

Global and Diffuse Solar Radiation Studies over Seven Cities of Sindh, Pakistan for Power Generation

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Abstract : Global and diffuse solar radiation on horizontal surface over seven cities of Sindh namely Karachi, Hyderabad, Chore, Padidan, Nawabshah, Rohri and Jacobabad were carried out using sunshine hour data of the area to assess the feasibility of solar energy utilization at Sindh province. The result obtained shows a variation of direct and diffuse component of solar radiation in summer and winter months in southern Sindh (50% direct and 50% diffuse for Karachi, and Hyderabad) where there is a large variation in direct and diffuse component of solar radiation in summer and winter months in northern region (80% direct and 20% diffuse for Rohri and Jacobabad). In southern Sindh, the contribution of diffuse solar radiation is higher during the monsoon months (July and August). The sky remains clear during September to June. In northern Sindh (Rohri and Jacobabad) the contribution of diffuse solar radiation is low even in monsoon months i.e in July and August. The Kt value for northern Sindh indicates a clear sky. In northern part of the Sindh percentage of diffuse radiation does not exceed more than 20%. The appearance of cloud is rare. From the point of view of power generation, the estimated values indicate that northern part of Sindh has high solar potential while the southern part has low solar potential.

Keywords : global and diffuse solar radiation, solar potential, Province of Sindh, solar radiation studies for power generation

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