

ENERGY AUDIT REPORT



2021

ENERGY AUDIT REPORT-2021



SANT LONGOWAL INSTITUTE OF ENGINEERING AND TECHNOLOGY, SLIET LONGOWAL, DISTRICT-SANGRUR (PUNJAB)

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About the Institute

Consequent upon the decision, taken by Govt. of India in 1985, to tender a valuable, yet humble tribute to the everlasting memory of the revered saint, Sant Longowal Institute of Engineering and Technology took its shape. The institute was established by Ministry of Education (MoE), Govt. of India in the year 1989 and was formally inaugurated on 20th December 1991.

Accepting the new challenge of new education policy, Sant Longowal Institute of Engineering and Technology (SLIET) was established, with a vision to act as an international podium for the development and transfer of technical competence in academics. It is committed to provide best possible technical education and to cater to the technical manpower requirements with emphasis on practical training in industry.

The institute is an autonomous body, fully funded by Govt. of India and controlled by SLIET society, registered under Societies Registration Act, 1860. The institute awards its own Certificates, Diplomas, Undergraduate and Postgraduate approved and recognized by AICTE, New Delhi. Ph.D. programmes have also been started after it attaining status of Deemed to be University.

It was formulated that the institute, besides catering to the needs of formal education would undertake an arduous task to prepare the skilled and qualified manpower for self-employment. Further, the institute would take up a strategic research and development activities which along with entrepreneurship will help in extending the efforts of the institute in imparting education to the unemployed and working population by updating and upgrading their technical skills. The institute was thought to cater to then existing 3-tier system to modern industry, which incorporates workers, technicians and engineers.

The institute has a sprawling area of 451 acres of land provided by Punjab Government. Surrounded by lush green land, the campus of the institute extends a beautiful and well-developed area with many topographically featured picturesque landscape, numerous buildings of various nature and stature and metal road network. The campus presents a spectacle of harmony and natural beauty. It is embedded with all the amenities required for a complete township.

Vision

SLIET shall strive to act as an international podium for the development and transfer of technical competence in academics through formal and non-formal education, entrepreneurship and research to meet the changing need of society.

Mission

1. Non formal, flexible, modular, multipoint entry programmes in engineering and technology and in the areas like rural development, educational planning, information and management sciences.
2. Education and training in modern technology areas.
3. Promotion of self-development among the students.
4. Extension services to industry working population, passed-out students, social organizations and institutions of research and higher learning.
5. Close interface with the industry to conduct research on the basis of manpower requirements leading integrated educational planning curriculum development and instructional material preparation in technology and inter-disciplinary areas.
6. Promotion of institute-institute linkages for sustainable development of academic and research.

Energy Audit Team:

1.	Prof. Sanjay Marwaha, Dept. of EIE, SLIET, Longowal	Chairman
2.	Prof. C.S. Riar, Dept. of FET & F.I. (Horticulture), SLIET, Longowal	Member
3.	Prof. Avinash Thakur, Dept. of Chemical Engineering & F.I. (Civil), SLIET, Longowal	Member
4.	Dr. Indraj Singh, Dept. of Mechanical Engineering, SLIET, Longowal	Member
5.	Dr. Raj Kumar Garg, Dept. of EIE & F.I. (Electrical), SLIET, Longowal	Member
6.	Dr. Nikhil Prakash, Dept. of Chemical Engineering, SLIET, Longowal	Member
7.	Er. R.K. Goyal, A.E. (Electrical), SLIET, Longowal	Co-opted Member
8.	Shri. Prabhdeep Singh, Estate Officer, SLIET, Longowal	Co-opted Member

CHAPTER – 1 Energy Audit

1.1 Introduction to Energy Audit

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In the Institute, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints. An energy audit in general includes identification and evaluation of the of the energy systems for their improvements in term of their energy efficiency through energy conservation measures. A detailed analysis of the various activities is as listed below.

Energy audit is an effective tool in defining and pursuing comprehensive energy management programmes. It has positive approach aiming at continuous improvement in energy utilization in contrast to financial audit which stresses to maintain regularity. Energy audit provides answer to the question what to do, where to start, at what cost and for what benefits?

Energy audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating and maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment, instrumentations and technology.

It has been established that energy saving of the order of 15 to 30% is possible by optimizing use of energy by better housekeeping, low cost retrofitting measures and use of energy efficient equipment at the time of replacements. Indian industry consumes more energy as compared to its counter parts in the developed countries.

1.2 Methodology of Energy Audit

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. Industrial energy audit is an effective tool in defining and pursuing comprehensive energy management programme. As per the Energy Conservation Act, 2001, Energy Audit is defined as “the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption”.

1.3 Need for Energy Audit

In any industry, the three top operating expenses are often found to be energy (both electrical and thermal), labour and materials. If one were to relate to the manageability of the cost or potential cost savings in each of the above components, energy would invariably emerge as a top ranker, and thus energy management function constitutes a strategic area for cost reduction. Energy Audit will help to understand more about the ways energy and fuel are used in any industry and help in identifying the areas where waste can occur and where scope for improvement exists.

The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc.

In an institute, Energy Audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame.

The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. Energy Audit provides a “bench-mark” (Reference point) for managing energy in the organization and provides the basis for planning a more effective use of energy throughout the organization.

1.4 Type of Energy Audit

The type of Energy Audit to be performed depends on:

- Function and type of industry / institute
- Depth to which final audit is needed, and
- Potential and magnitude of cost reduction desired

Thus, Energy Audit can be classified into the following two types.

- i. Preliminary Audit
- ii. Detailed Audit

1.4.1 Preliminary Energy Audit Methodology

Preliminary energy audit is a relatively quick exercise to:

- Establish energy consumption in the organization
- Estimate the scope for saving
- Identify the most likely (and the easiest areas for attention
- Identify immediate (especially no-/low-cost) improvements/ savings
- Set a ‘reference point’
- Identify areas for more detailed study/measurement
- Preliminary energy audit uses existing, or easily obtained data

1.4.2 Detailed Energy Audit Methodology

A comprehensive audit provides a detailed energy project implementation plan for a facility, since it evaluates all major energy using systems.

This type of audit offers the most accurate estimate of energy savings and cost. It considers the interactive effects of all projects, accounts for the energy use of all major equipment, and includes detailed energy cost saving calculations and project cost. In a comprehensive audit, one of the key elements is the energy balance. This is based on an inventory of energy using systems,

assumptions of current operating conditions and calculations of energy use. This estimated use is then compared to utility bill charges. Detailed energy auditing is carried out in three phases: Phase I, II and III.

Phase I - Pre-Audit Phase

Phase II - Audit Phase

Phase III - Post Audit Phase

1.5 Objectives of Energy Audit

The energy audit provides the vital information base for overall energy conservation programme covering essentially energy utilization analysis and evaluation of energy conservation measures.

- i. Assessing present pattern of energy consumption in different cost centres of operations
- ii. Relating energy inputs and production output
- iii. Identifying potential areas of thermal and electrical energy economy.
- iv. Highlighting wastage in major areas
- v. Fixing of energy saving potential targets for individual cost centres
- vi. Implementation of measures of energy conservation and realization of savings.

CHAPTER - 2

Electrical Power Consumption in SLIET

2.1 Power Consumption

At present, a single bulk supply electricity connection is provided by PSPCL (Punjab State Power Corporation Ltd.) through 11 KV independent feeder for the institute. There are 4 x 500 KVA + 3 x 250KVA distribution transformer installed at various locations in the Institute for all Academic, Administration and Hostel buildings. The electricity connection details are as follows.

Consumer Account No.	3007509804
Connected load	2127 KW
Sanctioned load contract demand:	2364 KVA

In case of power failure from PSPCL, 2 x 500 KVA diesel generator set are available to meet out emergency power needs. Further, the residential area is directly fed by PSPCL through their own distribution system.

Bill analysis for consumer SLIET, Longowal vide account number 3007509804 is presented in Table 2.1 for the year 2020-21.

Table 2.1: Electric Power Consumption in FY 2020-21

Period	kWh Unit	Max Demand (KVA)	Energy Charges (Rs.)	Fixed Charges (Rs.)	Power Factor	Bill Amount (Rs.)	Unit/Rate (Rs.)
18.03.2020-16.04.2020	108420	265.2	764014	143916	0.97	781890	7.2
16.04.2020-15.05.2020	107280	282.6	736434	143916	0.97	883250	8.2
15.05.2020-18.06.2020	162180	516.6	1103492	202227	0.96	1321490	8.1
18.06.2020-15.07.2020	148500	561.6	1007318	184238	0.96	1206000	8.1
15.07.2020-17.08.2020	178830	586.2	1174029	225179	0.99	1415940	7.9
17.08.2020-16.09.2020	153180	528	1006534	204708	0.99	1225670	8.0
16.09.2020-14.10.2020	158520	586.2	1091946	191061	0.95	1298610	8.2
14.10.2020-16.11.2020	142710	282	955796	225179	0.97	1194700	8.4

16.11.2020-16.12.2020	150120	388.2	1016916	204708	0.96	1236190	8.2
16.12.2020-16.01.2021	209010	490.8	1427327	211532	0.96	1626370	7.8
16.01.2021-15.02.2021	200790	450	1361700	205269	0.96	1525820	7.6
15.02.2021-15.03.2021	151110	358.8	1042384	191585	0.95	1202600	8.0
Average	155888	441	1057324	194460	0.97	1243211	8.0

2.2 Electricity Bill

The average electricity bill for the year 2020-21 is Rs.1243211/-. The graphs of the kWh, power factor, bill amount and maximum demand for the year 2020-21 are presented below.

