



**SCIENT INSTITUTE OF TECHNOLOGY**  
Ibrahimpattanam, R.R Dist 501506  
(NAAC Accredited, Approved by AICTE & Affiliated to JNTUH)

**7.1.3 Quality audits on environment and energy regularly undertaken by the Institution.**

## **Energy Audit Report**



**PowerTech Energy Solutions**

Conserve to Consume

# Energy Audit Report Of

## Scient Institute of Technology, Ibrahimpatnam.



Submitted By  
**Power Tech  
Energy Solutions**

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## **Energy Audit**

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, processor system to reduce the amount of energy input into the system without negatively affecting the output. The audit includes suggestions of alternative means and methods for achieving energy savings to a greater extent.

### **Aims and Objectives of an Energy Audit**

An energy audit is a useful tool for developing and implementing comprehensive energy management plans of an Organization. The aim of an energy audit is to identify the energy efficiency, conservation and savings opportunities at the premises of the audit sites in a systematic manner.

The audit process is carried out as per the following.

- Review of energy saving opportunities and measures implemented in the audit sites.
- Identification of additional various energy conservation measures and saving opportunities.
- Implementation of alternative energy resources for energy saving opportunities and decision making in the field of energy management.
- Providing a technical information on how to build an energy balance as well as guidance to be sought for particular applications.
- Detailed analysis on the calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by the central and State Electricity Board.
- List ways that the use of energy in terms of electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others.
- Analysis of electricity bill amount for the last two to three years, amount paid for LPG cylinders for last one year and amount paid for water consumption for human beings and watering to the plants.
- Use of incandescent (tungsten) bulb and CFL bulbs, fans, air conditioners, cooling apparatus, heaters, computers, photo copiers, inverter, generators and laboratory equipment and instruments installed in the organization (for example-  $60 \text{ watt bulb} \times 4 \text{ hours} \times \text{number of bulbs} = \text{kwh}$ ).
- Alternative energy sources / nonconventional energy sources are employed /installed in the organization (photovoltaic cells for solar energy, windmill, energy efficient stoves, Biogas, etc.).

- Creating awareness among the stakeholders on energy conservation and utilization.

### **About the college:**

SCIENT Institute of Technology, Popularly Known as SCIENT. It is the first Engineering College in Ibrahimpatnam, on the Sagar Road established in 2001 and is one of the most reputed engineering colleges in the state of TELAGANA affiliated to JNTU, Hyderabad.

SCIENT offers 4 Under Graduate Programmers B.Tech. CSE, ECE, EEE and MBA & M.Tech Programs at PG level with a fine blend of young and experienced teaching faculty. In all about 500 students take admission per year. The instructional facilities are spacious, and the laboratories are continuously upgraded with state of the art equipment. There are over 100 highly qualified and dedicated faculties. The college is well- equipped with excellent instructional facilities in all branches as well as other amenities. About 65% of the students get jobs through campus placements in the top MNC's like Cognizant, Infosys, TCS, Wipro, Capgemini, Deloitte, etc., and reputed core companies.

The College has a sophisticated Digital Library and also has an impressive repository of technical reference books, Magazines, National and International Journals catering to the needs of the students and faculty. Students and staff are provided with very good indoor and outdoor sports facilities. A dispensary is provided on the campus for the benefit of students and staff. Every effort is made to ensure that the students are trained in technical skills while inculcating in them a sense of social responsibility, in tune with the vision and mission of the college. All the A-category seats have been filled since the year of inception and the college is one of the most sought after ones for admissions.

### **Vision and mission:**

#### **Vision:**

To impart quality education in building engineering and management professionals striving for a symbiosis of innovative technological excellence, research and human values with global standards to meet skills, knowledge and behavior of industry and societal needs with global exposure

#### **Mission:**

- To achieve excellence by imparting innovative Teaching & Learning and

Research.

- To generate, empower, disseminate, and preserve knowledge and information.
- To render social relevant technical services and inculcating entrepreneurial talents in technological advancements.
- To nurture, inculcate and develop skills, knowledge and attitude to render technical services for industry and societal needs.

