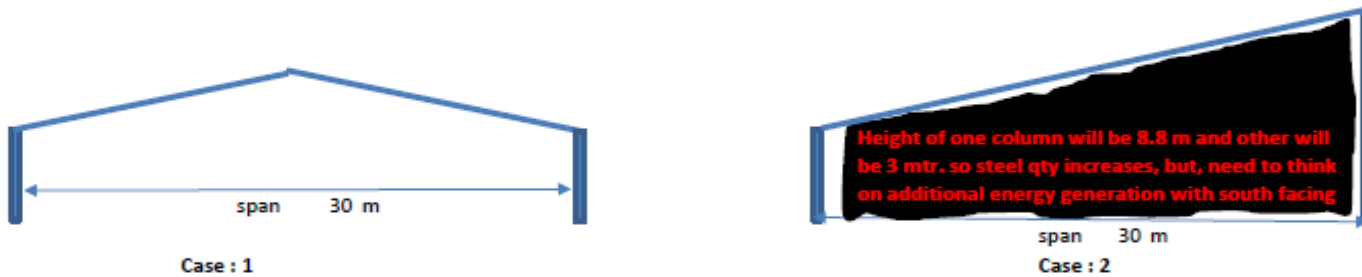


Praveen Kumar Kulkarni / KK NESAR PROJECTS PVT LTD / WWW.KKNESAR.COM



Effect of Building shape, structural weight (cost?) vis -a vis PV Energy generation with south facing panels  
(KK NESAR PROJECTS PRIVATE LIMITED : An initiative to reduce the land wastage while retaining RIGHT OF CULTIVATION below Panels)

Niche Solar PV Project Development with Innovative business concepts and idea by: **KK NESAR PROJECTS PRIVATE LIMITED,**  
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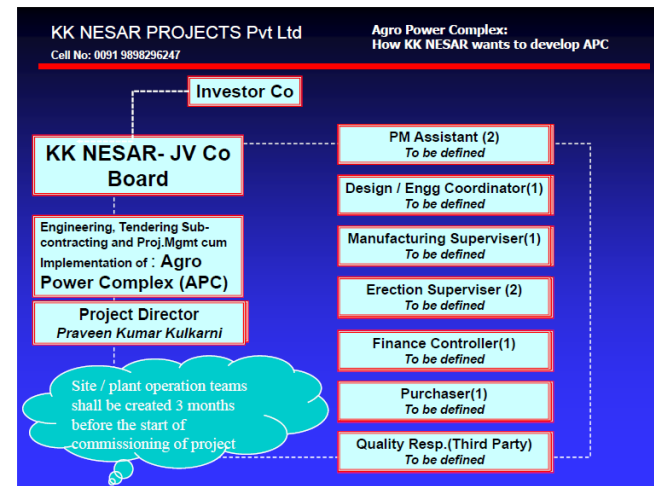
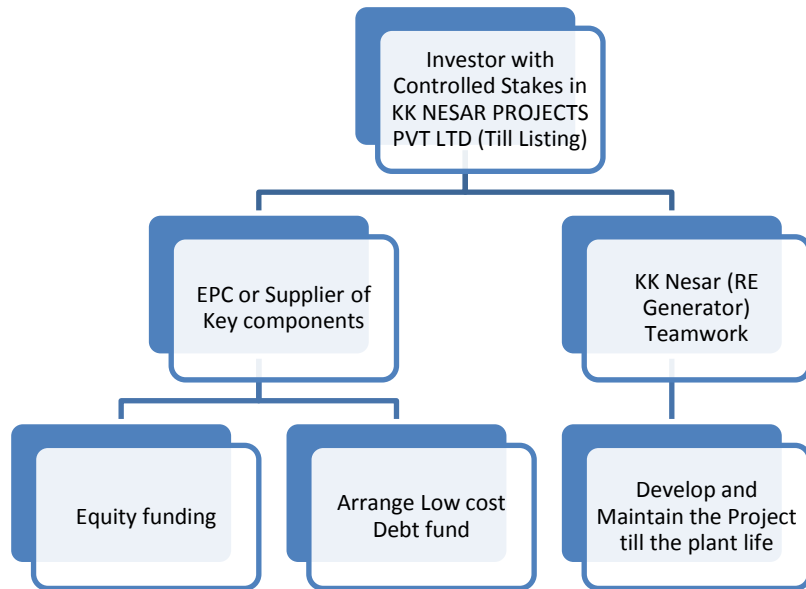
See attached the performance and yield calculations which Juergen has done for 11 degree and 6 degree cases (north/south and east/west orientation)

