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'Cost of production will match power produced from conventional plants'

India has abundant sunlight, but it has yet to tap this clean and green source of energy for power generation. Ravindra Prakash Dubey, managing director of Granzor Engineering Pvt. Ltd., explains the advantages of using this source which will reduce our dependence on fossil fuels. Read on…

India is blessed with abundant sunlight, averaging approximately 300 sunny days in a year.India has yet to utilize this advantage in terms of power generation. The country is still heavily dependent on fossil fuels, which are unviable in the long run. The highest proportion of installed electric energy comes from coal, which is polluting and a non-renewable source. Also remote areas and villages where Grid supply is not available, Solar Off Grid installation makes lot of sense.
Certain myths are created around solar energy, which need to be broken before one could clearly identify it as the only beneficiary in long term.

Myth 1:

Solar energy generation is only possible at places with abundance of sunshine.

The fact:

Sun's energy is the most evenly spread source of energy in the world. Where there is light, solar panels will work. The world's largest market for solar energy is Germany, a country not particularly blessed with long sun filled days but you witness largest solar installation of the world, just because of smart governance! In the summer, almost 10% of the household electricity in the south of Germany is generated by solar panels. Of course, when you're developing systems in barren lands having lot of sunshine like Thar desert, your return on investment (ROI) will be higher. But many other factors come into play, such as the presence of a grid, the local consumer price for electricity, your energy usage pattern, policies and much more. As an example, in North Eastern part of the country, it is smarter to invest in solar energy than to pull a cable from a faraway power plant or grid connection point.
Myth 2: Solar energy is costly and needs government subsidy to become competitive!
The fact: "People will never buy laptops." "Flat screen televisions are too expensive for the general consumer market." "Mobile communication is too expensive in comparison with landlines." These are some of the opinions that we have heard in the past - and how untrue they are, isn't it? Laptops, flat screen televisions and mobile phones are now everywhere, because people wanted them and were willing to pay for them - with the result that in the end prices fell due to mass production that could be applied for these innovative products. The same is now happening with solar energy systems. In the past three years, the prices of solar panels have dropped by half, as a result of the introduction of large scale production methods. We believe that by 2013-14, solar energy cost of production will match the electricity produced from thermal and other conventional energy plants.
Public funding was created in the past to accelerate this process of acceptance by the general consumer. In the largest markets, subsidies are now in the process of being terminated.

Myth 3:

What is at stake now is not the efficiency of panels, but the price per generated kilowatt-hour. Just as it is no longer about the type of engine in a car, but rather about how much fuel the motor consumes per mile. There will still be new types of solar panels developed, with improved efficiency, but the real success of solar energy in the future will lie in large scale production and the growth of the global market.

Myth 4:

Since they cannot work in cloudy condition or night, they are unreliable!

The fact:

It is wrongly perceived. Solar module comes with 25 years warranty, which is unparalleled because there are no moving parts and hardly require maintenance. Right now, the wind energy market is (still) bigger than the solar energy market, although the sun is a more reliable source of energy than the wind. But solar energy will soon surpass wind energy firstly because solar panels can be used anywhere, and secondly because they can be implemented in a modular way. This means that it is very easy to expand the solar energy system over the course of months or years. So it makes solar option very reliable system.

Myth 5:

Solar panels take lot of space.
This really depends on personal taste. Of course, there will always be people who believe a smoking chimney of a coal power plant is the best industrial technology and aesthetics. Other people don't mind showing that they are generating their own electricity and therefore have solar panels on their roofs. Anyway, there will always be enough space on earth for all the solar panels ever needed. Mind you, only a relatively small barren area of 200 kilometers installed with today's solar panel technology would be needed to fulfill India's entire electricity requirements.

Can you give a typical example for the size of a solar system at home?
Typically a two-bedroom apartment with 3-4 people will consume approximately eight units of power per day. In case you have to support the supply system for only 4-6 hours a day, 1 KW solar system will be sufficient.

What is the expected cost of 1 KW system?
Actually, many factors play a vital role in the costing. However, considering subsidy up to 30%, a system should cost in the range of Rs. 1.2 to Rs. 1.5 lacs.

What is the best advice you give to a customer ?
My best advice would be to use energy efficient products first and then go for the solar roof top systems. Every house normally has enough roof top area to install solar power systems. The life of solar panels are guaranteed for 25 years and good quality solar batteries also last for approximately 7-8 years. Hence , in case the system is installed by qualified system integrators , the chances of a trouble free system with least attention ,is very high.If you compare it with a normal inverter which does not have any "pay back" solar power packs are the best option.

How do you compare it with DG sets?
The cost of power generated by DG set comes over Rs.20 per unit.The maintenance cost, storage problems, pilferage of diesel,
space requirement, need of an operator, etc., add up to the cost substantially. Whereas a solar system gives you uninterrupted trouble free service for number of years. As I explained earlier,

back period of a solar system to less than 3.5 years.

nd the Govt. policies like subsidies, concessional loans,

2. Very few qualified system integrators
3. Distracting CAPEX
4. Low reliability factor due to solar irradiation (cloudy days)
5. Space Requirement

What are the incentives by the government?

For the individual house holds, upto 1 KW and for A s s o c i at i o n s, Corporations, Industries, etc.,. upto 100 KW for each location, the subsidy may be upto 30 %. In case, either the location is different for the same user or the owners of the projects are different for the same location, the project(s) qualifies for the subsidy as per above limitations.

It is also important to note that for availing the subsidy, prior approval of the project by MNRE is must.

What are the challenges in the design of solar systems?

· Typical mindset of the customer is that they start comparing Solar system with other Backup power system like DG set on one to one basis. One has to keep in mind that raw material for producing power from solar system is free!

The other challenge is the design of the system which handles variable flow rates using induction motors like in petrol pumps or process chemical industries.

In the congested multistoried complexes the space also becomes a big constraint.

Lack of knowledge about the systems.