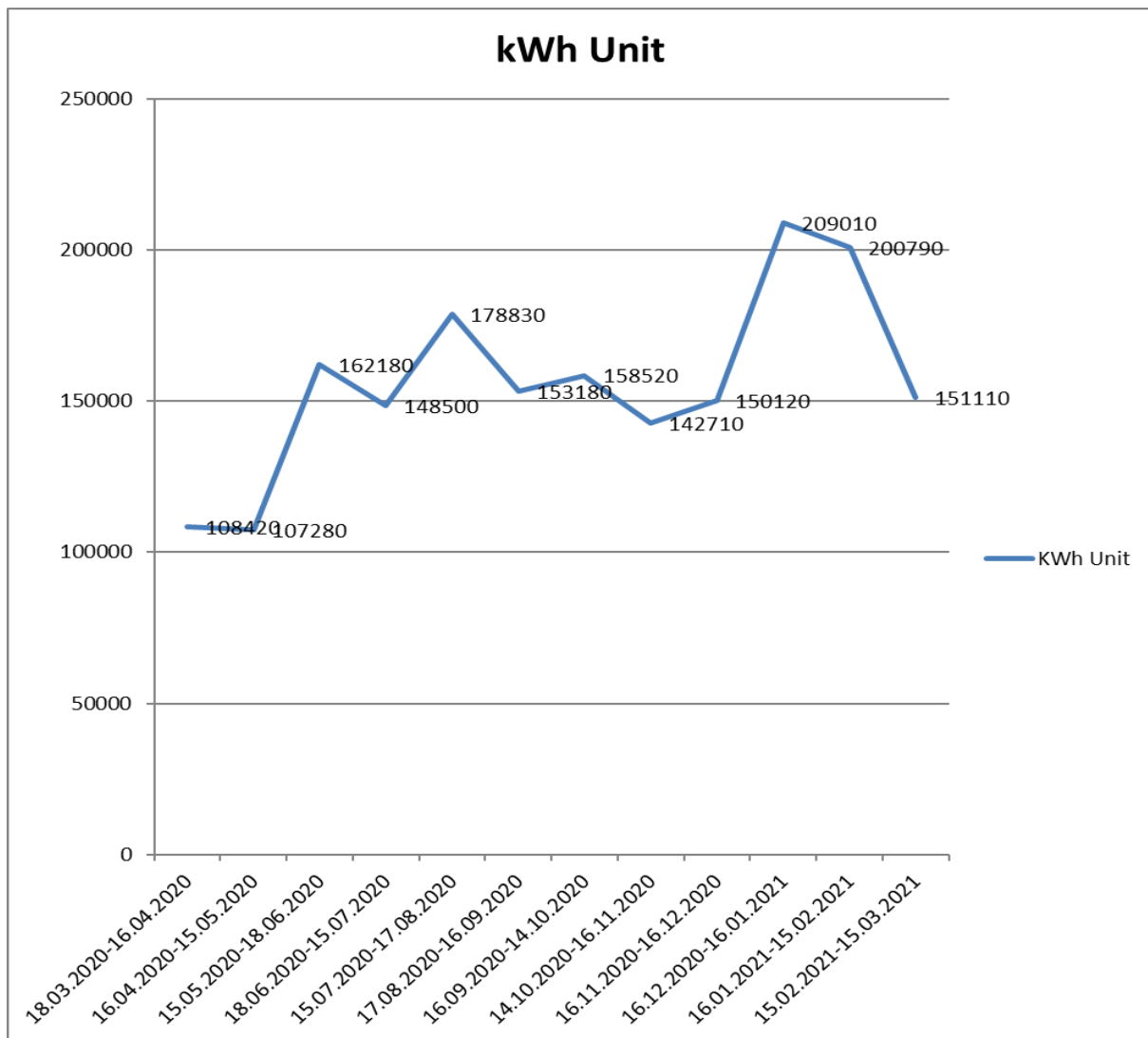


Fig. 2.1: Electric Power Consumption in FY 2020-21

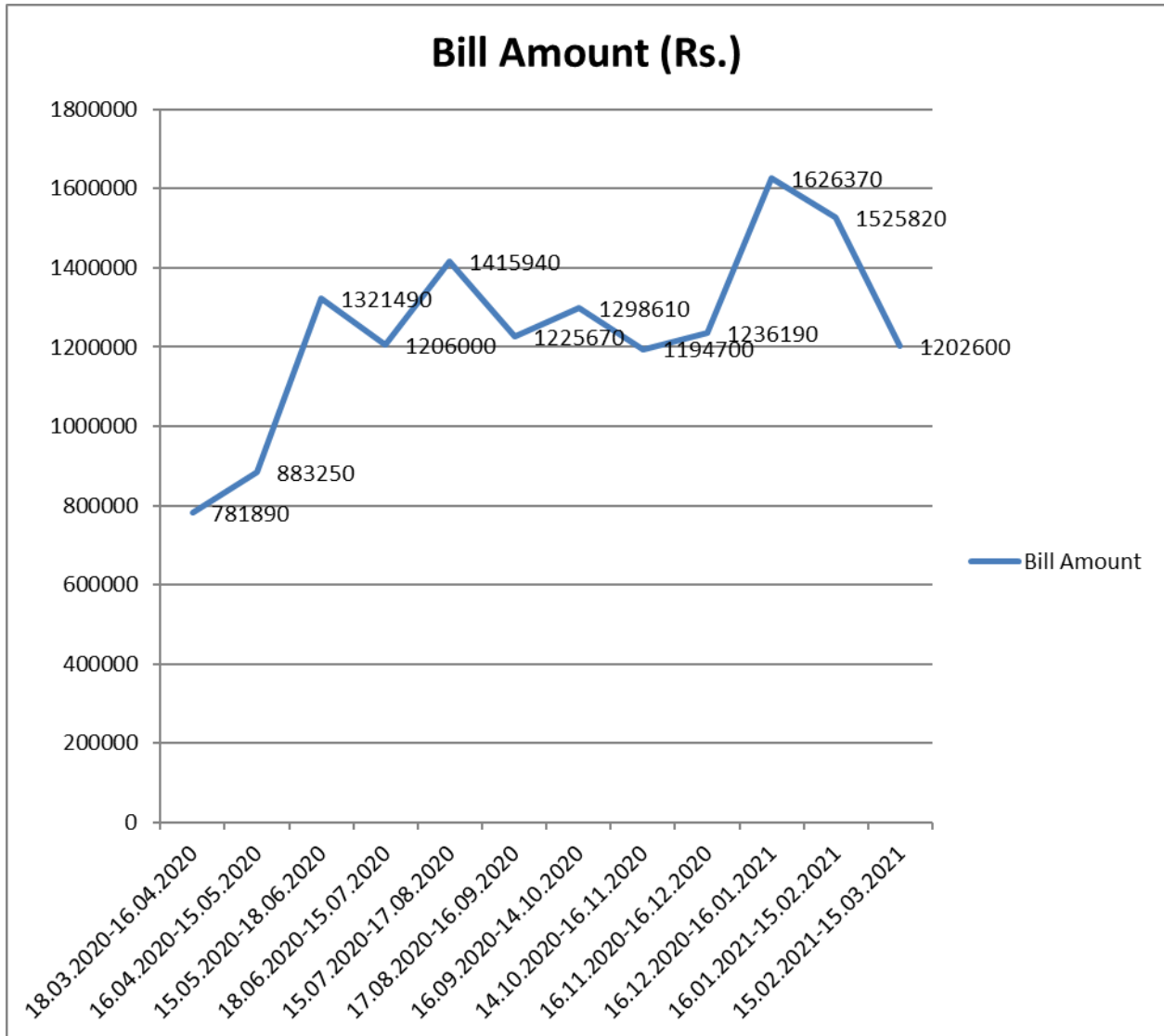


Fig.2.2: Monthly Billed Amount in FY 2020-21

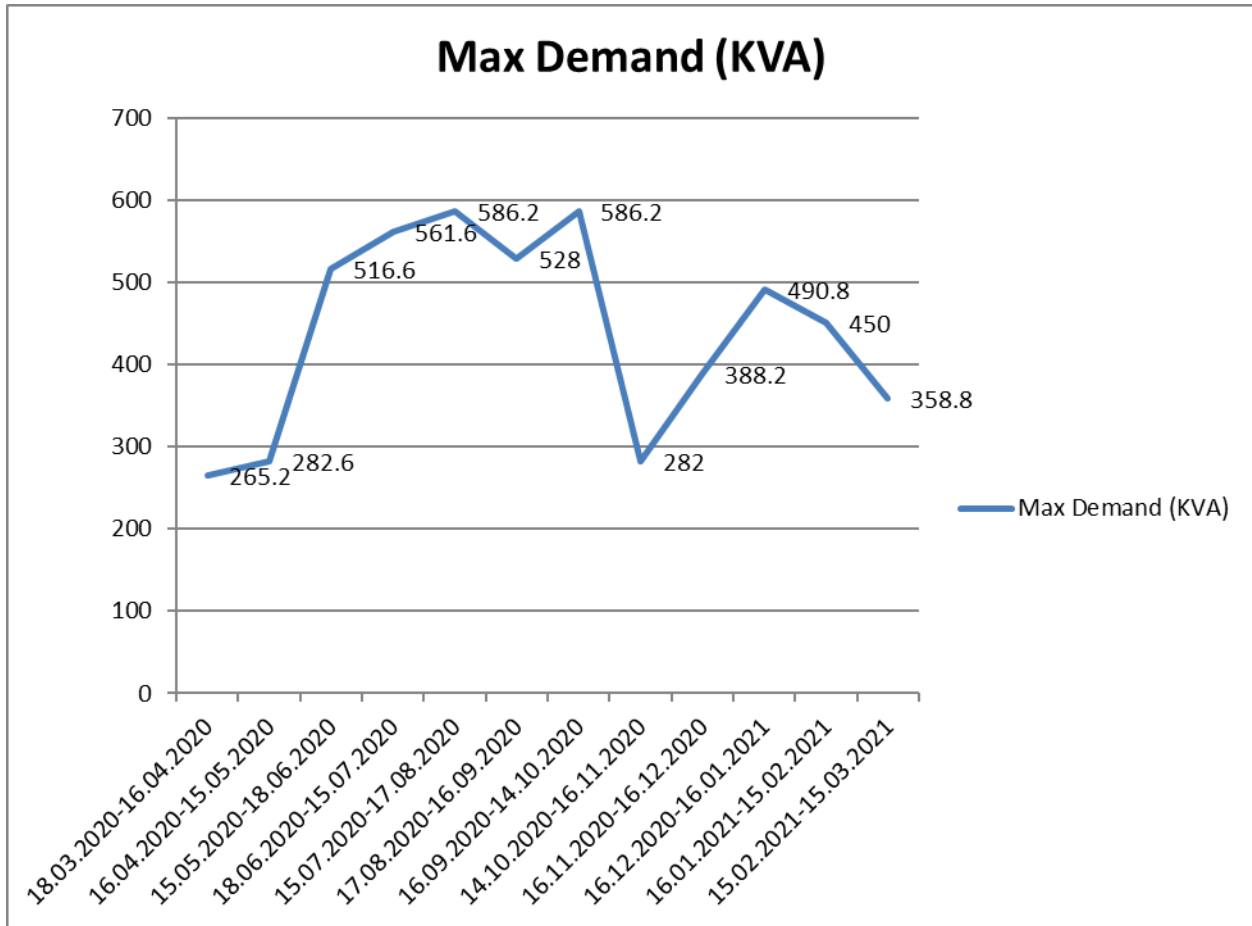


Fig.2.3: Maximum Demand Trend in FY 2020-21

From the above analysis, following are the observations.

- Monthly average energy consumption is 155888 kWh
- Monthly average power factor is 0.97
- Monthly average maximum demand is 441.35 kVA
- Monthly average electricity bill is Rs.1243211/-
- Avg. unit rate cost to SLIET is 8.00Rs./kWh

CHAPTER-3

Methods Applied for Electrical Power Conservation

3.1 Reactive Power Management

The objective of reactive power management is improvement of power factor, or “Power Factor Correction”. The principle of “Power Factor Correction” (or “Reactive Power compensation”) is to generate the reactive power close to the load, so that the supply source could be relieved, when connected with the loads. Capacitors banks are most used in electrical network to supply reactive power.

There are 4 automatic power factor correction controller relay (APFCR) panels installed in indoor 11 kV sub-station at Electrical Sub-station I and II. Out of four two are of capacity 2 x 160 kVAR installed in the year of 2009-10 at ESS-I and ESS-II and 2 x 200 kVAR APFCR panels installed in the year of 2014-15 and 2020-21 respectively. Apart from this, individual and dedicated capacitor bank has been installed on the submersible pump set, non-clog pump set and street light feeder panels. Hence, all these installations have improved the power factor of the Institute. Due to improvement in power factor, following are the major benefits:

- i. Reduced kVA (Maximum demand) charges in utility bill. Utility power bills are typically reduced by 5 % to 10 %
- ii. Reduced distribution losses within the system network.
- iii. Better voltage is available at distribution network. Hence there is improved performance of the motors and other electrical gadgets.
- iv. A high power factor eliminates excess demand charges imposed when operating with a low power factor.
- v. Investment on system facilities such as transformers, cables, switchgears etc. for delivering load is reduced.
- vi. Due to improved power factor, the life of all the electrical gadgets enhanced.
- vii. Availability of more energy at utilities ensures in the reduction of total CO₂ emissions for a sustainable future.



Fig. 3.1: APFCR Panel at ESS-I and ESS-II

Automatic Power Factor Correction Relay (APFCR) are installed at various locations which resulted to maintain power factor of the Institute. The power factor is always more than 0.95 as shown in Fig. 3.2

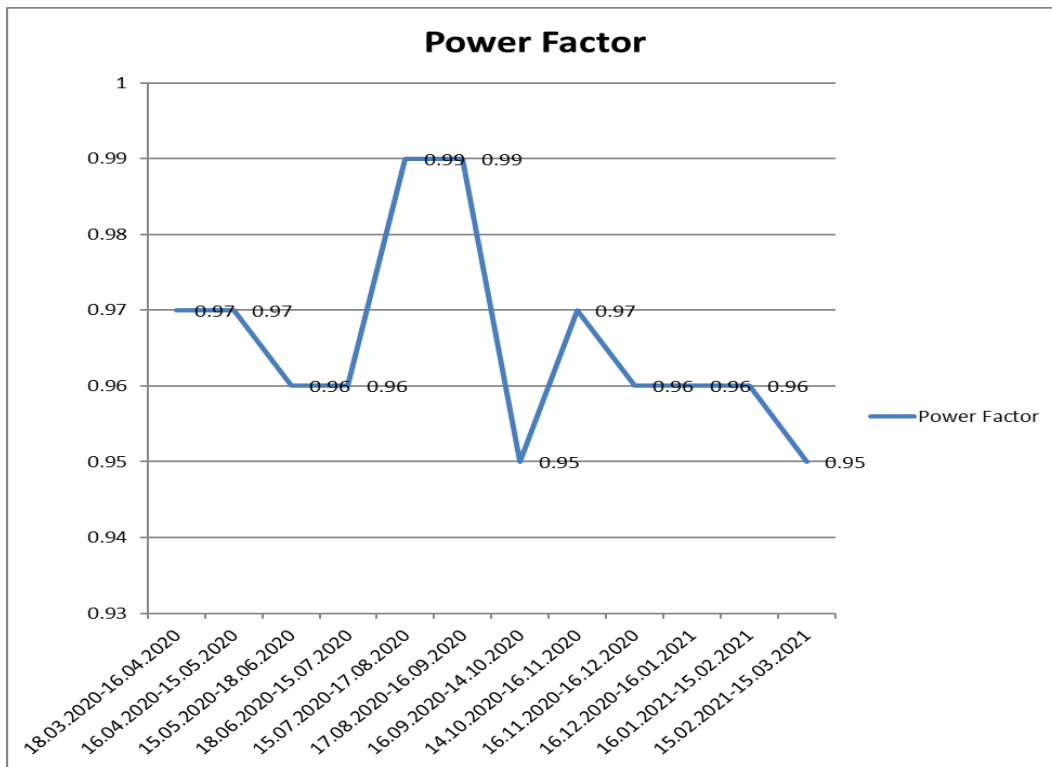


Fig.3.2: Power Factor Trend in FY 2020-21

3.2 Replacement of Conventional Lighting System with LEDs

As per policy adopted in the Institute in 2017, vide circular no. F.No.25(24)/E.Coord/2017 dated 04.08.2017 and F.No.917/05/LED/HRD-ID/2017 dated 03.11.2017 of Ministry of Finance (**please refer page no. 24 - 27**) i.e. to replace the conventional lighting system by LED lighting, a large no. of conventional lighting has been replaced into LED in academic/residential area and the rest are in progress.