## **Energy Policy**

We, at Scient Institute of Technology, are engaged in providing technical & management education are committed to continual improvement in energy efficiency in all areas of our operations.

To achieve this, we shall, in particular,

1. Have in place an Energy Management System.
2. Comply with applicable legal and other requirements related to energy usage.
3. Minimize wastages through efficient use of resources by adopting Reduce, Reuse & Recycle practices.
4. Imbibe best practices and technology.
5. Purchase energy-efficient products and services.
6. Ensure involvement and participation of staff & students by providing training and awareness.
7. Ensure availability of information and of all necessary resources to achieve energy objectives and targets.
8. Evaluate effectiveness of the Energy Management System through regular audits and management reviews.

## **Energy conservation & Renewable Energy**

The efficient use and conservation of energy has been one of the focus areas of the institution, we have also taken steps towards augmenting our energy portfolio using renewable energy.

The college has a dedicated transformer of 160KVA capacity and the contract demand with the state electricity board for 80 KVA. The consumption of the campus is generally within the limits except for few months where the demand exceeds contract demand due to additional load in the laboratory section.

The college has dedicated skilled team for managing the energy requirements of the campus

The campus also has a Manual Power Factor Control (MPFC) system in place to maintain required power factor to avoid penalty charges.

The replacement policy for lighting involves replacement of conventional lighting systems with energy efficient LEDS lights has been taken by the institution and is a continuing practice for the last 5years.

The efficient use of energy has been the endeavor of the institution and thus have a dedicated team of professionals constantly striving to conserve energy through various initiatives.

The campus has a centre of excellence dedicated to electrical vehicles and various initiatives have been taken up in this area.

The campus has an exclusive **Energy Policy** to support energy efficiency at the institutional level which has the following guidelines and principles

- Energy Efficiency road map
- Minimize energy use where ever possible.
- Avoid idle operation of electrical devices and equipment.
- Replacement policy of electrical equipment dictates purchase of energy efficient equipment of higher energy efficiency rating.
- Conduct a yearly internal energy audit of the facility and implement the findings.

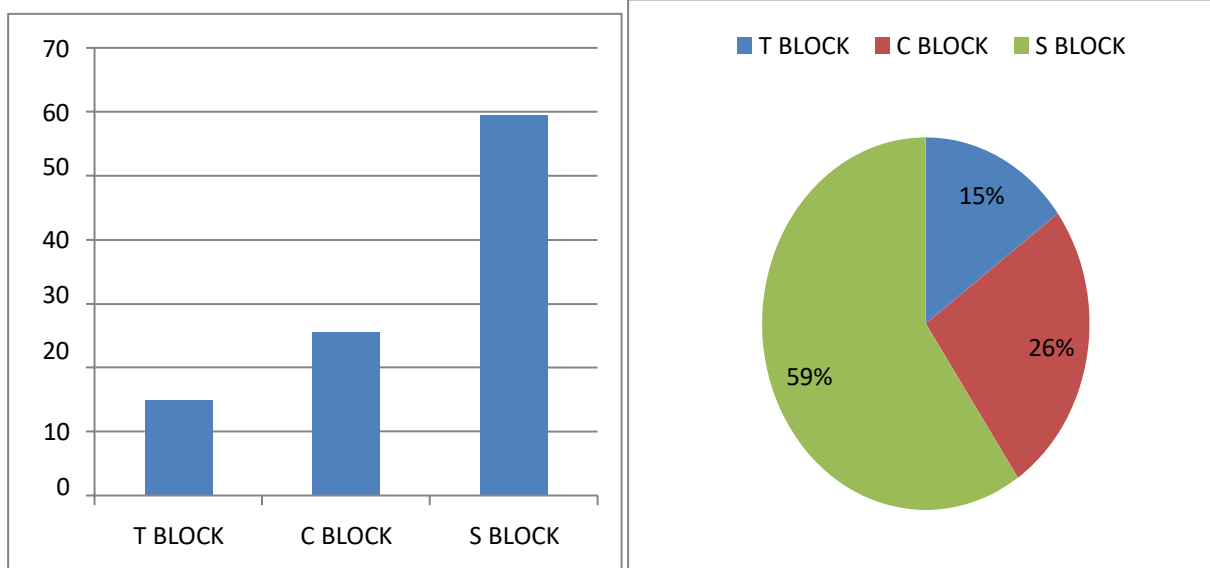
The institution is envisaging installing a biogas based system using canteen waste for use of thermal energy in the and chemistry lab.

