

# DESIGN AND FEASIBILITY OF COMBINED CYCLE POWER PLANT (BIOMASS AND SOLAR THERMAL COLLECTOR): A CASE STUDY OF BLOCK BARNALA, BARNALA, PUNJAB

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## ABSTRACT

This thesis is a study of solar thermal and biomass combined cycle power plant. This study is about the solar power and biomass power working in a same cycle to fulfill high demand of electricity by small and medium power generation. Renewable power plants are promoted throughout the world, but there are problems in individual plants such as in case of solar plants sunlight is available only at daytime, foggy or cloudy weather etc. and in case of biomass seasonal availability of biomass, some kind of pollutants, etc. This study is about the presence of biomass and solar potential in Punjab and feasibility of combined cycle power generation (solar and biomass) in rural area. Two independent sources are used for power generation in Combined Cycle Power Plant which makes it more reliable and cost effective. It will help in overall development of the area by providing employment to large number of people and financial support to farmers by consuming abundant amount of biomass from their fields. Hybrid power plant gives uninterrupted power supply to nearby area which will regardless of time, season and weather. It will better utilize local available energy resources and suitable to any location in Punjab. The combined of solar thermal and biomass power plant will also reduce CO<sub>2</sub> emission as both plants will use renewable sources, also solar energy creates zero emission. This study gives a new idea and technique in renewable energy for better world.