There are 451 street light pole having HPSV/MH Luminaries having 200/150 watt. Out of this 20% luminaries have been replaced with LED like on the road A (Longowal to Duggan gate thoroughfare), road C (from bus stand to BH-2). The same work of replacement on road B (from Longowal gate – BH 3,4-Swimming pool, BH 5,6, BH 9,10, lake- Duggan gate round about) is in process.

Apart from this, there are 6719 nos. fluorescent single and twin lights installed in the various academic and hostel buildings of the Institute. Out of this, 1997 nos. have been replaced with LED luminaries i.e. 30%. Further, there is planning to convert all the remaining lights fixture into LED up-to 2023 to save the power. A detailed analysis of the SLIET is presented below:

Table 3.1: Replacement of Conventional Lighting System with LED Up to FY 2020-21

Area	Type	Replaced Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	Replaced Qty	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs.)	Saving in Rs. per month	Saving in Rs. per Annum	Investment in Rs.	Payback period in years	Remarks
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
						DxE / 1000	GxFx 30 days			I x J / 1000	K x F x 30 days	H - L		M x N	O x 12 months	J x rate of item	Q / P	
Street Light	HPSV Light 200 W	90	90	200	10	18	5400	Led fixture of 45 Watt	90	4	1215	4185	8	33480	401760	220500	0.55	Total qty 451
Hostel System (BH 1,2,5,6 and9)	Fluorescent Light	468	468	55	8	26	6178	Led fixture of 18 Watt	468	8	2022	4156	8	33247	398961	95940	0.24	
Hostel System (BH 3,4,7a and8)		310	310	55	8	17	4092	Led fixture of 18 Watt	310	6	1339	2753	8	22022	264269	63550	0.24	
Academic Deptt.		541	541	55	8	30	7141	Led fixture of 18 Watt	541	10	2337	4804	8	38433	461192	110905	0.24	
Hostel System (GH)		260	260	55	8	14	3432	Led fixture of 12 Watt	260	3	749	2683	8	21466	257587	270920	1.05	

Table 3.2: Replacement of conventional lighting system with LED

Area	Type	Replaced Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	Replaced Qty	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs.)	Saving in Rs. per month	Saving in Rs. per Annum	Investment in Rs.	Payback period in years	Remarks
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
						DxE / 1000	GxFx30 days			I x J / 1000	K x F x 30	H · L		M x N	O x 12 months	J x rate of item	Q / P	
Smart Class Rooms Hall 4,6,8 Science Block, M 310 ME, E 329 EIE, LS 5 CSE, LC 3 FT/Chem, Digital Classroom ECE Phase - I	Fluorescent Light	177	177	110	8	19	4673	Recess mounted grid ceiling led light 2' x 2' of 38 Watt	177	7	1614	3059	8	24468	293622	556842	1.90	

It is seen from the above table that there is approximately **Rs. 23,79,606/-** saving by the replacement conventional light fixture into LED fixture in a year.

Table 3.3: Replacement of Conventional Lighting System With LED (22.06.2020-13.08.2021)

Area	Type	Replaced Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	Replaced Qty	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs.)	Saving in Rs. per month	Saving in Rs. per Annum	Investment in Rs.	Payback period in	Remarks
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
						DxE / 1000	GxFx30 days			I x J / 1000	K x F x 30 days	H - L		M x N	O x 12 months	J x rate of item	Q / P	
All academic and Hostel system	Fluorescent Light	280	280	55	8	15	3696	Led fixture of 18 Watt	280	5	1210	2486	8	19891.2	238694	57400	0.24	
														Total	238694	57400		



Fig.3.3: LED Fixture (Street Light, Road-A Near H Pole)/ LED Fixture in Girls Hostel No.1, FF (Corridor) Near Room No. 231



Fig. 3.4: LED Fixture in ME Entrance and Central Library, FF (Reading Hall)



Fig. 3.5: LED Fixtures in Smart Classrooms (CSE, Software Engineering and Programming Lab, FF) / Smart Classrooms (Science Hall 4, FF)



Fig. 3.6: LED Fixtures in Smart Classrooms (Science Hall 4, TF)



Government of India
Ministry of Finance, Department of Revenue
Directorate General of Human Resources Development
Customs & Central Excise
IRCON Building, West Wing,
Ground Floor, Plot No. C-4,
District Centre, Saket,
New Delhi-110017

F.No. 917/05/LED/HRD-ID/2017

Date: 3 November, 2017

To

All Principal Chief Commissioners/ Chief Commissioners of Customs

All Principal Chief Commissioners/ Chief Commissioners
of CGST & Central Excise

All Principal Director Generals / Director Generals under
Central Board of Excise & Customs

Sir/Madam

Sub: Mandatory installation of LED based lights in Government Buildings and Energy Efficient Equipments (Fans and Air Conditioners).

Please find enclosed copies of (i) OM F. No. O-21011/08/2017-Coord. dated 28.09.2017 (with enclosures) received from the Under Secretary (Coord), and (ii) letter F. no. 296/233/2017-CX-9 dated 20.10.2017 along with copy of OM No. 13020/3/2017/-GAR dated 17.10.2017 on the above subject.

2. It has been intimated that Hon'ble Prime Minister had launched the National LED programme on 5th January 2015, to facilitate rapid adoption of LED based home and street lighting across the country.

3. The programme components Unnat Jyoti by Affordable LEDs for All (UJALA) and Street Lighting National Programme (SLNP) are under implementation in 34 States and UTs. This programme along with Building Energy Efficiency Programme (BEEP) is being implemented by Energy Efficiency Services Limited (EESL), a joint venture company of four power sector Central PSUs. EESL works on Energy Services Company (ESCO) model wherein upfront investment is done by EESL and the investment is recouped on annuity basis with performance based guaranteed energy saving during the project period.

4. Pursuant to the above the Central Government has taken a decision for mandatory installation of LED based lighting and energy efficient equipments (Fans & ACs) in all Government buildings.

5. In view of the above, it is requested to initiate action in terms of O.M. No. 25(24)/E.Coord/2017 dated 04.08.2017 and Background Note issued vide letter No. 25(24)/E/Coord/2017 dated 27.9.2017 (copies enclosed) for installation/conversion of LED based lights & energy efficient equipments and also ensure that the existing non-LED based lightings are replaced with LED lights in order to save energy and cut down on the electricity consumption in all Govt. buildings (Offices & Quarters) under your zones. Model Energy Performance Agreement to be entered between the CLIENT and EESL can be downloaded from EESL's web-site (doe.gov.in/sites/default/files/Office%20MemorandumLED_light_0.pdf).

6. As per the OM No. 13020/3/2017-GAR dated 17.10.2017, progress of this project will be monitored by the Revenue Secretary on Fortnight Basis, accordingly an action taken report on fortnight basis has to be submitted to the Ministry for updating the status.

7. In view of the above, it is requested to take appropriate necessary action on priority basis and submit the fortnightly reports in the format given below to this office. Reports for the 1st Fortnight should reach by 18th of the month and for the 2nd fortnight, report should reach by 3rd of the succeeding month positively. Reports may also be sent by e-mail at landdghrd@gmail.com.

FORTNIGHTLY PROGRESS REPORT

Name of the Zone/ Directorate: _____

Report for the fortnight ending : _____

1.a) Report regarding installation of LED based lighting

Number of the LED Lights installed		Capacity of the LED Lights installed (in Watts)		Approx. energy saved (in Watts)		Number of agreements entered	
During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight
1	2	3	4	5	6	7	8

1. b) Status of completion of the project (Pending/ongoing/Completed) _____

2 a) Item-wise report regarding conversion of Energy Efficient Equipments: (Fans and Air Conditioners)

Number of energy efficient equipments converted		Capacity of energy efficient equipments converted (in Watts)		Approx. energy saved (in Watts)		Number of agreements entered	
During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight	During the fortnight	Upto the fortnight
1	2	3	4	5	6	7	8

2. b) Status of completion of the project (Pending/ongoing/Completed) _____

Yours faithfully,

Encl : As Above

Manoj 3.11.17
 (MANOJ KUMAR)
 Joint Director (I&W)
 Ph. : 011-29563972

F.No. 25(24)/E.Coord/2017
Ministry of Finance
Department of Expenditure
(E.Coord)

North Block, New Delhi
Dated: 4th August, 2017

OFFICE MEMORANDUM

**Subject: Economy Measures - Mandatory installation of LED based lighting
in all Government buildings - regarding**

The Hon'ble Prime Minister on 5th January 2015 launched the National LED programme to facilitate rapid adoption of LED based home and street lighting across the country. The programme components, Unnat Jyoti by Affordable LEDs for All (UJALA) and Street Lighting National Programme (SNLP) are under implementation in 34 States and UTs. This programme along with Building Energy Efficiency Programme (BEEP) is being implemented by Energy Efficiency Services Limited (EESL), a joint venture company of four power sector Central PSUs. EESL works on Energy Services Company (ESCO) model wherein upfront investment is done by EESL and the investment is recouped on annuity basis with performance based guaranteed energy saving during the project period.

2. Pursuant to the above the Central Government has taken a decision for mandatory installation of LED based lighting and energy efficient equipments (Fans & ACs) in all Government buildings.

3. Government buildings is a major source of energy consumption. Usage of LED based lightings and energy efficient equipments in Government buildings will lead to economy in expenditure and savings in the long run through reduction in energy consumed.

4. Keeping in view the economy in expenditure and savings that will entail, all Ministries/Departments are requested to convert the existing lightings/equipments into LED based lightings and energy efficient equipments on priority utilizing the services of CPWD/EESL.

- 1 -



**Annexure
B**

5. The model Agreement/Contract to be entered in to between the Client Ministry/Department and EESL is enclosed for reference. The Client Ministry/Department and EESL on mutual agreement can modify/amend the provisions of the model Agreement/Contract to suit their specific requirements.

6. In respect of those Government buildings maintained by CPWD but where the electricity bill is borne/paid by the respective Ministries/Departments, CPWD (as third party) will countersign the agreement to provide comfort to the Ministry/Department as well as extending help for implementing the contract.

7. Action taken in this regard be reported to Ministry of Power and Department of Expenditure by 15.08.2017 for monitoring purposes.


(H. Atheli)
Director

To

All Secretaries of Ministries/Departments

Copy to

1. Cabinet Secretary, Government of India
2. Prime Ministers' Office, South Block

3.3 Energy Conservation by Occupancy Sensors

In the newly constructed building of EDP, the provision of 14 nos. occupancy sensors (motion sensor-based lightening) has been made in the washrooms. These sensors which are normally in open mode and circuit of lights is not in operational mode. However, when there is human movement or motion the circuit gets closed and lights glow. Now, as and when no human movement/motion is there again lights goes off automatically due to occupancy sensor. In this way, electrical energy is saved.



Fig. 3.7: Occupancy Sensor Installed in The Washrooms of Newly Constructed EDP Block

3.4 Replacement of Old / Non Star Rated Ceiling Fans with Energy Efficient 5 Star Rated Ceiling Fans

A policy has been adopted in 2012 i.e. to replace the non-efficient / star rated electrical gadgets into energy efficient / star rated electrical gadgets. At present there are 4315 ceiling fans installed in the various Academic/Hostel buildings of the Institute. As per policy of 2012, 1240 non-star rated ceiling fans have been replaced with energy efficient ceiling fans in Academic and hostel area. Further, there is emphasis to replace the old/non-working, non-star rated ceiling fans with energy efficient fans. Further, the copy of supply order of procurement energy efficient, star rated enclosed herewith at **Annexure C (Page No. 30)**.