### Energy consumption pattern

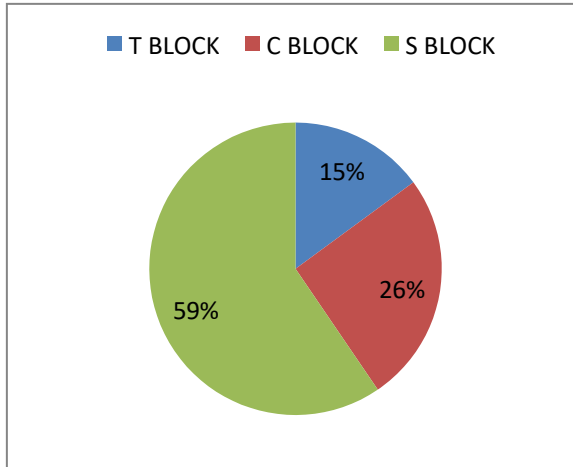
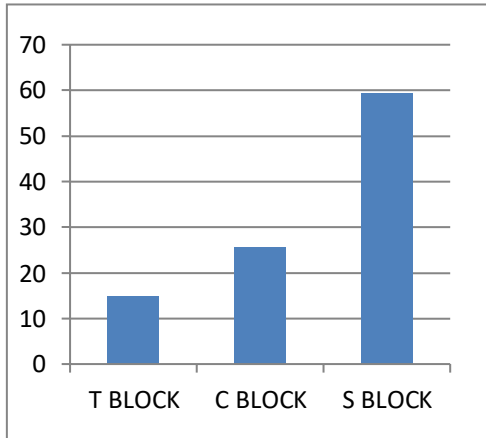
The energy consumption at the campus for the last 5 years is as follows

S.no	Name of the Block	Consumption in KwH 2018-19	Block wise percentage consumption 2017-2018
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1	C - Block	1524.98	14.9
2	T - Block	2600.27	25.5
3	S - Block	6052.00	59.4
4	Total	10176.25	

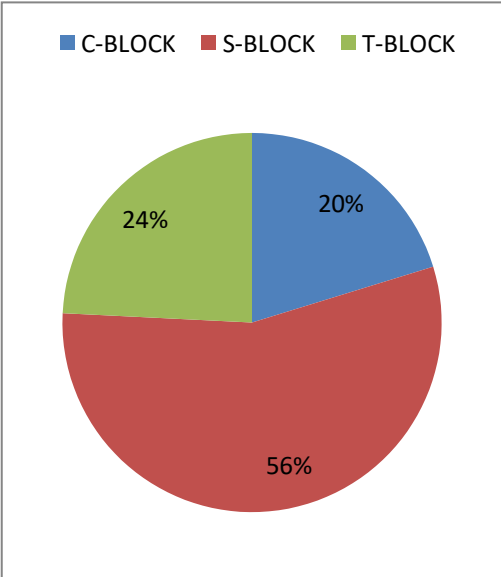
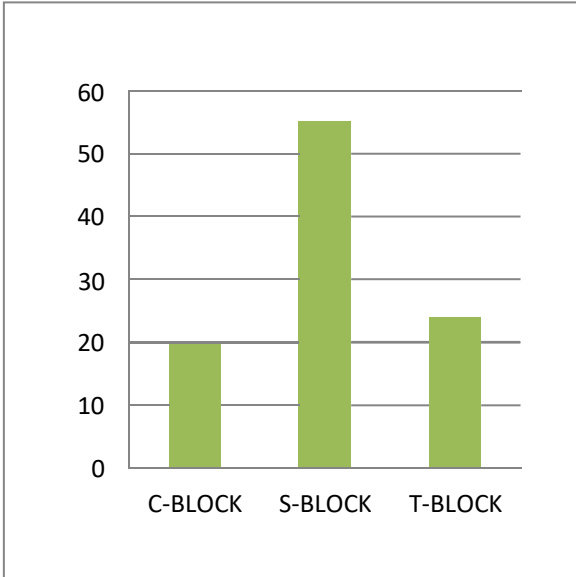


