



# MATILTAN POWER PLANT

## Pakistan, 1998

### PROJECT CHARACTERISTICS

**Works:** overflow weir with flood radial gates and desanding gate, fast desander with lateral spillway, head reservoir and gated intake, power tunnel, surge tank and penstock, powerhouse and switchyard.

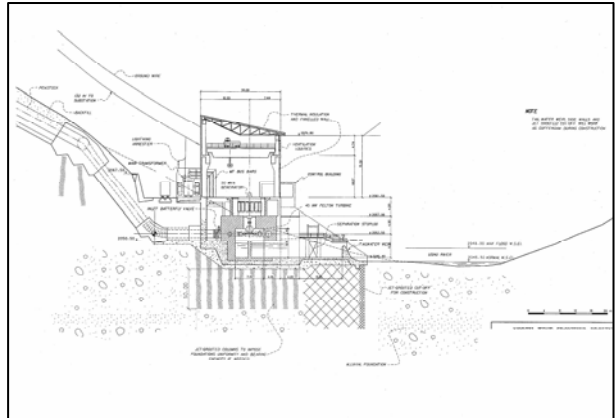
**Purpose:** power generation.

### Dimensions:

- *design flood:* 600 m<sup>3</sup>/s
- *average generating flow:* 42 m<sup>3</sup>/s
- *tunnel length:* 6.5 km
- *installed capacity:* 90 MW
- *turbines:* 2 Pelton 8 nozzles, vertical axis

### Materials:

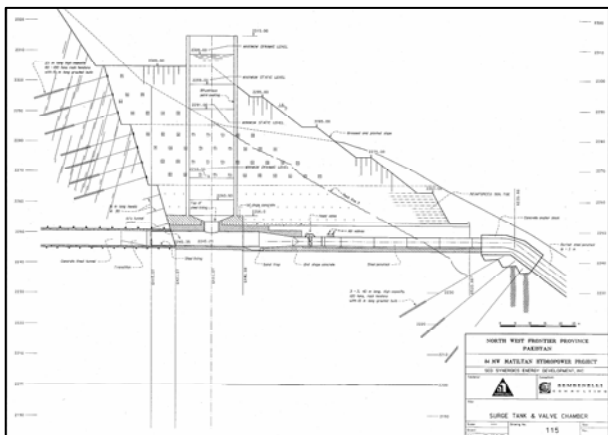
- *weir and powerhouse foundation:* sand and gravel alluvial
- *tunnel:* diorite and phyllites



### PROFESSIONAL SERVICES PERFORMED

Reviewing and improving an existing design to make it suitable for an accurate construction planning and for a detailed cost estimate in view of a firm commitment to finance, build and operate the plant under an EPC agreement. **Design activities included:** Analysis of existing design material, review of site conditions, check and modifications to the hydraulic design of the entire scheme (a multi-chamber desander has been eliminated and the head reservoir has been introduced) and changes to the powerhouse equipment (Francis turbines have been substituted with Pelton wheels). Computations and drawings of the modified plant and quantities take-off for cost estimate.

*Hydropower generation along Himalaya's rivers imposes special precautions against avalanche floods and frost drought. Limited accessibility and difficulties of maintenance require engineering solutions simple and sturdy at the same time. The plant scheme and the characteristics finally selected for each component of the scheme were all developed in such an optics.*



*The head reservoir has been introduced to allow generation during the peak hours even in wintertime, when river discharges are much reduced. A simple desander provides a protection against turbid flows that may occur in connection with bank slides or mud flows along an otherwise clean river. The tunnel cross section and lining provisions, to be adjusted to the actual rock conditions, have been adopted to get a uniform safety level, maximum speed of construction and reduced investment.*

*The powerhouse building and equipment have been selected in order to create a substantial safety edge against powerhouse flooding and silt-up in case of major mud flows.*