Solar Energy Power Plant

S.E.P.P.

Overview

SOLAR ENERGY POWER PLANT REQUIREMENTS

1. 24 hour system use,
2. autonomous system,
3. high plant availability,
4. high thermal and electric conversion efficiency,
5. operation and service with low man power requirements,
6. high temperature process heat production,
7. electricity production and use of waste heat energy,
8. clean and ecological system.

S.E.P.P. - BASIC FEATURES OF LARGE PARABOLIC DISH SYSTEMS

- *high conversion efficiency due to high process temperatures,*
- *low service and maintenance requirements,*
- *simple and reliable cycle using air as working medium,*
- *low thermal inertia for a short system start-up time,*
- *development potential for extremely high process temperatures through the use of ceramics in receiver and turbine for future generations of Large Parabolic Dish Systems (1200° Celsius and higher),*
- *compact, stand-alone system with 24 h system use due to hybrid firing mode.*

Comparison S.E.P.P. to other Concepts

1. higher output in annual kWh (electric or thermal) due to constant two axis solar tracking without a cosine loss factor;

2. higher efficiency in electric power conversion due to constant heat flux distribution in receiver;

3. high availability through the use of proven components;

4. process heat availability in a wide spectrum of temperatures (650° down to 200° Celsius and lower as exhaust heat);

5. exhaust heat utilization at temperature levels of 200° Celsius together with electricity production can bring plant efficiency up to 85 %;

6. spin-offs for use of collector as radio telescope for radio astronomy during non-sunshine hours.

S.E.P.P. - USER PROFILE

1. *isolated load user* - small communities with isolated site characteristics for electricity production and process heat applications;

2. *industrial process heat* user with the demands for both process heat and electricity in a "total energy systems" market. This market includes producers of chemical or fuels, apart from the smaller industrial process heat consumer in developing countries;

3. *grid-connected electric utility* user, primarily small communities, the repowering market - with the bulk electric market as the ultimate goal.

Primary Uses of a Solar Power Plant

- electricity
- desalination
- foods with drying, canneries, etc.
- chemicals
- fuel production
- textiles
- paper
- fertilizers
- housing (heating and cooling)
- services (laundries, cleaners, etc.).

S.E.P.P. - Solar Thermal Power System

- low maintenance
- reliable
- simple
- compact
- use of the reject heat for industrial processes.