Surge tank with a height of 130 m und 10.5 m inner diameter
- Valve chamber, height 20m, lenth 66 m
- 2 steel lined pressure shafts, $\varnothing_i = 4.2$ m, TBM Excavation $\varnothing = 5.2$ m, $J = 85\%$
- Power cavern with 4 pump turbines, height 54 m, lenth 150 m, width 31 m
- Transformer cavern with 4 transformer units, height 25 m, lenth 120 m, width 20 m
- 2 Tailrace pressure tunnels with prestressed concrete lining, $\varnothing_i = 5.5$ m
- Several access tunnels and caverns
- Preparation of concrete aggregates using excavated rock
- Construction access to powerhouse with cable ropeways (25 t) and access tunnel (25%)

Main technical data

- Installed capacity 4 x 250 MW
- Design discharge 190 m³/s
- Gros head 560 - 724 m



General overview of Limmern Pump Storage Power Plant, 3D-Layout of Powerhouse Cavern



Excavated Powerhouse Cavern after starting of the first concrete works

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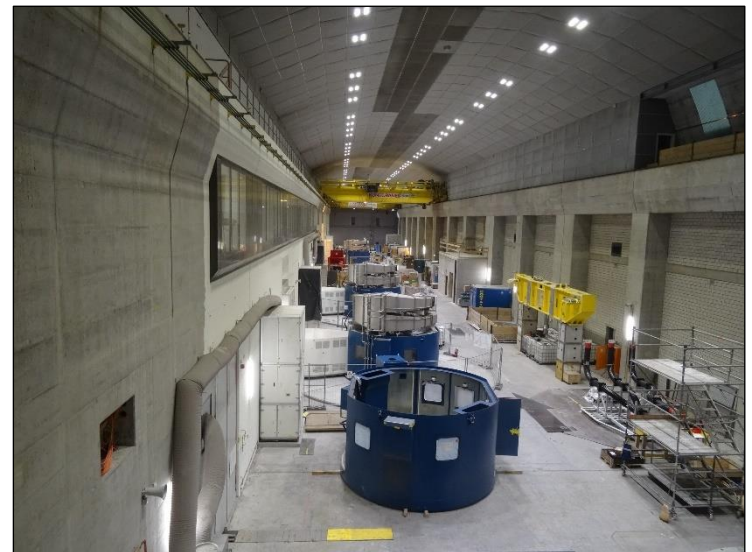
Headrace pressure tunnel formwork (Ø = 8.0 m)



Upstream headrace concreted manifold Ø = 8.0 / 2 x 5.50 m



TBM Pressure shafts (Ø = 5.20 m, L = 1054 m)



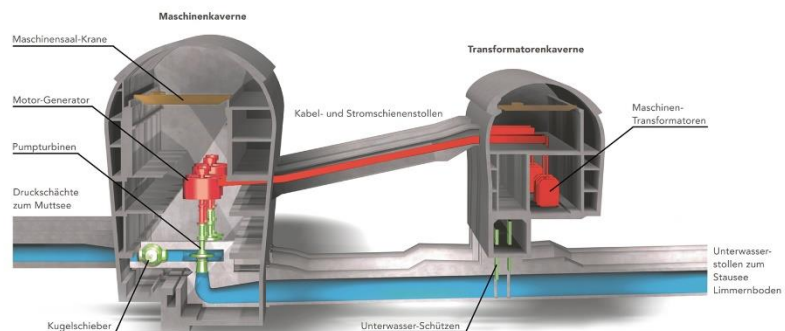
Main Powerhouse cavern with erection works of the main units



Excavated pressure shaft (Ø = 5.20 m, 85%)



Steel lining erection of pressure shaft (Ø = 4.20 m)



Main section of Powerhouse and Transformer Cavern of Limmern Pump Storage Power Plant