Fig. 3.8: Energy Efficient 5 Star Rated Ceiling Fan

Table 3.4: Replacement of Old/Non Star Rated Ceiling Fans with Energy Efficient 5 Star Rated Ceiling Fans

Area	Type	Total Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	Replaced Qty	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs.)	Saving in Rs. Per month	Saving in Rs. Per Annum	Investment in Rs.	Payback period in
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
						D x E /1000	E x F x 30 days			J x 40 /1000	F x K x 30 days	H - L		M x N	O x 12	J x Item of rate	
All academic and Hostel system	Non energy efficient ceiling fan	1240	1240	80	8	99.2	23808	Energy efficient 5 Star rated Fans 40 Watt	1240	49.6	11904	11904	8	95232	1142784	1798000	1.57
Total														1142784	1798000		

It is seen from the above table that there is **Rs. 11,42,784/-** saving in energy consumption cost in a year with the replacement of Old/non star rated ceiling fans into Energy efficient 5 Star rated ceiling Fans.



SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY
LONGOWAL -148106, DISTT. SANGRUR, PUNJAB, INDIA
(Established by Govt. of India)
(Deemed University)
Tel No. 01672-253339
F/I (Electrical)

Ref. No. SLIET/EW/EST/2021/415-419

Dated: 13/07/2021

M/s. Gupta Electrical Traders,
Main Kishanpura Road,
Sangrur-148001 (PB.)

SUBJECT:-Supply of Electrical Material for Annual Repair & Maintenance at SLIET, Longowal for the F/Y 2021-22.

Dear Sir,

With reference to our work order no. SLIET/EW/EST/02/21/355-361 dated 30.06.2021. You are requested to supply us Electrical material as per detailed below:-

S.No	DESCRIPTION OF ITEM	UNIT	MAKE	QTY	RATE	AMOUNT
1.	Ceiling Fan 48" 5 STAR Rating as per BEE Labeling	Each	Havells/ Usha/ Crompton Greaves/ Orient	50	2600.00	130000.00
2.	Flood Light Lamps (Metal halide or HPSV) as per site requirement (Street Light)		Philips/ Crompton Greaves/ Osram/ Havells			
	70 Watt	Nos.		100	520.00	52000.00
	150 Watt	Nos.		50	580.00	29000.00
3.	M.S. Machine screw 25 mm (100 Nos. Pkt.)	Pkt.	Netle F&D Marks	10	95.00	950.00
4.	Flexible Pipe		Good Quality			
	3/4"	Mtr.		120	10.00	1200.00
	1"	Mtr.		120	12.00	1440.00
5.	LED Street Light luminaire (Suitable for pole mounting) having polycarbonate/ toughened glass, totally enclosed dust tight & water IP-65/66, CDL, Inbuilt Electronic Driver (12-15 Watt)	Each	Havells, Philips, CG, Wipro	20	1350.00	27000.00
6.	Supplying of recess mounted/ grid ceiling softline luminaries of approx. size 595mmx595mmx70mm (LxWxH) for armstrong/gridsealing with high brightness LED 34-38 watt, Lumen 3000-3250, 230V, 50Hz, with surge suppressor upto 2 KV to perform in erratic power condition, working life >40K hours, CRI > 80, with extruded diffuser, glare free uniform illumination light, Energy efficient & compliments to interiors.	Nos.	CG, Havells, Wipro, Philips	20	2230.00	44600.00
TOTAL						286190.00

Delivery : FOR SLIET, Longowal
Rate : The rates are inclusive of all taxes.
Delivery Period : Thirty days from the Issue of order
Payment Terms : Within Thirty days.
Inspection : To be inspected by (Electrical Wing Estate)
Penalty : The supply must be completed satisfactorily within the stipulated period, failing which penalty @ ½ % per week on the value of supply order will be imposed without any notice.

[Signature]
Incharge, EW (Estate)

Endst. No. SLIET/EW/ EST/2021/ 416-419

Dated:- 13/07/2021

Copy to:-

- 1 Dean (P&D) for information, please
- 2 DR (A&A)
- 3 F/I (E)
- 4 File Copy

[Signature]
Incharge, EW (Estate)

3.5 Replacement of Air conditioning System with Star Rated ACs

A decision has been taken in the 11th BWC held on dated 30.08.2019 vide item no. 11.12 (A) regarding replacement of Electromechanical type (after effective life span), non star rated AC's installed on the various locations in the Institute in a phased manner with energy efficient star rated AC. Presently, there are 467 AC's installed in the Institute of various types like Window, High wall and Tower AC. The capacity of these AC's varies from 1 TON to 3.5 TON. Apart from this, there is two central AC plant available in CSE and Main Auditorium of the Institute of capacity 121 Ton and 140Ton (156 HP) respectively installed in the year of 2011 and 2016. Out of 467 AC's, 337 AC's are energy efficient, star rated and having eco-friendly refrigerant. The copy of supply order on GeM enclosed herewith at **Annexure D and E (Page No. 35, 36)**.



Fig. 3.9: Star Rated Air Conditioning in Smart Classrooms (ME, M-117, GF)/ Smart Classrooms (Hall No. 3, TF)

Table 3.5: Replacement of Air conditioning system with Star rated Air Conditioning as per BEE norms

Area	Type	Total Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	Replaced Qty	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs)	Saving in Rs. per month	Saving in Rs. per Annum	Investment (Rs.)	Payback period in
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
						DxE / 1000	GxFx30 days			I x J / 1000	K x F x 30 days	H - L		M x N	O x 12 months	J x rate of item	Q / P
Guest House	W/High wall AC non energy efficient 1.5 T	10	10	1900	3	19	1710	Star rated AC 1300 Watt	10	13.00	1170	540	8	4320.00	51840.00	325000	6.27
CAD CAM Lab	W AC non energy efficient 1.5 T	6	6	1900	6	11.4	2052	Star rated AC 1300 Watt	6	7.80	1404	648	8	5184.00	62208.00	195000	3.13
HOD CSE	W AC non energy efficient 1.5 T	1	1	1900	6	1.9	342	Star rated AC 1300 Watt	1	1.30	234	108	8	864.00	10368.00	32500	3.13
Numerical Lab	W AC non energy efficient 1.5 T	4	4	1900	6	7.6	1368	Star rated AC 1300 Watt	4	5.20	936	432	8	3456.00	41472.00	130000	3.13
														Total	165888.00	682500	

It is seen from the above table that there is approximately **Rs. 1,65,888/-** saving in energy consume cost in a year with the Replacement of Air conditioning system to Star rated Air Conditioning as per BEE norms.

Since 2012, a policy decision has been taken to procure new AC's/other Electrical Gadgets like water heaters, ceiling fans etc. having star rating (energy efficient) as per BEE norms. Further, the AC's are being procured having eco-friendly refrigerant since 2012.

Table 3.6: List of Star Rated Conditioning System as per BEE Norms

Area	Type	Tonnage Capacity	Total Qty.	Wattage	Daily Op Hr Avg	Load (KW)	Mthly KWh
ECE/EIE Block	Window AC	1.5	24	1500	4	36	4320
	Split AC	1.5	10	1500	4	15	1800
CSE Block	Window AC	1.5	8	1500	4	12	1440
	Split AC	1.5	20	1500	4	30	3600
Science Block	Window AC	1.5	36	1500	4	54	6480
	Split AC	1.5	9	1500	4	13.5	1620
Food Block	Window AC	1.5	21	1500	4	31.5	3780
	Split AC	1.5	4	1500	4	6	720
ME Block	Window AC	1.5	42	1500	4	63	7560
	Split AC	1.5	17	1500	4	25.5	3060
Kendriya Vidyalaya	Window AC	1.5	3	1500	4	4.5	540
	Split AC	1.5	2	1500	4	3	360
SET office	Window AC	1	9	1000	4	9	1080
Admn Block	Window AC	1.5	40	1500	4	60	7200
	Split AC	1.5	2	1500	4	3	360
Guest House	Window AC	1.5	14	1500	3	21	1890
	Split AC	1.5	12	1500	3	18	1620
Library GF	Window AC	1.5	1	1500	4	1.5	180
	Split AC	1.5	8	1500	4	12	1440
EDP FF (Library)	Window AC	1.5	5	1500	4	7.5	900
	Split AC	1.5	15	1500	4	22.5	2700
Estate Office	Window AC	1.5	3	1500	4	4.5	540

Transit Accommodation	Window AC	1.5	7	1500	3	10.5	945
Workshop	Window AC	1.5	1	1500	4	1.5	180
	Split AC	1.5	2	1500	4	3	360
Faculty Club	Window AC	1.5	2	1500	1	3	90
Hostel System	Window AC	1.5	9	1500	4	13.5	1620
JC Bose Hall	Split AC	1.5	10	1500	1	15	450
Main Auditorium	HVAC System	156	1	116376	1	116.376	3491.28
Total (Rs.)			337				



Invoice

SELLER DETAILS:

Address: **Manish Trader**
Shop no. 4, Circular market, Camp-2, Bhilai, Durg,
CHHATTISGARH, 490001
Email Id: manishtrader14@rediffmail.com
Contact No : 9893707012
GSTIN: 22AIFPJ1066L1ZF

GeM Invoice No: GEM-8159121
GeM Invoice Date: 14-Jul-2020

Order No: GEMC-511687735240073
Order Date: 02-Jul-2020

[click here to download seller tax invoice](#)

SHIPPING TO:

Consignee Name: Raj Kumar
Address: Sant Longowal Institute of Engineering & Technology,
Longowal SANGRUR
PUNJAB 148106

Contact No: 01672-253339-

BILL TO:

Buyer Name: Raj Kumar , BUYER-CONSIGNEE
Address: Sant Longowal Institute of Engineering & Technology,
Longowal SANGRUR PUNJAB 148106 Department of Higher
Education Sant Longowal Institute of Engineering and
Technology (SLIET)
GSTIN: 03aaaa16685r1zz
Department: Department of Higher Education
Office Zone: Punjab
Organisation: Sant Longowal Institute of Engineering and
Technology (SLIET)
Ministry: Ministry of Human Resource Development

Seller Tax Invoice Number	Seller Tax Invoice Date	Dispatch Mode	Dispatch Date
2021124	14-Jul-2020	Manual	14-Jul-2020

Description	HSN Code	Expected Delivery Date	Supplied Qty	Unit Price	Total Price inclusive all Taxes
LLOYD 1.5 Ton / 4500 kcal/hr Window AC 5 Star	-	01-Aug-2020	22	24580.00 INR	Rs. 540760.00
				CGST Rs. 0.00 SGST Rs. 0.00 IGST Rs. 118291.26 UTGST Rs. 0.00 Cess Rs. 0.00	
Grand Total					Rs. 540760.00



Invoice

Shanti Krupa Sales
 VW-5, Shankheshwar Complex, SURAT, VW-5, Shankheshwar
 Complex, Opposite Raymond Show Room,, Majura Gate,
 Surat, GUJARAT, 395002
 rahul_avi@yahoo.com
 Contact no : 7624090997
 GSTIN: 24AAPHR3757Q1Z7
 MSME Verified : Yes

GEM-5582730

Order No: GEMC-511687784802097
 Order Date: 10-Dec-2019

Bill To:
 Charanjiv Gupta , BUYER-CONSIGNEE
 Sant Longowal Institute of Engineering & Technology,
 Longowal SANGRUR PUNJAB 148106 Department of Higher
 Education Sant Longowal Institute of Engineering and
 Technlogy (SLIET)
 GSTIN: 03aaaa16685r1zz
 Department: Department of Higher Education
 Office Zone:Punjab
 Organisation: Sant Longowal Institute of Engineering and
 Technology (SLIET)
 Ministry: Ministry of Human Resource Development

Shipping To:
 Charanjiv Gupta
 Sant Longowal Institute of Engineering & Technology,
 Longowal SANGRUR
 PUNJAB 148106
 Contact: 01672-253339-

Seller Invoice No	Invoice Date	Dispatch Mode	Dispatch Date
G/126/19-20	21-Dec-2019	Transport	21-Dec-2019

Description	HSN Code	Expected Delivery Date	Supplied Qty	Unit Price	Total Price inclusive all Taxes
VOLTAS 1.5 Ton 5 Star Copper WAC - 185DZA	-	09-Jan-2020	6	28499.00 INR	Rs. 170994.00
				CGST Rs. 0.00	
				SGST Rs. 0.00	
				IGST Rs. 37404.00	
				UTGST Rs. 0.00	
				Cess Rs. 0.00	
Grand Total					Rs. 170994.00

3.6 Installation of 1MW Roof Top Solar Power Plant

Solar energy is produced by the sun's light - photovoltaic energy offers many benefits that make it one of the most promising energy.

