SUNTROF MULK ASSEMBLY DATA

PERFORMANCE		
THERMAL EFFICIENCY	75%	
DESIGN POINT THERMAL OUTPUT	540 KW - Th SUB ARRAY	
INDICATIVE ANNUAL ENERGY GENERATION	1232 MW - Th	
INDICATIVE DESIGN POINT GROSS ELECTRIC OUTPUT	184 KWe	
LAND REQUIRED		
LAND USE	1.2 Ha/MWh - e	3 Acre/MWh - e
MAXIMUM INSTALLED SLOPE	LASER LEVEL	0 % GRADIENT
SUNTROF MULK - PARABOLIC TROUGH COLLECTOR ASSEMBLY DATA		
TOTAL SOLAR COLLECTOR ASSEMBLY LENGTH	72 m	236 ft
NET APERTURE AREA	720 m2	7740 ft2
TOTAL MIRROR AREA	903 m2	9717 ft2
NUMBER OF MODULES	18	
MODULE APERTURE LENGTH	8 m	26.22 ft
MODULE APERTURE WIDTH	5 m	16.39 ft
MODULE APERTURE AREA	40 m2	430 ft2
MIRROR AREA / APERTURE AREA RATIO	1.253	
GEOMETRIC CONCENTRATION	71:1	
RECEIVER TUBE OR HEAT COLLECTING ELEMENT	**(HCE)**	
ABSORBER TUBE DIAMETER	70 mm	
GLASS ENVELOPE DIAMETER	125 mm	
RECEIVER LENGTH	4.06 m	
WIND DESIGN PARAMETER		
DESIGN WIND SPEED	85 mph	
MAXIMUM OPERATING WIND SPEED	45 mph	
DAILY OPERATING WIND SPEED	45 mph	

MIRRORS - ALUBOND SOLAR COLLECTOR PANEL	
STRUCTURAL BACKING	ASCM®
REFLECTIVE SURFACE	ANODIZED MIRROR FINISH
SOLAR WEIGHTED REFLECTANCE	91.5%
SUNTROF CONTROLLER	
NUMBER OF SINGLE AXIS DRIVES	1 PER SUB ARRAY

SUN- TRACKING ACCURACY	WITHIN 0.5 DEGREES OF SUN	
TYPE OF DRIVE SYSTEM	GEAR- BOX DRIVEN PIPE	
CONTROLLER COMMUNICATIONS		
NETWORK	RS485 WIRED OR WIRELESS	
LOCAL PC	USB	
TOTAL RANGE OF TRAVEL	ROTATE EITHER SIDE 132.5 DEGREE	
HEAT TRANSFER FLUID SYSTEM (HTF)		
TYPICAL HEAT TRANSFER FLUID	PARATHERM NF	
TYPICAL SYSTEM OPERATING TEMPERATURE INLET	2900 ° C	5540 F
OUTLET	395 ° C	743 F
TYPICAL SYSTEM HTF MASS FLOW RATE	2 kg / sec (2.2 Lbs / sec)	
STEAM GENERATION		
STEAM PRODUCE PER SUB ARRAY (TYPICAL)	611 Kg per hour (O.611TPH)	
STEAM TEMPERATURE (TYPICAL) (350C TO 390C)	390 degree C	
STEAM PRESSURE (TYPICAL) (VARIES FROM 40 BARS TO 123.5 BARS)	123.5 Bar (1750 psi)	
POWER GENERATION		
DESIGN POINT EFFICIENCY	25.5 %	
NET SOLAR-ELECTRIC	25.5%	
TYPICAL ANNUAL AVERAGE EFFICIENCY	DEPENDS ON LOCATION	
NET SOLAR -ELECTRIC (WET-COOLING)	25.5%	
NET SOLAR- ELECTRIC (DRY COOLING)	DEPENDS ON LOCATION	
TYPICAL CAPACITY FACTOR	26 %	
TYPICAL INHERENT THERMAL STORAGE	1500 Kilo joules	

WATER CONSUMPTION		
WET COOLING	2880 L / MW-e	762 Gall MW
DRY COOLING	-0-	-0-
MIRROR WASHING	45-55 L/MWh-e	12-15Gal/MWh-e
PROCESS WATER	150 L / MWh-e	39 Gal / MWh-e

1   The solar collector assembly comprises the modules, expansion joints and ball joints.

2   Used for any metric expression [abc]/ m2.

3   Surface area of anodized mirror finish with Patent "Alubond solar collector panel" (ASCM).

4   A module is the smallest single unit of a sub array.

5   Define as (Aperture width / Receiver tube diameter)

6   Define as (Gross Thermal power) / Solar Power at 1,000 W / m2 of direct normal incident solar radiation and 3500 C HTF temperature.

7   At 34% net thermal -to-electric efficiency.

8   At 1.50 Air Mass acceptance angle measured with a device & services specular Reflectometer.

9   Also Known as "Actuators".

10   Or other HTF such as Therminol -VP -1, Dowtherm A etc.

11   Indicative Value for reheat steam cycle designed for 3950 C HTF delivered from the solar field and condenser pressure of 69 mbar. Actual values will vary for specific design and operating conditions.

12   Premium solar resources area, solar multiple 1.15, No storage. Capacity Factor is define as (Annual Energy per year)/ (design point power x hours in year) X [MWH /(MWX8760H)].

13   A result of the thermal capacity provided by the fluid, piping, valves and vessels. Amount of inherent storage depends on filed layout and design.

14   Average values for operating plants in California source: Sandia Labs report SAND99-1290.

15   Primarily steam cycle make up water and de-mineralized blow down.

16   M= meters, ft = feet, mm = millimeters, C = Celsius, F= Fahrenheit, kg= Kilogram, W = Watt, KW = Kilo Watt, MW= Mega Watt, h = hour ,Th= thermal, e= electric, Gal= gallons, L = liters, THP= Tons per hour, KHP = Kilo per hour, PSI = Pounds per square Inch. Mph= miles per hour. USB = Universal Serial Bus.