

THESIS

DESIGNING OF POWER HOUSE FOR SUKI KINARI
HYDROPOWER PROJECT



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ABSTRACT

Suki Kinari hydropower project on Kunhar River is a run of river scheme which is proposed to utilize all or part of gross head of approximately 900 m and existing daily flows for power generation of 800 MW. The main components of scheme involve the construction of dam, head race tunnel and underground power house. This purposeful study engulfed the designing of Suki Kinari underground power house. In this context first selection of type, size and number of hydromechanical and electromechanical equipments for Suki Kinari Power house was carried out. In order to utilize the gross head of approximately 900 m, four units of pelton wheel each having the capacity of 210 MW was selected. The functionary worth computations for main dimensions and out put performances of pelton turbine was done by using TURBNPRO software. In order to control the each turbine's speed and to regulate the flow under charged loading conditions, four digital PID Hydro-electric types' governors were proposed.

Each Pelton turbine would be coupled with one generator of 210 MW capacity. Each unit would be connected to i) Main Transformer ii) Generator step up transformer iii) Auxiliary transformer. In next step, calculations of main dimensions and selection of appropriate layout for Suki Kinari under ground P/House was carried out. By using empirical relations available in literature, the lengths of power house, P/House roof span and height of underside crane rail was calculated. Finally to accommodate the selected hydromechanical and electromechanical equipments, four layouts of P/H were proposed keeping in view the geological and topographical conditions of site and layout IV was selected.