GREENC SOLAR
الطاقة البديلة

Go solar, burn your bills!

136.62Kwp Solar PV Grid Tied
Prince Sultan University
Building-105
Technical Proposal

Date: 09/10/2018

VISION رؤية 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

Contents

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1. TECHNICAL PROPOSAL

1.1. SITE SURVEY ANALYSIS

1) MDB 14-1
   Running Amperes = 720A
   Power = 402KW
   MDB 14
   Running Amperes = 400A
   Power = 223KW
2) The solar panels can be installed on every available area of the roof
3) The design of solar system will provide power in daytime only to reduce the electricity bill. Instead of penetrating directly we will place a ballast blocks for the frame structure which with stand the wind.

1.2. ENERGY EFFICIENCY & CONSULTATION

Greenco solar can provide its customer with cost effective and energy efficient solutions for household appliances such as:

1) Low consuming and efficient Air conditions

By using Inverter based Air-conditions the energy consumption can be reduced up to 50%.

2) LED lighting solutions

LED lights are more efficient than normal incandescent lamps. They provide the same amount of intensity of light while consuming 3-4 times less energy than regular spot light.

3) Solar Water heating

Heating water is very expensive as it requires a huge amount of energy. It is believed that 18% of domestic energy is used to heat water. Solar water heaters are efficient. Approximately 80% of the radiation is turned into heat energy.

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4) Motion sensors controls

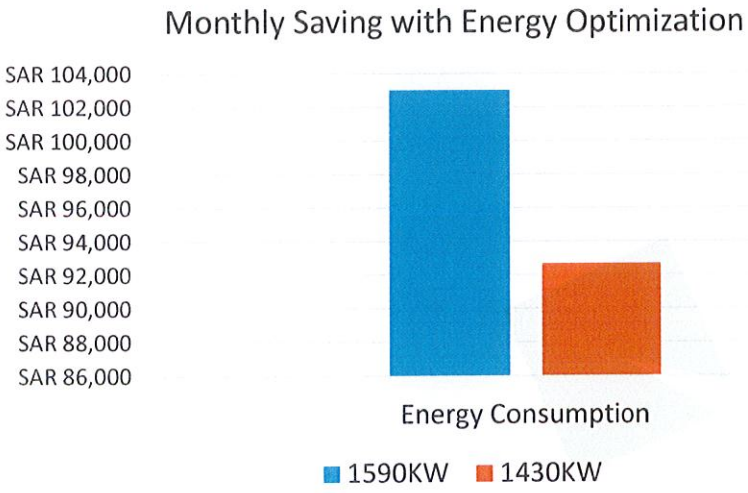
Motion sensors automatically turn outdoor lights on when they detect motion and turn them off a short while later. They are very useful for outdoor security and utility lighting.

Because utility lights and some security lights are needed only when it is dark and people are present, the best way to control might be a combination of a motion sensor and photo sensor.

5) Dimmer Controls

Dimmer controls provide variable indoor lighting. When you dim lightbulbs, it reduces their wattage and output, which helps saving energy.

By applying above energy efficiency solutions the energy consumption can be reduced between 5-10%.



* Amount reduced in SAR 10,368

Above table is based on 12 hours usage consumption.

1.3. SYSTEM DESIGN

- Max PV Panels to be installed on building 105 roof.
- PV Panels Gross Area: Each panel of 1.94m2 = 414x1.94= 804m2
- Solar Energy System Output: 414 modules of 330Wp each, overall rated power 136.62KWp
- PV Panels installation method: The modules will be installed on racks with supportive concrete blocks without any penetration in the roof.

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1.4. SYSTEM STUDY

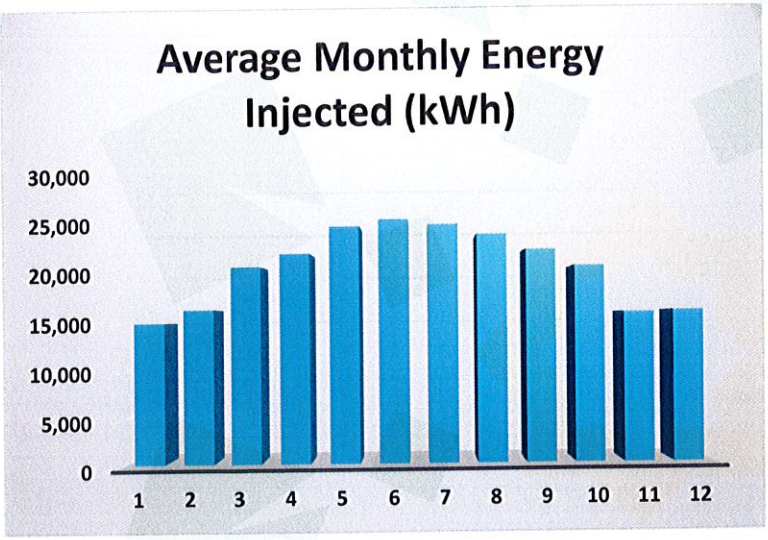
This system is an example of grid Tied or Grid-connected PV systems which are the most popular solar electric system in the market today. Grid-connected systems are so named because they are connected directly to the electrical grid — the vast network of electric wires that spans the nation and criss-crosses your neighbourhood.