- i. Renewable,
- ii. Inexhaustible,
- iii. Non- polluting,
- iv. Avoids global warming,
- v. Reduces use of fossil fuels,
- vi. Reduces energy imports, v
- vii. Contributes to sustainable development. The Ministry of New ad Renewable Energy (MNRE), Govt. of India has been promoting the aim to develop and deploy New and Renewable energy for supplementing the energy requirement of the country.

The Institute signed power purchase agreement (PPA) on 21.08.2020 with M/s Sukhbir Agro Energy Limited, New Delhi (Solar Energy Corporation of India Empaneled bidder for Punjab state under Zone-3) for the installation of 1 MW Rooftop solar power project on RESCO model. The work of installation initiated in the month of December 2020 and completed in the March 2021. The term of project is 25 years and after that period the ownership of this plant will be of Institute as per Agreement. All the installation and repair/maintenance cost are on the part of SAEL as per PPA. Institute is bound to pay Rs.3.33 per KWH to SAEL which is fixed for 25 years. The Solar power plant is made operational w.e.f. 03.05.2021 i.e. 1st joint meter reading taken by Institute and M/s SAEL is locked for billing purposes. There is around Rs. 6 Lacs saving in monthly Electricity bill as per today applicability of tariff of PSPCL.

Table 3.7: Installed Capacity of Solar System (Building Wise)

Projects	Building Name	Capacity
Sant Longowal Institute of Engineering and Technology (SLIET-01)	Mechanical Block	340 KW
	Workshop 2	
Sant Longowal Institute of Engineering and Technology (SLIET-02)	Science Block	340 KW
	Chemical Block	
	Workshop 1	
Sant Longowal Institute of Engineering and Technology (SLIET-03)	Boys Hostel 2	320 KW
	Boys Hostel 4	
	Electronic Block	
Total Capacity		1000 KW

The details of solar power plant energy generated and saving of last three months is as under:

Table 3.8: Energy Generated by Solar Power Plant and Saving of Last Three Months

Sr. No.	Month	Production of Solar Energy in kwh	Rate (Rs.)/Unit	Amount paid to SAEL (Rs.)	Avg unit rate of PSPCL (Rs.)	Cost of energy purchase from PSPCL (Rs.)	Saving if (Rs.)
A	B	C	D	E	F	G	H
						C x F	G-E
1.	May-21	127725.5	3.33	425326	8	1021804	596478
2.	Jun-21	132631.5	3.33	441663		1061052	619389
3.	Jul-21	126777	3.33	422167		1014216	592049
Average		129045		429719			602639

Further, this solar power plant abated 1450 Ton CO₂ / annum. This plant is equivalent to planting of 23809 trees (Annexure A6).

The detail of Energy consumptions after the installation of Solar Power Plant.

Table 3.9: Energy Consumption After the Installation of Solar Power Plant

Period	kvah Unit	Energy Charges (Rs.)	Fixed Charges (Rs.)	Power Factor	Bill Amount (Rs.)	Unit/Rate (Rs.)
18.05.2021-31.05.2021	16980	110879	88923	0.90	235930	7.35
31.05.2021-16.06.2021	17100	113373	124368	0.90	281480	9.17
16.06.2021-19.07.2021	80580	534444	256509	0.90	930354	8.4
19.07.2021-17.08.2021	76770	508786	225417	0.90	863180	8.30
Average	47858	316871	173804	0.90	577736	8.29

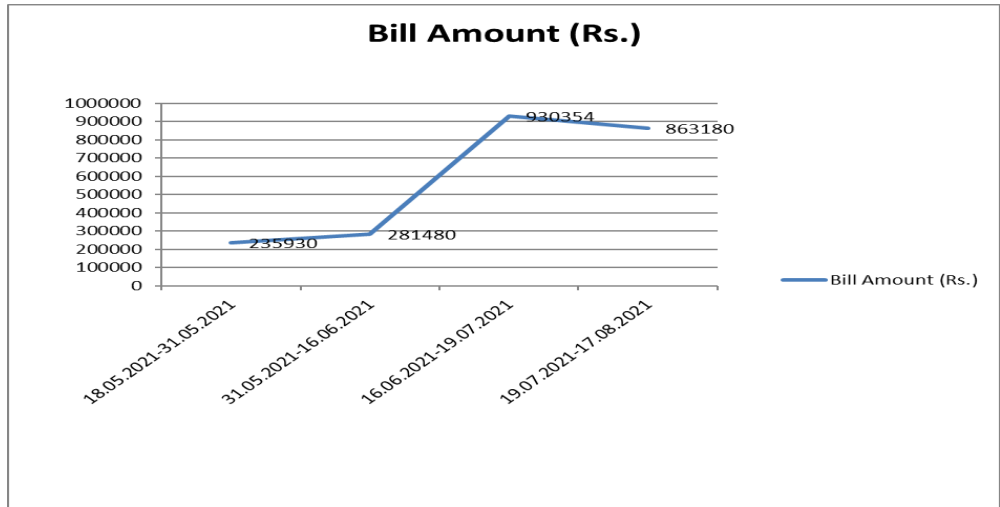


Fig. 3.10: Bill Amount Trend FY 2021 After Installation of Solar System (May-August)

Note: It can be seen from table no. 1 on page no. 7 and table no. 10 on page no. 36 that after installation of PV solar power plant of capacity 1 MW, the average bill reduced by 53% i.e. from Rs. 12,43,211/- to Rs. 5,77,736/-.



Fig. 3.11: Installed Solar Panel on the Roof Top of Buildings (Science and Mechanical Block)

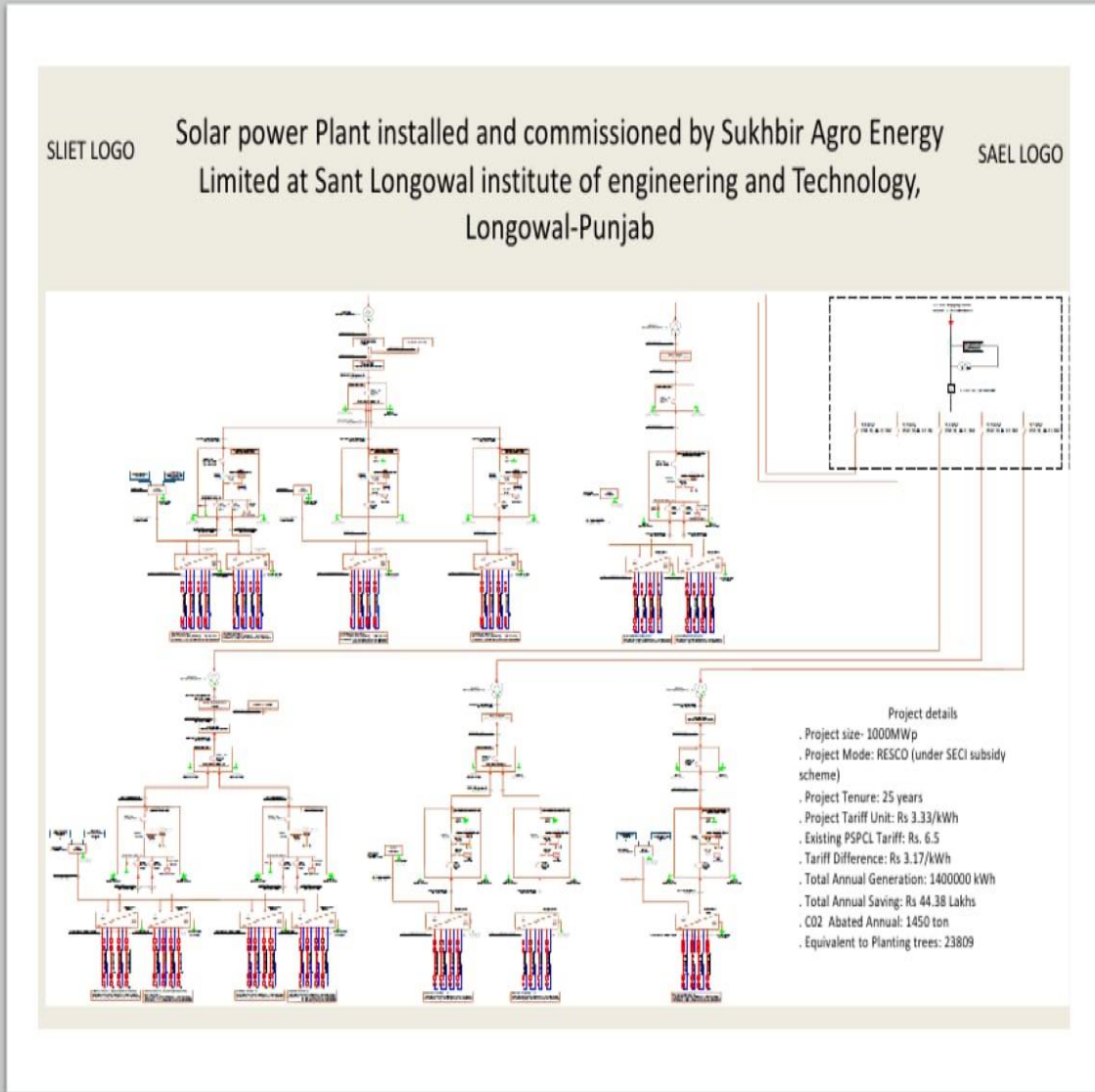


Table 3.10: Energy Efficiency Assessment of DG Sets

Parameter	Unit	Value		Remarks
		ESS-II	ESS-I	
DG set capacity	KVA	500	500	
Start Time		09:05 AM	11:10 AM	
End Time		11:55 AM	12:42 PM	
Running hours	Hrs	02:50	01:02	
Start meter reading	Nos	88.50	20.52	
End meter reading	Nos	91.40	21.54	
kWh generated	kWh	894	307	
Diesel consumed	Ltr.	170	67	
Average power factor		0.85	0.85	
Specific energy consumption	Kwh/ltr.	5.25	4.58	
Running load in KVA	kva	388	375	

During energy efficiency study, it was also observed that during summer season the DG set load goes beyond its rated capacity. This may result in failure of DG operation. Hence, it is suggested to run the DG at the optimum level i.e. 80-85% of its rated capacity. This will ensure the breakdown free operation of DG sets.

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Connected Load (KW)	Reading of DG Set (KWhr)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWhr/Liter)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E)/ I/c EW (Estate) F.I. (E)	Reason
07/08/2020	9:10 Pm	9:35 Pm	25 min	180	70.685744	543.19	29.19	534		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
08/08/2020	9:05 AM	11:20 AM	2hr 15 min	340	71.305176	534	142	392		G. Singh	[Signature]	[Signature]	do
08/08/2020	Diesel Loaded wide Bill no: -06 Dt-22/08/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				326.01 Lt					G. Singh	[Signature]	[Signature]	
04/08/2020	11:05 AM	6:40 Pm	7hr 35 min	280 KW	72.925072	718.01	485.01	233		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
04/08/2020	Diesel Loaded to Shay Bft Tata 407				40 Lt		233	40	193	G. Singh	[Signature]	[Signature]	
04/08/2020	Diesel Loaded wide Bill no: -07 Dt-24/08/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				326.01 Lt (193+326.01)				519.01	G. Singh	[Signature]	[Signature]	
02/09/2020	10:00 Am	10:10 Am	10 min	170	72.933208	519.01	10.01	509		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
07/09/2020	12:00 Am	12:10 Pm	10 min	250	72.949154	509	10	499		G. Singh	[Signature]	[Signature]	do
05/09/2020	2:45 Pm	8:10 Pm	5hr 25 min	220	73.828336	499	320	179		G. Singh	[Signature]	[Signature]	do
10/09/2020	Diesel Loaded wide Bill no: -08 Dt-10/09/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				328.24 (179+328.24)				507.24	G. Singh	[Signature]	[Signature]	
10/09/2020	11:00 Am	2:20 Pm	3hr 20 min	325	74.655360	507.24	206.24	301		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
11/09/2020	Diesel Loaded wide Bill no: -09 Dt-11/09/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				328.24 (301+328.24)				629.24	G. Singh	[Signature]	[Signature]	