**KK NESAR'S CONCEPT OF RIGHT OF CULTIVATION WORKS WITH THESE TENTATIVE ENERGY GENERATION OUTPUT NOS !**

Project report overview	Praveen Kumar Kulkarni	Indien								
Location	Inverter	STC Power kWp	Array tilt °	Panel qty	String	Panel Type bin in W	Tracker yes / no	Performance %	Specific Yield kWh/kWp	Annual production MWh
Raichur, IN shed roof style	SMA 880 CP	1002	11	4175	18	240	no	79.7%	1677	1680
Raichur, IN double pitched roof N/S	SMA 400 HE-11	500	6	2091	17	240	no	79.5%	1652	829
Raichur, IN double pitched roof N/S	SMA 400 HE-11	500	6	2091	17	240	no	79.2%	1554	780
Sum N/S		1000	+/- 6	4182				79.4%	1603	1609
Raichur, IN double pitched roof E/W	SMA 400 HE-11	500	6	2091	17	240	no	79.3%	1555	780
Raichur, IN double pitched roof E/W	SMA 400 HE-11	500	6	2091	17	240	no	79.6%	1656	831
Sum E/W		1000	+/- 6	4182				79.5%	1605,5	1611

As you can see the difference of the cases is not very substantial and the final yield is dependent on the detailed analysis of loss parameters.

**Envisaged Organisation**



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According to the Pvinfosight, the Silicon and Thin Film Module's weekly average spot prices per watt as on 28th September 2011 was around US\$ 1.135 and US\$ 0.895 per Watt respectively.

Tem	High US\$	Low US\$	Average US\$
Silicon Module Price Per Watt	1.50	1.00	1.135
Thin Film Module Price Per Watt	1.20	0.80	0.895

Source: <http://pvinsights.com/>

Sr. No.	Particulars	Capital Cost Norm for Solar PV project (₹ Lakh/MW)	% of total cost
1	PV Modules	494	54%
2	Land Cost	16	2%
3	Civil and General Works	90	9%
4	Mounting Structures	100	10%
5	Power Conditioning Unit	98	9%
6	Cables, Transformers and other misc.	100	10%
7	Preliminary and Pre-Operative Expenses including IDC and contingency	80	7.6%
8	Total Capital Cost	978	100%

**KEY COST COMPONENTS:**

KK NESAR Design of elevated structures costs almost equal to Mounting structures !! with LESS land use !!

**1.1 9.2.2.1 POWER CONDITIONING UNIT: INVERTER**

The single largest of the BOS components the inverter. The Commission, while determining the benchmark capital cost for Solar PV projects for the year 2011-12, had considered the Inverter cost as ₹ 1.60 Crore/MW. According to IPCC Report-2011, the overall BOS experience curve was between 78 and 81%, or a 19 to 22% learning rate. Quite similar to the module rates, learning rates for inverters were just in the range of 10%.

Based on the Energy Tend survey as shown in the above table, the Commission proposes to consider base inverter price at \$0.20 per watt for the determination of benchmark capital cost for solar PV projects for FY2012-13. With the exchange rate of Rs 49/US\$, the module cost works out to ₹ 0.98 Crore/ MW.

The preliminary/pre-operating expenses include transportation of equipment, storage of equipment at site, insurance, contingency, taxes and duties, IDC and finance charges etc. Detailed breakup of Preliminary and Pre-operative expenses and financing cost, lump sum in percentage of total capital cost is proposed as under:

- i. Insurance Cost: 0.5%
- ii. Contingency: 0.5%
- iii. Interest during Construction (IDC): 4%
- iv. Financing cost: 1%
- v. Project management cost: 0.5%
- vi. Pre-operative Cost: 1%