The System consists of five main components: (1) a PV (photovoltaic) array, (2) a PV (photovoltaic) inverter, (3) the main service panel or breaker box, (4) safety breakers.
The solar panels will generate energy in from of DC (Direct current) power from the sun and convert it into AC power with on Grid tied solar Inverter, the inverter will directly hook up with the consumer Main Electricity power panel.
The useful energy will be consumed by the appliances.

1.5. ENERGY GENERATION

Monthly Yield Graphs

Month	Average Monthly Energy Injected (kWh)
January	15,028
February	16,394
March	20,903
April	22,269
May	25,138
Jun	25,821
Jul	25,275
Aug	24,182
Sep	22,542
Oct	20,766
Nov	15,848
Dec	15,985
Year	250,151



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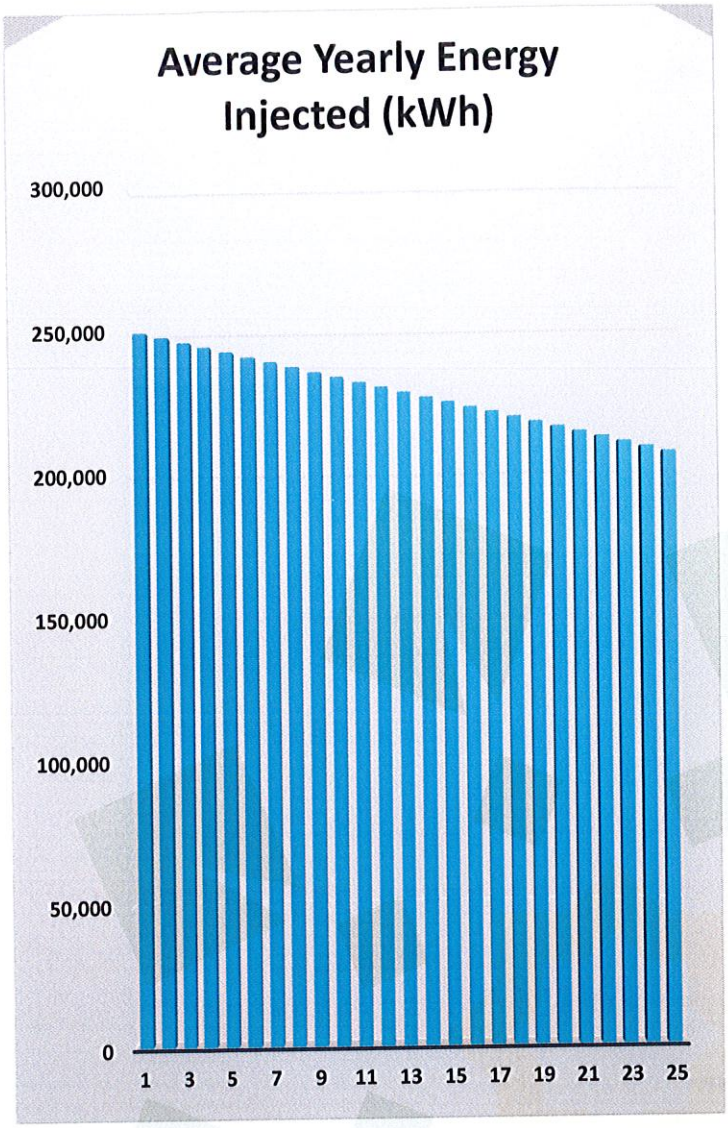
Yearly Yield Graphs

Year	Average Yearly Energy Injected (kWh)
1	250,151
2	248,346
3	246,541
4	244,736
5	242,930
6	241,125
7	239,320
8	237,515
9	235,710
10	233,904
11	232,099
12	230,294
13	228,489
14	226,683
15	224,878
16	223,073
17	221,268
18	219,463
19	217,657
20	215,852
21	214,047
22	212,242
23	210,436
24	208,631
25	206,826
25 Year	**5,712,216**



*NOTE: The project output stated is based on theories and simulations. The Output in real life applications **will NOT be 100% similar**.

With the energy efficiency solution the consumer can lower its consumption between 5-10%.

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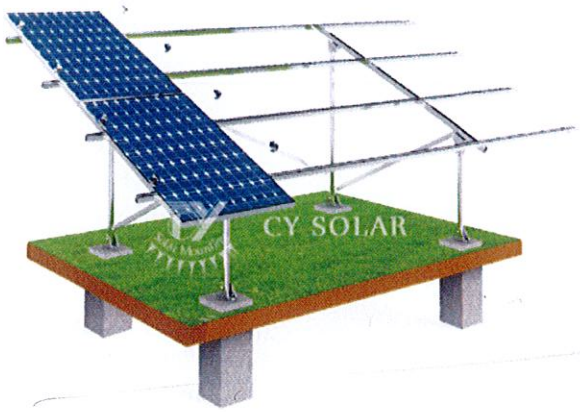
Solar Panels Structure:

The final selection of the support structure will be done during the detailed design phase.
At this stage we offer a support structure from an internationally recognized Chinese manufacturer, CY Solar.



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