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Connected Load (KW)	Reading of DG Set (KWhr)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWhr/Liter)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E)/ I/c EW (Estate) F.I. (E)	Reason
12/09/2020	03:00 Pm	03:37 Pm	37 min	150		629.24	35.24	594		G. Singh	[Signature]	[Signature]	Testing EPU installation
17/09/2020	4:37 Pm	5:20 Pm	43 min	170	74.829600	594	45	549		G. Singh	[Signature]	[Signature]	PSPCL Power Cut
18/09/2020	Diesel Loaded wide Bill no: -10 Dt-18/09/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				332.88 (549+332.88)				881.88	G. Singh	[Signature]	[Signature]	
19/09/2020	9:30 Am	3:30 Pm	6 hrs	178	75.893576	881.88	362.88	519		G. Singh	[Signature]	[Signature]	PSPCL Power Cut
22/09/2020	11:22 Am	12:30 Pm	58 min	248	76.180560	519	60	459		G. Singh	[Signature]	[Signature]	
08/10/2020	11:05 Am	3:08 Pm	4hr 3 min	245	77.046400	459	251	208		G. Singh	[Signature]	[Signature]	
08/10/2020	Diesel Loaded wide Bill no: -11 Dt-08/10/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				339.95 (208+339.95)				547.95	G. Singh	[Signature]	[Signature]	
09/10/2020	Diesel Loaded to Tata 407						547.95	40	507.95	G. Singh	[Signature]	[Signature]	
12/10/2020	10:50 Am	11:45 Am	55 min	220	77.221880	507.95	56.95	451		G. Singh	[Signature]	[Signature]	
15/10/2020	09:05 Am	01:30 Pm	4hr 25 min	225	78.107252	451	273	178		G. Singh	[Signature]	[Signature]	
15/10/2020	Diesel Loaded wide Bill no: -12 Dt-15/10/2020									G. Singh	[Signature]	[Signature]	
	From K.L Fuel Centre				339.95 (178+339.95)				517.95	G. Singh	[Signature]	[Signature]	
15/10/2020	02:30 Pm	06:10 Pm	3hr 40 min	145	78.651992	517.95	223.95	294		G. Singh	[Signature]	[Signature]	
19/10/2020	01:00 Pm	01:45 Pm	45 min	130	78.744332	294	45	249		G. Singh	[Signature]	[Signature]	

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Page No

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Hour Meter Reading of DG Set	Connected Load (KW)	Reading of DG Set (KWh)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWh/Litre)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E) / EEW (Estate) / F.I. (E)	Reason
24/10/2020	Diesel	Loaded	wide Bill no:-	13 Dt-		24/10/2020	249							
	From	KL Fuel Centre	339.95			(249+339.95)			588.95		C/Sind			
24/10/2020	10:00 AM	01:45 PM	3h 45min	26.26	100	79.107024	588.95	225.95	363	60	C/Sind	Aut		PSPCL-Cut
24/10/2020	02:45 PM	06:50 PM	4h 05min	30.31	120	79.590872	363	245	118	60	C/Sind	Aut	28/10/20	do
26/10/2020	Diesel	Loaded	wide Bill no:-	14 Dt-		26/10/2020								
	From	KL Fuel Centre	339.95			(14+339.95)			457.95		C/Sind			
03/11/2020	Diesel	Loaded	to TATA 407				457.95	40	417.95		C/Sind			
13/11/2020	11:30 AM	1:00 PM	1h 30min	32.11	135	79.783840	417.95	91.95	326		C/Sind			Power Cut / PSPCL
18/11/2020	3:35 PM	3:50 PM	15min	32.24	130	79.801488	326	15	311		C/Sind			do
07/12/2020	11:05 AM	12:10 PM	0h 20.5min	33.30	190	79.959904	311	67	244		C/Sind			do
07/12/2020	Diesel	Loaded	wide Bill no:-	27 Dt-		27/12/2020								do
	From	Sita H.P. Pump	Sharon Road Longowal	600 Ltr		(244+600)			844		C/Sind			
30/12/2020	Diesel	Loaded	to Tata 407				244	05	839		C/Sind			
13/01/2021	4:00 PM	4:27 PM	27min	33.57	230	Testing	839	27	812		C/Sind			
26/01/2021	8:00 AM	8:13 AM	13min	34.10	270	Testing	812	13	799		C/Sind			
13/02/2021	5:36 PM	6:36 PM	60min	35.10	170	80.003864	799	61	738		C/Sind			
19/02/2021	10:50 AM	11:17 AM	27min	35.37	203	80.082168	738	27	711		C/Sind			
26/02/2021	7:20 PM	8:08 PM	48min	36.25	200	80.194580	711	48	663		C/Sind			

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Page No

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Hour Meter Reading of DG Set	Connected Load (KW)	Reading of DG Set (KWh)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWh/Litre)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E) / EEW (Estate) / F.I. (E)	Reason
27/02/2021	Diesel	Loaded	to TATA-407				663	40	623		C/Sind			Power Cut / PSPCL
02/03/2021	2:10 PM	3:10 PM	60 min	37.25	167	80.359264	623	61	562		C/Sind			do
04/03/2021	4:35 PM	5:18 PM	43 min	38.08	60	80.392240	562	43	519		C/Sind			do
06/03/2021	1:00 PM	1:27 PM	27 min	38.35	110	Testing	519	27	492		C/Sind			Service of Eng Power From PS
10/03/2021	1:00 PM	1:18 PM	18 min	38.53	220	80.426360	492	18	474		C/Sind			do
18/03/2021	4:17 PM	4:30 PM	13 min	39.06	120	80.440864	474	13	461		C/Sind			do
19/03/2021	11:30 AM	12:20 PM	50 min	39.56	250	80.589392	461	51	410		C/Sind			do
20/03/2021	9:30 AM	11:16 AM	1h 46 min	41.42	200	80.870968	410	107	303		C/Sind			do
22/03/2021	9:45 AM	11:35 AM	1h 50 min	43.32	220	81.180936	303	112	191		C/Sind			HT Line due to
23/03/2021	11:10 AM	12:20 PM	1h 10 min	44.42	250	81.418424	191	72	119		C/Sind			do
31/03/2021	10:44 AM	11:00 AM	16 min	44.58	200	81.446576	119	16	103		C/Sind			do
05/04/21	Diesel	Loaded	wide Bill no:-	104 Dt-		05/04/2021								
	From	M/S Sita H.P. Centre	Sharon Road Longowal	400 Ltr		(103+400)			503		C/Sind			Power From PS
05/04/2021	11:40 AM	12:16 PM	36 min	45.34	190	81.534464	503	37	466		C/Sind			do
06/04/2021	5:01 PM	6:10 PM	1h 09 min	46.43	120	81.698640	466	70	396		C/Sind			do
06/04/2021	8:00 PM	10:56 PM	2h 56 min	49.39	214	82.261280	396	179	217		C/Sind			do
09/04/2021	6:20 PM	6:34 PM	14 min	49.53	110	82.276136	217	15	202		C/Sind			do
10/04/2021	Diesel	Loaded	wide Bill no:-	104 Dt-		10/04/2021								
	From	M/S Sita H.P. Centre	Sharon Road Longowal	600 Ltr		(202+600)			802		C/Sind			

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Page No

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Hour Meter Reading of DG Set	Connected Load (KW)	Reading of DG Set (KWhr)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWhr/Litre)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E)/ Uo EW (Estate) F.I. (E)	Reason
16/04/2021	1:50 PM	4:44 PM	2hr 24min	52.17	195	82.591896	802	146	656		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
29/4/2021	11:15 AM	12:15 PM	60 Min	53.17	170	82.752384	656	60	596		G. Singh	[Signature]	[Signature]	do
29/4/2021	2:47 PM	4:00 PM	1hr 13min	54.26	130	82.918016	596	70	526		G. Singh	[Signature]	[Signature]	do
23/4/2021	8:25 AM	8:55 AM	30min	54.56	145	82.994632	526	30	496		G. Singh	[Signature]	[Signature]	do
21/4/2021	4:00 PM	4:10 PM	10min	55.06	175	83.017448	496	10	486		G. Singh	[Signature]	[Signature]	do
29/4/2021	2:35 PM	3:05 PM	30min	55.36	170	83.039000	486	30	456		G. Singh	[Signature]	[Signature]	do
6/5/2021	7:10 PM	7:35 PM	25min	56.01	150	83.221320	456	25	431		G. Singh	[Signature]	[Signature]	do
15/5/2021	11:35 AM	12:15 PM	40min	56.41	185	83.341496	431	40	391		G. Singh	[Signature]	[Signature]	do
17/5/2021	12:00 PM	1:05 PM	1hr 05min	57.46	120	83.691318	391	62	329		G. Singh	[Signature]	[Signature]	do
20/5/2021	11:25 AM	12:19 PM	54 min	58.40	135	84.017128	329	51	278		G. Singh	[Signature]	[Signature]	do
31/5/2021	8:00 AM	10:45 AM	2hr 45min	61.25	95	84.365920	278	158	120		G. Singh	[Signature]	[Signature]	do
2/6/2021	6:20 PM	6:50 PM	30min	61.55	92	84.533728	120	27	93		G. Singh	[Signature]	[Signature]	do
4/6/2021	Diesel Loaded	8:00 PM	Vide Bill no. 28657 Receipt no. 106404741								G. Singh	[Signature]	[Signature]	
	Contn	8:00 PM	(800 + 93)			893			893		G. Singh	[Signature]	[Signature]	
4/6/2021	10:20 AM	7:35 PM	9hr 15min	71.10	165	86.010632	893	537	356		G. Singh	[Signature]	[Signature]	Power cut from PSPCL
8/6/2021	2:00 PM	4:25 PM	2hr 25min	73.35	172	86.829560	356	140	216		G. Singh	[Signature]	[Signature]	do
10/6/2021	Diesel Loaded	6:00 PM	Vide Bill no. 28781 Receipt no. 10621064785								G. Singh	[Signature]	[Signature]	
	Contn	6:00 PM	(600 + 216)			816			816		G. Singh	[Signature]	[Signature]	
19/6/2021	8:45 AM	9:30 AM	45min	74.20	105	86.910040	816	43	773		G. Singh	[Signature]	[Signature]	Power cut from PSPCL

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-II AT SLIET, LONGOWAL.

Page No.

Date	Starting Time of DG Set	Closing Time of DG Set	Time-Period (Hours:Minutes)	Hour Meter Reading of DG Set	Connected Load (KW)	Reading of DG Set (KWhr)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWhr/Litre)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (E)/ Uo EW (Estate) F.I. (E)	Reason
15-06-2021	3:30 PM	7:15 PM	3hr 45min	78.05	100	87.373680	773	214	559		G. Singh	[Signature]	[Signature]	Power cut by PSPCL
15-06-2021	7:38 PM	8:08 PM	30min	78.35	230	87.402824	559	29	530		G. Singh	[Signature]	[Signature]	do
17-06-2021	3:00 PM	3:50 PM	50min	79.25	260	87.533840	530	50	480		G. Singh	[Signature]	[Signature]	do
21-06-2021	Diesel Loaded	4:00 PM	Vide Bill no. 28788 Receipt no. 10621064785								G. Singh	[Signature]	[Signature]	
	Contn	4:00 PM	(400 + 480)			880			880		G. Singh	[Signature]	[Signature]	Power cut by PSPCL
24/06/2021	11:33 AM	2:03 PM	2hr 30min	81.55	325	88.201360	880	150	730		G. Singh	[Signature]	[Signature]	do
29/06/2021	11:10 AM	11:20 AM	10min	82.05	335	88.402464	730	10	720		G. Singh	[Signature]	[Signature]	do
30/06/2021	5:32 PM	6:10 PM	38min	82.43	230	88.321368	720	38	682		G. Singh	[Signature]	[Signature]	do
11/07/2021	7:40 PM	8:04 PM	24min	83.07	150	88.385472	682	22	660		G. Singh	[Signature]	[Signature]	do
14/07/2021	10:03 AM	10:50 AM	47min	83.54	240	88.574736	660	47	613		G. Singh	[Signature]	[Signature]	do
14/07/2021	12:12 PM	12:24 PM	12min	84.06	160	88.605264	613	13	600		G. Singh	[Signature]	[Signature]	do
14/07/2021	12:59 PM	2:19 PM	1hr 20min	85.26	215	88.941520	600	80	520		G. Singh	[Signature]	[Signature]	do
21/07/2021	Diesel Loaded	4:07 PM	Vide Bill no. 28788 Receipt no. 10621064785								G. Singh	[Signature]	[Signature]	
	Contn	4:07 PM	(407 + 40)			520			520		G. Singh	[Signature]	[Signature]	
28/07/2021	12:36 PM	2:00 PM	1hr 24min	86.50	290	89.323864	520	82	398		G. Singh	[Signature]	[Signature]	Power cut by PSPCL
30/07/2021	9:35 AM	10:27 AM	52min	87.42	240	89.493976	398	50	348		G. Singh	[Signature]	[Signature]	do
30/07/2021	11:30 AM	12:29 PM	59min	88.41	260	89.688808	348	55	293		G. Singh	[Signature]	[Signature]	do
30/07/2021	2:32 PM	2:41 PM	09min	88.50	240	89.720488	293	08	285		G. Singh	[Signature]	[Signature]	do
06/08/2021	9:05 AM	11:55 AM	2hr 50min	91.40	330	90.582960	285	170	115		G. Singh	[Signature]	[Signature]	do
13/08/2021	Diesel Loaded	10:21 AM	Vide Bill no. 28788 Receipt no. 1081305478								G. Singh	[Signature]	[Signature]	



Greaves Cotton Limited

Diesel Engines Unit, Chinchwad, Pune 411 019.

