

Institutional Best Practices

AY 2017-18

Practice-I

Title of the Practice: Green Energy using Solar Photovoltaic (PV) Plant

Goal:

1. To identify solution for energy demand and load shedding.
2. To identify feasibility of project
3. To provide evidence of practice

The context

1. Load shedding and high energy demand were two main challenges we were facing during working hours.
2. Variable power supply and load shedding lead to delay many important laboratory practicals and workshop sections.
3. Load shedding was mostly during working hours so we were forced to identify the solution and alternate source of electricity
4. More than 20 lathe machines, 400 computers, fans, lighting load, and various laboratory instruments used to work at same time, so the electricity demand was high in working hours.
5. Solar energy is one of the freely available renewable sources of energy and abundant in tropical country like India. It is the most fundamental among the alternative sources of energy.
6. So, we planned to install Solar Photovoltaic panels as alternate source of energy has been installed to meet the demand and to overcome load shedding issue.

The practice

1. As we have to overcome two issues therefore two different type of Solar PV plant have installed as per requirement i.e. ON grid PV plant and OFF grid plant. Grid connected or Grid tied Solar Plant panels that has been synchronized and connected to the grid.
2. It behaves just as any other source connected to the grid. Grid connected solar plants usually only supply excess power to the grid after catering the local load connected.
3. OFF Grid Solar plants are just the same solar plants connected to the loads without connecting it to the utility grid. During load shedding period on grid inverter do not generate electricity even in presence of ample sunlight due to “Anti Islanding Law” being in effect.
4. Need for such Law being in force is that electricity follows a low resistance path and thus in absence of supply from grid the total amount of electricity generated by ON grid inverter would be directly injected in grid. In that case it may lead to any kind of mishap.
5. In our campus there is load shedding on every Friday and thus to cater load we used to run diesel generator. In attempt to make our campus carbon neutral and minimise usage of diesel generation we installed

off grid inverter of 100kW on 8/9/2015 that works irrespective of grid supply. Excess energy is stored into batteries which are utilized during excess demand times or in absence of sunlight for critical load viz. CCTV, Outdoor Street lighting, passages lights and so on.

6. We also believed that “Energy Saved is Energy Generated”. Emphasizing such phenomenon we have replaced 100 of lights by LEDs which of having 60 less consumption than conventional Tube lights.

7. ON grid Solar system: Inverter: 20 kW 60kW and OFF grid System: Inverter: 100 kW

Installation:

- ON grid Solar system: Inverter: 60kW is installed in May 2017 but in operational since July 2017 after rate sharing agreement with MSEDCL installation of Net meter.

No of panels: 222

Module Capacity: 315wp

ON grid Solar system: Inverter: 20kW

No of batteries: 120

- OFF grid Solar System: Inverter: 100kW is installed in 2015.

No of panels: 400

Module capacity: 100kwp

ON grid inverter: 20kW

No of batteries: 120

Evidence of success

The Solar panels installed on the Terrace (Roof Top) of SSJCET main and mirror building is shown in the photograph below:

Percentage of power requirement of the Institutions met by the renewable energy sources:

Data Requirement:

Months year Power requirement met by

Renewable energy sources (kwh) YC-B MSEB (XA-B)	Renewable energy	Total power requirement (kwh) (A)	Total power taken from
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source Renewable

energy generated

and used (kwh) (C)	Energy supplied to the grid (kwh) (B)
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Oct. 2017	4900	7430	4916	Solar energy	7414	2514
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Sep. 2017	5370	9060	7414		7106	1646
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Aug. 2017	3611	10214	9350		4475	864
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Jul. 2017	1948	8448	6950		3446	1498
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Jun. 2017	1748	8148	6396		3500	1752
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1. Power requirement met by renewable energy sources:

Units Generated per month: On an average 4000-6000kwh depending on season's variation. From MSEDCL bills it is clear that during daytime (B Zone C Zone) there is no electricity consumption from grid Solar units mentioned in the bills are those units which are exported in this period itself.

2. Total power requirement:

For 20 desktops,

Energy consumption per Desktop 200watt per hour

For 20 Desktops: - 4000 watts per hour

- Practical: - 2 Hours

Total energy consumption 8000 watts

Readings through inverter:

60kW—37443units generated (For Year 2017)

20kW—7000 units generated (For Year 2017)

100kW—70000 units generated (2015 onwards, till date)

Resources required are:

ON grid System: Solar panels, stands, Batteries.

Off grid System: Inverters, Wires

Practice-II

Title of the Practice: Students Associations of each Department and Students Council of SSJCET.

Goal:

- To improve personality, communication skill, acquainted with various competitive exams/ interviews
- To conduct relevant training programs, add-on courses, seminars, workshops to bridge the gap between academia and industry
- To organize various activities like technical quiz, debate competition, personality contest etc.
- To organize events like project competitions, paper presentations etc. to inculcate the interest in research and to explore the possibilities of research.
- To develop awareness about participation in different events held at state, national and international level.

The Context

It is a platform for students to participate actively in the co-curricular activities, organized by students Associations/Students Council. Students joining our institute are from varied background. Student Associations

and Students Council organizes skill-oriented co-curricular programs based on the needs of industry. The exposure which students gained out of these programs motivates them to take up challenges and to overcome such challenges.

The Practice:

- Every Department is having Student Associations with Office bearers selected for every year. Head of Department along with faculty members will be conducting a meeting with students and form the students Association. Various teams will be formed under the Students Association for organizing co-curricular activities at Departmental Level like Industrial Visit, Seminars/ Workshops/ Guest Lectures, etc. In addition to that Student council is formed at Institute level to organize co-curricular activities and extra-curricular activities at Institute level like Sports, Tech Fest, Annual Day, etc. After formation of association the activities are planned for the particular Academic Year. While making plan different suggestions from student and faculty members are considered. For every activity a team is formed including faculty and students. The team is responsible for conducting the activity.
- Under the banner of Students Associations, the enrichment courses like communication, soft skill, personality development programs etc. are conducted to improve the standard of students.
- Value added programs like seminars, workshops, training programs etc. are organized which impart knowledge to students to make them industry ready and facilitates to be employable.
- Expert Lectures, industrial visit programs are arranged to witness the onsite phenomena which cannot be gained inside the class.

Evidence of success:

- The Students who are participating in activities are appreciated with Prizes and certificates. Attendance of participating students is maintained with Event Head. Notices have been circulated about conduction of activities so that students can take active part in activities. Certificates of Participation is also provided to the students who are participating in Paper Presentation competition in order to encourage and motivate our students to develop interest in Research areas, to promote the leadership abilities and to build the ability work in a team.
- Students are actively participating in different activities, it makes a positive improvement in students like personality development, communication skills, management skills, programming skills, emotional balance, etc.
- As students and faculty work together, it builds team spirit among students. It also helps in exchanging innovative ideas between students and faculty. It helps in many perspectives for students.

Problems Encountered and Resources required:

- Students are hesitating to take part in activities because of lack of time due to hectic academic schedule.
- To motivate students for participation is challenge.