

High Head Plants

**Yamula Dam and Hydroelectric Power Plant
TURKEY**



The Yamula Hydropower Project is a BOT Project, licensed by the Ministry of Energy and Natural Resources (MENR) of the Turkish Republic. The progress of the project has suffered from the country's economical crisis in 2001 / 02. The hydropower scheme consists of a barrage power plant located at the toe of a 115 m high embankment dam, impounding a live / total storage of 2,025 / 3,476 hm³. The embankment is of zoned rockfill dam construction with a clay core in its centre, crest length 542 m. Grouting galleries, at rock foundation level under the clay core of the dam and at two distinct levels into the rock formation of volcanic origin at both abutments have been excavated to allow for grouting curtain works (170,300 m²). All waterways, i.e.: spillway designed for 5,500 m³/s discharge (PMF); lined power tunnel, ø7.0 m, 245 m; penstock, ø 5.0 m, 215 m; and bottom outlet ø 6.5 m; are constructed and founded in the rock mass at left abutment of the embankment dam.

The powerhouse is an open-air type concrete structure and accommodates two generating units (Francis turbine, 52 MW). Two outdoor step-up transformers, 50 Hz, 11 kV / 154 kV provide high tension level and connects the power plant via the switchyard and a 22 km long OHL to the National Interconnected Grid System of Turkey.

Client:

Kayseri Elektrik Üretim Sanayi ve Ticaret A.Ş.

Main Data:

Zoned rockfill embankment dam, with central clay core:

- Maximum height above rock foundation 115 m
- Crest length 542 m
- Upstream/downstream slope 1V:2.0H/1.8 H
- Total cubage 6,519,000 m³

Spillway

- Nos./type/size of gates 4/radial/10.5× 14.5 m

Powerhouse:

- Nos./type of turbines 2/Francis, vertical axis
- Rated capacity/rated discharge 52 MW/61.60 m³/s
- Rated/min/max head 96.47/74.12/105.53 m
- Rotation/Frequency 50 rpm/50Hz
- Firm energy production 309 GWh/a
- Second energy production 114 GWh/a

Execution:

2000 - 2005

Services:

- Review, appraisal and recommendations for feasibility study
- Preparation of final design reports and drawings
- Preparation of technical specifications
- Programming site investigations and evaluation of the works
- Preparation of detailed construction drawings for project structures