GREAVES POWER GENSET TEST CERTIFICATE

Model: GPWII-500KVA+12V14TA+CG+W/O CPBATCHAR

Genset Sr.No.: 3309121906141

This is to certify that above model with

Engine Sr. No.: 1309121906141

Alternator Sr. No.: SGAG0485

is tested and found satisfactory for its performance and workmanship.

The full load at NTP condition is 500 kVA with power factor 0.8 at 50 Hz.
(As per ISO: 8528)

This product complies with the provisions of Ministry of Environment & Forests, Government of India notification GSR No.371 (E) dated 17.05.2002.

Date: 20.07.2019



[Signature]
Quality Assurance



Greaves Cotton Limited

Diesel Engines Unit, Chinchwad, Pune 411 019.

ENGINE CERTIFICATE

Production Order No : 12014081

Model : 12V14TAG23 444kW@1500RPM, 500kVA

Engine Sr. No. : 1309121906141

This is to certify that the above product has been duly tested at our works to the following specifications and found satisfactory for its performance and workmanship:

- 1. Rated Power
- 2. Rated Speed
- 3. Rating as Per
- 4. Governing
- 5. On 10% Overload at

604/444	HP/KW
1500	RPM
ISO:3046	
CLASS	
1500	RPM

SINCE 1859

This power rating is at air Pressure of 1000 mbar with an Ambient Temperature NOT exceeding 25 Deg C and Relative Humidity, of 30% and with Diesel oil to IS-1460-2005 having net calorific value of 10,030 K Cal/Kg.

Date : 19.07.2019



Atulya
Manager - Quality Assurance

QA 3 30
Rev = 01

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Fig. 3.12: DG Set Installed in Electrical Wing and Estate Office

3.8 Energy Conservation by Bifurcation of Electrical Load in Essential and Non Essential Category.

A decision has been taken in the 8th BWC vide item no. 8.13 held on dated 08.12.2017 (**Annexure- N and O**) regarding bifurcation of Electrical load in essential and non essential category in a phased manner. Accordingly, the electrical load of buildings like ME, Food and Chemical, Science and EIE Block has been bifurcated into essential and non essential category.

Now, as and when there is power failure from PSPCL, the DG sets are made operational to cater the need of essential load only. In this way, consumption of fuel reduced which further lessen the abate of CO₂.



Fig.3.13. AC DB Attached in Mechanical Block for Essential and Non-Essential Load

MINUTES OF 8TH MEETING OF THE BUILDING & WORKS COMMITTEE OF SLIET LONGOWAL HELD ON 08.12.2017 AT 12:00 NOON

Sr. No./ Item No.	Agenda Items	Minutes of Meeting
Item No. 8.11	<p>INSTALLATION OF DB'S & DISMANTLING OF OLD PANELS IN RESIDENTIAL AREA IN A PHASE MANNER.</p> <p>As PSPCL has installed its own Feeder pillar outside of each block in every type of Residential area. So, the old panels installed near the stair case of every block has no use right now. Sometimes, snakes, reptiles etc. are seen moving in these old panels. Same can be cause of any mishappening to the residents. So, it is suggested to replace it with DB's including DP's/TPN's & the old dismantled panels will be taken in credit in the estimate. The approximate cost is Rs. 10 Lacs.</p> <ul style="list-style-type: none"> • SITC of 4 way double door TPN boxes for 124 qtrs. & dismantling of old material : 4 lacs • SITC of 2 way double door DP boxes for 381 qtrs. & dismantling of old material : 6 lacs <p>The committee is requested to consider & approve the same</p>	<p>The proposal was considered and approved.</p>
Item No. 8.12	<p>PROVISION OF 500 KVA DG SET AT ESS-II.</p> <p>The new LT panel has been installed at ESS-II which is having provision of two 500KVA DG set as a main in comer. HIT panels & 500KVA transformer has already been installed through CPWD. Presently there is one 500 KVA DG set which cannot cater the need of demand during peak summer seasons during power failure/power cut from PSPCL. The maximum load demand noted at ESS-II during peak season as on date is 600KW. In this position, this wing forcefully has cut power supply of any department to maintain the supplying power through DG set at its specified limit. Accordingly, a new DG set 500 KVA is proposed to be installed at ESS-II. It will enable to cater the need of essential load of all the departments also the new two buildings i.e. extension of ECE & EIE Block coming eminent. Also some civil work is required i.e. platform & wire mesh around the periphery of this platform. The approximate cost is Rs. 50 Lacs.</p> <p>The cost of DG set, installation etc. : 4200000.00 The cost of cabling, laying, end termination & earthing : 450000.00 The cost of platform & wire mesh around of this platform: 350000.00 The committee is requested to consider & approve the same</p>	<p>The proposal was not considered for the time being and deferred.</p>
Item No. 8.13	<p>ADDITION & ALTERNATION ELECTRICAL WORK REQUIRED IN VARIOUS BUILDINGS KEEPING IN VIEW ESSENTIAL & NON ESSENTIAL ELECTRICAL LOAD.</p> <p>The electrical infrastructure up-gradation, addition & alternation is required to divide the load into two categories i.e. essential & non essential. As since the inception of Institute this concept was not taken into consideration. However, in the recently constructed new buildings like BH-9, BH-10 & extension of mechanical block has this concept has been taken care of. This scheme is useful to cut the power supply of non essential load during power failure/cut from PSPCL & operation of DG set.</p> <p>Hence, during operation of DG sets the power supply can be cater the need of power to all buildings, users officials having essential load. This concept will be implemented in a phased manner block</p>	<p>The proposal was considered and approved.</p>

MINUTES OF 8TH MEETING OF THE BUILDING & WORKS COMMITTEE OF SUET LONGOWAL HELD ON 08.12.2017 AT 12:00 NOON

Sr. No./ Item No.	Agenda Items	Minutes of Meeting
	<p>wise. In 1st phase ME & Science block may be taken. Accordingly, a fund of Rs.10 lacs may be taken in consideration. The cost of cabling, wiring, end termination etc. : 650000.00 The cost of earthing, GI strip etc. : 125000.00 The cost of DB's, MCCB's, MCB's, TPN's etc. : 225000.00 The committee is requested to consider & approve the same</p>	
Item No. 8.14	<p>REPLACEMENT & ADDITION OF AIR CONDITIONERS IN THE GUEST HOUSE, TRANSIT ACCOMMODATION AND FACULTY CLUB.</p> <p>Recently, the renovation work of Guest House has been undertaken by Civil Wing & Completed. During this renovation, the Electrical work has been carried out through the labour of ARM & wiring for the provision of Air Conditioners has been already made. A request has been received in this office from In-charge Guest House for Replacement & Addition of Air Conditioners in Guest House, Transit Accommodation & Faculty Club.</p> <p>Presently, there is no facility available of AC rooms right now in Transit Accommodation & Faculty club. The ACs' available in some of the room of the Guest House is of window type which were installed in the year of 1994-95 & 2001-05. These ACs' are not energy efficient, electromechanical, makes noise during operation, very old & there outer body has been rusted. It is mentioned as per CPWD General Specification for Electrical Works Part-1, Internal 2013, Table-12, Sr. No (07), the expected useful life of window AC is 7 years. Also, there is no Air Conditioning available in the waiting lounge area. However, if any Qty. of dismantled ACs' found in good condition same will be installed in the rooms of Transit Accommodation after laying of its main LT cable. The lighting available in some of room of Guest House is of fluorescent type. It may be replaced with LED fixture for perfect Light, Energy efficient & compliments interiors. Hence, it is proposed to replace the old ACs', provision of LED lighting & addition of Air Conditioner in these premises. The approximate cost is Rs. 17 Lacs.</p> <p>The cost of ACs', wiring, interconnection of indoor/outdoor unit including copper pipe, wiring, nitric insulation & packing etc.: 1280000.00 The cost of foundation, wire mesh cage, painting, installation & etc. : 195000.00 The cost of LED lightings: 225000.00 The committee is requested to consider & approve the same</p>	<p>With reference to Ministry of Finance, Department of Expenditure (E.Coord) Office Memorandum no. F.No. 25(24)/E/Coord/2017 dated 4th August 2017. Vide which Central Government has taken a decision for mandatory installation of LED based lighting & energy efficient equipments (Fans/ACs) in all Government buildings. The committee decided that the proposal for replacement of ACs in Guest House will be submitted to Energy Efficient Services Limited (EESL), Noida, where as the provision of ACs in Faculty Club and Transit Accommodation is approved. The ACS in Transit Accommodation may be provided in phased manner.</p>
Item No. 8.15	<p>SUPPLYING & LAYING OF MAIN LT CABLE TO ME BLOCK.</p> <p>Presently, the main LT cable supplying power to ME Block is of size 3.5C aluminum 120 sqmm is having two joints in the way. The same was laid down in the year 1996 i.e. inception of ME Block. It is also mention here that the route of this cable has been covered by the interlocking tiles. So, same cannot be dig out for repair purposes in future if fault occurs in this cable. It is mentioned as per CPWD General Specification for Electrical Works Part-1, Internal 2013, Table-12, Sr. No C (3), the expected useful life of underground cable is 20 years. Accordingly, it is proposed that a new LT cable of size</p>	<p>The proposal was considered and approved.</p>

CHAPTER - 4

Best Practice Used in the Institute to Save the Electrical Energy

To save the electrical energy and environment, following actions have been taken:

1. **NATURAL LIGHT DAY:** Institute observe NATURAL LIGHT DAY on every Thursday (notice no. SLIET/DIR/1182-84 dated 19.07.2019). Hereby every official is encouraged to use natural light in the office/labs (**Refer Annexure P**).
2. **NO MOTOR VEHICLE DAY:** Institute observes NO MOTOR VEHICLE day on every Friday (notice no. SLIET/DIR/1182-84 dated 19.07.2019). Hereby every official is encouraged to use bicycle/walk on foot. It helps a lot to abate CO₂ emission (**Refer Annexure P**).
3. **USE ACs ON 25°C:** Periodically circulars have been issued by the concerned Institute authorities to use AC's with a temperature set point no. 25-26 Celsius. It saves a lot of electrical energy and reduce the heat emission to the atmosphere by the Air conditioner (**Refer Annexure Q**).
4. **Standard Practice To Use ACs:** During the COVID-19 pandemic, a circular has been issued (ref. no. SLIET/EW/EST/07/20/110-112, dated 27.05.2020) regarding modalities to use Air Conditioning facility available in offices/labs in line with GOI, CPWD O/o CE (CSEQ) (E), New Delhi vide OM No. EC.CSQ (E)/COVID-19/2020/028 dated 30.05.2020 (**Refer Annexure R**).
5. **Plant Trees Against Every Installed AC:** A decision has been taken in the 9th BWC held on dated 20.06.2018 vide agenda item no. 9.16 to plant 5 trees in the Institute against 1.5 Ton AC to compensate the environment (**Refer Annexure S**).
6. **Save Energy Display Boards:** Save energy display boards (for switch off lights/fans/AC's when not in use) are installed in the offices, labs, hostels and other academic buildings to aware the users (**Refer Annexure T**).

CHAPTER - 5

Outcomes of Energy Audits

By adopting the various means of energy conservation, significant energy is saved as highlighted in earlier chapters. The average saving in kWh along with the reduction in CO₂ emission is achieved as shown in the table 5.1.

