RATLE HYDROPOWER PROJECT

Ratle Hydro Electric Project, Jammu & Kashmir, India

The Ratle Hydro Electric project is located on the river Chenab in the state of Jammu & Kashmir. It is planned to be developed as a run-of-the river scheme. It has an underground power house having four units of 205 MW each and in addition a 30 MW plant, totaling an installed capacity of 850 MW

Scope

- Dam, 133 m high roller compacted concrete gravity structure
- 4 headrace tunnels, diameter 6.6 m, length 173 – 217 m
- Power house cavern 168 m x 24.5 m x 49 m
- 4-tail race tunnels diam. 8.7 m, length 300 – 400 m

Challenges

- Overburden up to 300 m
- Geological conditions, highly metamorphic rocks, Partially missing geological information
- Site access and infrastructure

Amberg Services

- Detailed design for contractor in JV regarding civil works of underground structures:
  Underground powerhouse
  Headrace galleries and surge chambers
  Other tunnels and service galleries
- Consultation in JV

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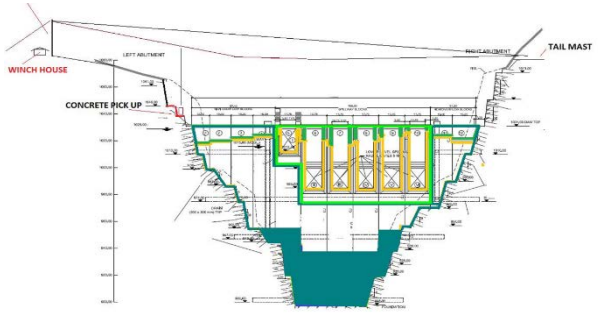
- Location of Ratle HEP project

- View of Chenab river at dam site



- Profile of dam

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Contracted value JV

- Total JV 13 Mio. USD (JV partner Stucky Ltd.)

Contracted value Amberg

- Total 6.5 Mio. USD

Project Phases & Duration

- Design phase 2013 – 2015
- Construction phase since 2017

Project Details

Dam, intake and tailrace structures

- Dam, 133 m high roller compacted concrete gravity structure
- 4-tail race galleries, diameter 8.7 m
- Length 300 – 400 m

Head race gallery and surge chamber

- 4 head race galleries, diam.6.6 m
- Length 173 –217 m

Powerhouse cavern

- Power house cavern 168 m x 24.5 m x 49 m

CLIENT FACTS

Overall costs

- Total 800 Mio. USD

Overview Project

- It is planned to be developed as a run-of-the river scheme
- It has an underground power house having four units of 205 MW each and in addition a 30 MW plant, totaling an installed capacity of 850 MW

Geology

- The project lies in High Himalayan Crystalline Sequence (HHCS)
- The formation consists of highly metamorphosed meta sedimentary rocks ranging from mica schist to granitic gneiss

Contact person

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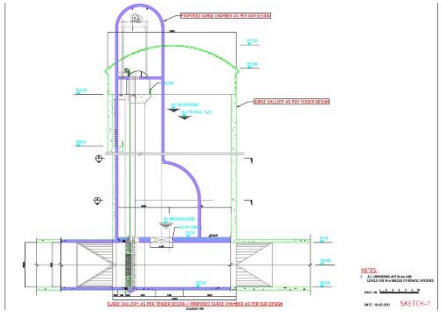
CHALLENGES

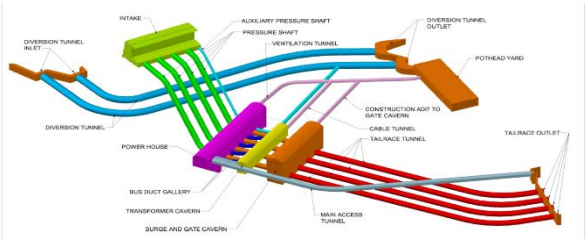
- Chenab river at tailrace section



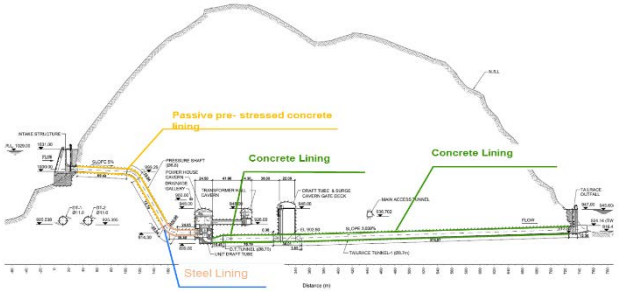
- Downstream surge chamber/gallery optimization

- View towards intake section

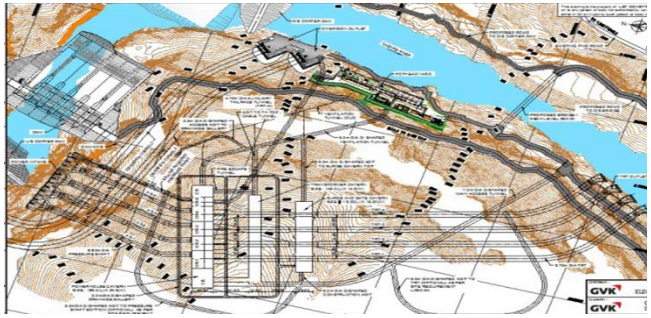
ENGINEERING APPROACH



- Bird eye view of general arrangement

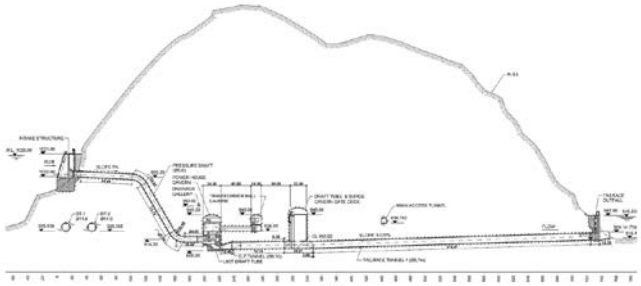


- Alternative lining concept, pre-stressed concrete

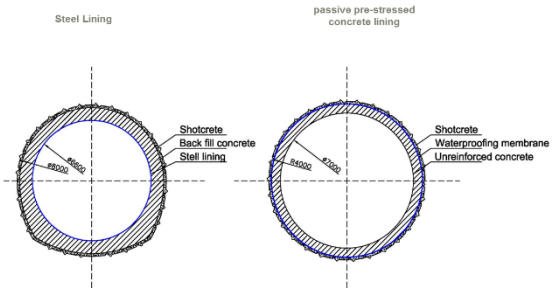


- Detailed design of Ratle HEP structures

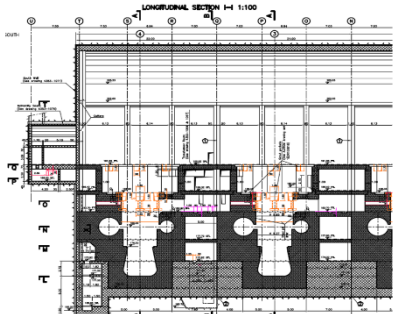
TECHNICAL SOLUTIONS



- Longitudinal section, headrace gallery/surge shaft



- Comparison of profiles



- Profile section of powerhouse installations

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