Table 5.1: Reduction in CO₂ Emission

Sr. No.	From various sources Saving of energy in kwh	Average No. of kwh saving (monthly)	Average No. of kwh saving (yearly)	Factor	Reduction in Co ₂ emission yearly (kg)	Equivalent to no. of plant	Remarks
1.	Replacement of conventional lighting system by LED	24788	297456	0.9	267710	12	
2.	Replacement of Old/non star rated ceiling fans into Energy efficient 5 Star rated ceiling Fans	11904	142848	0.9	128563	6	
3.	Replacement of Air conditioning system to Star rated Air Conditioning as per BEE norms	1728	20736	0.9	18662	1	
4.	Production of Solar Energy in kwh	129045	1548540	0.9	1393686	63	Average production by the Solar plant of 1MW capacity in a month



SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY
LONGOWAL – 148 106, DISTT. SANGRUR (PUNJAB)
(DEEMED TO BE UNIVERSITY)
OFFICE OF THE DIRECTOR

Ref. No. SLIET/DIR/1132-84

Dated: 29-07-2019

CIRCULAR

“NATURAL LIGHT DAY”

To promote Energy Conservation, Institute will observe "Natural Light Day" on every "Thursday".

All the faculty, staff members, and students are requested to promote use of natural light, to the extent possible, by practicing following –

1. Keep lights of Offices/Labs/Class Rooms off, if not required.
2. Keep windows open/ remove curtains to allow natural light.

It is once again requested to please use ACs around 25-26 °C, as an effective measure of energy conservation.

Further, following committee will visit various department/ sections to increase awareness on Energy Conservation, use of ACs as per circular no. SLIET/EW/EST/Misc/19/348-54 Dated 22.05.2019:

1. Mrs. Anshuka Bansal, AsP (EIE)
2. Sh. Charanjiv Gupta, AsP (EIE) & FI (Electrical)
3. Sh. Rakesh Goyal, I/C (Electrical Wing)

Note

This is to remind all that the Institute observes every "Friday" as
"No Motor Vehicle Day"

Cooperation from all is highly solicited.


29/7/19
Director

Copy to:

1. All Deans/ HODs/ Section In-charges- With a request to circulate among all faculty and staff.
2. Registrar
3. Committee members listed above- Please arrange message display in the form of Flex at important locations.

“Proud To Be Part of Team SLIET”



SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY
LONGOWAL -148106, DISTT. SANGRUR, PUNJAB, INDIA
(Established by Govt. of India)
(Deemed to be University)

Ref. No. EW/EST/Misc./21/555-559

Dated: 12/8/2021

CIRCULAR

In the larger interest of the Institute, environment & to save the electricity, all the officials are requested to use the **Air Conditioning facility** available in Rooms/Labs **with a set point of not below 25°C**. Please ensure the use of Air Conditioning judiciously.

Your co-operation in this regard is highly solicited.

“ONE UNIT SAVED IS TWO UNITS GENERATED”


F.I. (Electrical)

Dated 12/8/2021

Ends. No. EW/EST/Misc./21/555-559

Copy for kind information:

1. Director Cell
2. All Deans
3. Registrar
4. All HODs'/Section In-Charges-with a request to circulate among the Faculty & Staff.
5. File copy


F.I. (Electrical)



संत लौंगोवाल अभियांत्रिकी एवं प्रौद्योगिकी संस्थान
(मानव संसाधन विकास मंत्रालय, भारत सरकार के अधीन सम विश्वविद्यालय)
लौंगोवाल, जिला-संगरूर, पंजाब - 148106
Sant Longowal Institute of Engineering & Technology
(Deemed to be University under Ministry of Human Resource Development, Government of India)
Longowal, Distt. Sangrur, Punjab-148106

संदर्भ सं/ Ref.No. SLIET/Est/07/20/110-112

दिनांक / Date: 27/05/2020

CIRCULAR

COVID-19 infection through Air-Flow has become an issue. Summer has already started & monsoon season will begin soon. The thermal discomfort will therefore be maximum now onwards due to season changes & there can be a possibility of its spread through Air Flow. Therefore, maximum caution should be exercised to minimize the chances of spread of Corona virus through Air-Flow in enclosed spaces like residences, offices, meeting places, assembly places etc. Following general guiding principles for use of air-cooling and conditioning devices have been issued by the Government of India, CPWD, office of the Chief Engineering (CSEQ)(E) New Delhi vide OM No. EC.CSQ(E)/COVID-19/2020/028 dated 13.05.2020:-

- The temperature setting for all AC's should be in the range of 25°C-30°C.
 - Relative Humidity should be in the range of 40-70%.
 - Intake of fresh air should be much as possible.
 - Recirculation of Air should be avoided to the extent possible.
 - Window fitted Room cooler pad must be disinfected at regular intervals.
 - Cross ventilation should be adequate.
 - Replacement of Air by using the facility of Exhaust Fans in the nearby area.
 - Air Sanitization should be very frequent by regular cleaning & sanitization of filters of Indoor Unit.
 - Observing social distancing norms, bearing of mask, avoid direct contact of Air flow, frequent surface decontamination are to be followed compulsory.
- A copy of the guidelines issued by the CPWD, New Delhi dated 13.05.2020 is enclosed for information please. All are requested to follow these guidelines in letter and spirit.

Roy 27/05/2020
Faculty In-charge (Electrical)

Copy to :-

- 01 Director for kind information.
- 02 All Deans/HoDs/Section In-charges/Faculty In-charges- with the request to circulate among the Faculty & Staff.
- 03 Faculty In-charge (ACSS) - with the request to upload on the Institute website.

"Proud to be Part of Team SLIET"

लौंगोवाल, जिला संगरूर-148106 (पंजाब), भारत, दूरभाष सं. +91-1672-280057, 253100 (निदेशक), 253115 (कुलसचिव) फ़ैक्स सं. +91-1672-280057
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www.sliet.ac.in



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(Established by Govt. of India)

(Deemed to be University)

(e-mail- estateoffice2010@gmail.com)

Tel/Fax No. 01672-253475

ESTATE OFFICE

Ref. No. SLIET/EST/2018/838-48

Dated: 20-06-2018

REGISTERED POST

1.	Prof. Shailendra Kumar Jain, Director, SLIET, Longowal	Chairman
2.	Joint Secretary & Financial Adviser, Government of India, MHRD, Department of Higher Education, I.F. Division, Shastri Bhawan, New Delhi	External Member
3.	Deputy Secretary, Govt. of India, Ministry of Human Resource, Department of Higher Education, Section -VII, Shastri Bhawan, New Delhi	External Member
4.	Director, Technical Education & Industrial Training, Punjab, Chandigarh	External Member
5.	Superintending Engineer, Jalandhar Central Circle, CPWD, 29, Link Road, Jalandhar	External Member
6.	Superintending Engineer (Electrical), CPWD, Patiala Circle, Patiala	External Member
5.	Prof. Harish Chopra, Dean (Planning & Development), SLIET, Longowal	Member
6.	Er. Sudeep Singh, Estate Officer, SLIET, Longowal	Member
7.	Dr. Avinash Thakur, Faculty Incharge (Civil), SLIET, Longowal	Special Invitee
8.	Dr. Charanjiv Gupta, Faculty Incharge (Electrical), SLIET, Longowal	Special Invitee

SUBJECT: MINUTES OF THE 9TH MEETING OF THE BUILDING & WORKS COMMITTEE,
SLIET-REGARDING.

Dear Sir/Madam,

Please find enclosed herewith a copy of the approved minutes of 9th meeting of the Building & Works Committee, SLIET, Longowal held on 23.05.2018 under the Chairmanship of Dr. Shailendra Jain, Director, SLIET, Longowal for information and further necessary action.

With regards,

Sincerely,



Dr. Harish Chopra,
Registrar & Member Secretary
E-Mail: registrar@sliet.ac.in

Encl.: Approved Minutes (22 pages).

MINUTES OF 11th BUILDING WORKS COMMITTEE MEETING HELD ON 30.08.2019

Item No.11.4	ANNUAL RATE CONTRACTS OF DISMANTLED MATERIALS OF BUILDING & SERVICES AT SLIET, LONGOWAL
	Decision: The committee decided that disposal of dismantled material/ scrap / like expired material be taken up through e-tendering and highest rates quoted be considered. E-tendering may be done every time material is to be disposed off.
Item No.11.5	PROVISION OF PATHWAY ALONG BOTH SIDE OF ROAD FROM COMPUTER BLOCK TO MECHANICAL BLOCK AT SLIET, LONGOWAL
	Decision: Approved
Item No.11.6	SITC OF OUTDOOR (DOUBLE DOOR) LT PANEL ON 250 KVA SUB STATION ECE BLOCK AT SLIET, LONGOWAL
	Decision: Approved
Item No.11.7	SITC OF INDOOR LT PANEL AT ESS-II FOR RATIONALIZATION OF ELECTRICAL LOAD AT SLIET, LONGOWAL
	Decision: Approved
Item No.11.8	SITC OF AUDIO AND VIDEO SYSTEM IN JC BOSS HALL AT SLIET, LONGOWAL
	Decision: Approved
Item No.11.9	REQUIREMENT OF ONE MORE CEILING FAN IN EACH ROOM ALONGWITH PROVISION OF SUFFICIENT TUBE LIGHTS IN BOYS HOSTEL NO.5&6 AT SLIET LONGOWAL
	Decision: Approved
Item No.11.10	SUPPLYING OF SCAFFOLDING SYSTEM OF 15 MTR HEIGHT AT SLIET, LONGOWAL
	Decision: Approved
Item No.11.11	STATUS OF ONGOING WORKS.
	Decision: Approved
Item No.11.12	AY OTHER ITEM WITH PERMISSION OF CHAIRMAN.
Item No.11.12(A)	Policy for the replacement of old ACs in the Institute.
	A large no. of ACs installed in the Institute around 15-20 years ago those are of Electromechanical type, useful expired life, non star rated as per BEE norms, with refrigerant R 22 Gas & beyond economical repair. It is also worth mention here that these ACs may cause of any untoward incident during operation like fire hazards etc. One similar incident of fire in AC has been occurred on 12.08.2019 in Room No. 17 of Guest House as informed by In-charge Guest House. Further, a committee was constituted by the Competent Authority to frame a policy for the replacement of

MINUTES OF 11th BUILDING WORKS COMMITTEE MEETING HELD ON 30.08.2019

	<p>old ACs. The committee met on 10.07.2019 for detailed discussion & given their recommendations. The competent Authority approved the recommendations of committee & same has been circulated in the various departments.</p> <p>Now, Electrical Wing is in the process to replace the old ACs (on the recommendation of committee) of Guest House in a phased manner. In 1st phase, 10 nos. of ACs have been taken for replacement after that all remaining will be taken in 2nd & Final phase. Apart from this, requirement for replacement of old ACs has been received from the Mechanical Department, SET office & other departments. After receiving the requirements from all other departments, same will be processed for procurement & replacement of ACs in consolidated way subject to assessment of functional efficiency of ACs by the committee. Further, it is pertinent to mention here that the procurement of new ACs is being/will be made to keep in mind that the ACs should have star rating, energy efficient, copper coil & eco-friendly refrigerant & further compliance of Govt. directives & regulation in this regard issued from time to time. Keeping in view the urgency of replacement of old ACs the expenditure incurred towards this may be booked U/H OH-35 subject to the availability of funds.</p> <p>The item is hereby placed for information & ratification of the committee, please.</p> <p>Decision: The BWC ratified the policy for the replacement of old ACs and approved the replacement of ACs in phased manner as per availability of funds under OH-35.</p>
Item No.11.12(B)	<p>Construction of one Boys and one Girls Hostel of 250 capacity each at SLIET, Longowal.</p>
	<p>The capacity of Boys Hostel is 2453 but the students accommodated are 2640. In the case of Girls Hostel the capacity is 705 where as student accommodated are 787. This is done by placing four students in three seater rooms. The increase is due to implementation of EWS Scheme and there is possibility of more students in next session i.e. 2020-21. Dean (SW) has requested that one new Boys Hostel and one Girls Hostel with a minimum capacity of 250 students each may be constructed to accommodate the hostellers.</p> <p>Accordingly, preliminary estimate has been worked out for the construction of two (three seater) Hostels. The estimated cost to construct these Hostels is Rs. 3578.64 Lacs. The work will be taken up after sanction of HEFA Loan.</p> <p>Decision: The BWC considered & approved the same. It was desired that provision of GRIHA as applicable to government building may be incorporated in the design & execution of work. Provision for water harvesting and water conservation may also be included in all the new works coming up in the Institute. However, in view of implementation of EWS reservation, MHRD may be requested to fund the construction of Hostels under OH-35. The same has already been included in the proposal submitted to MHRD for EWS implementation.</p>


 02/09/19
 Director & Chairman,
 Building & Works Committee




Report Submitted by:

Members:

(Dr. Nikhil Prakash)

(Dr. Raj Kumar Garg)

(Dr. Indraj Singh)

(Prof. Avinash Thakur)

(Prof. C.S. Riar)

Co-opted Members:

(Er. R.K Goyal)

(Mr. Prabhdeep Singh)

Chairman:

(Dr. Sanjay Marwaha)