S.no	Name of the Block	Consumption in Kwh 2018-19	Block wise percentage consumption 2018-2019
1	C - Block	1593.98	15.78
2	T - Block	2655.27	25.30
3	S - Block	6051.44	58.14
4	Total	10302.31	

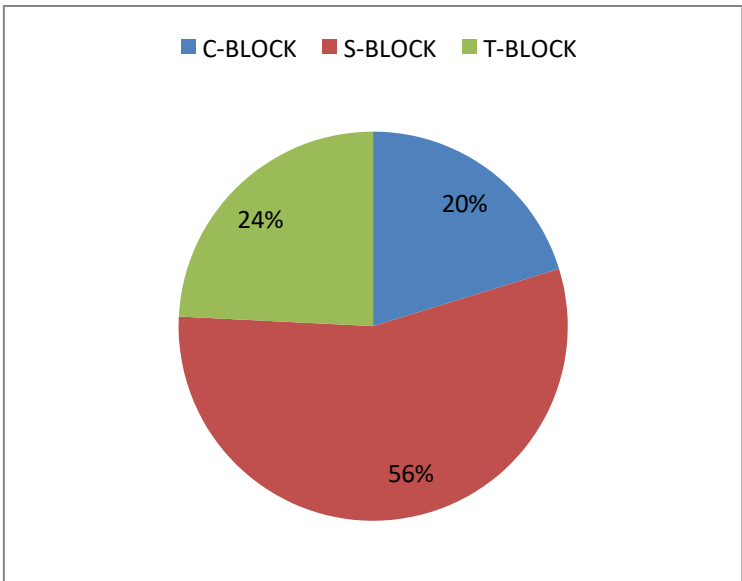
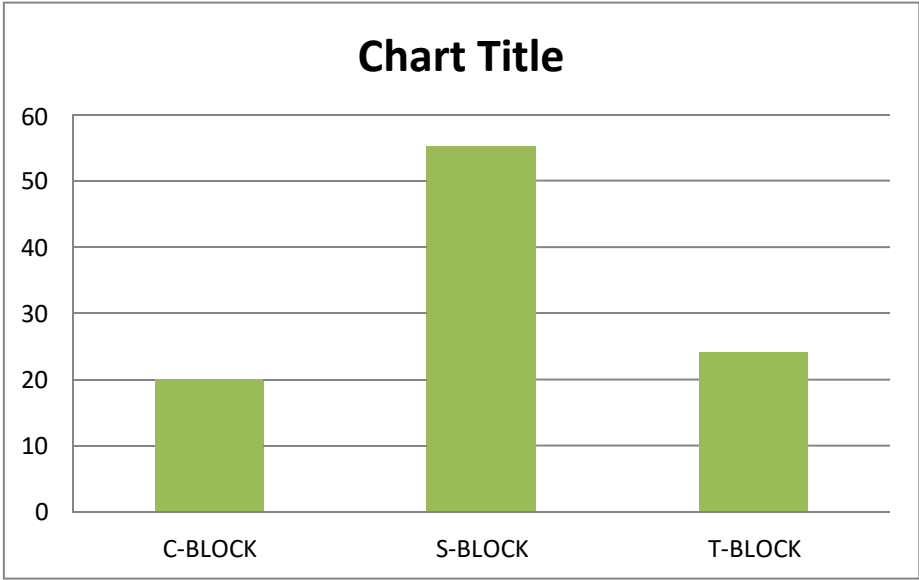




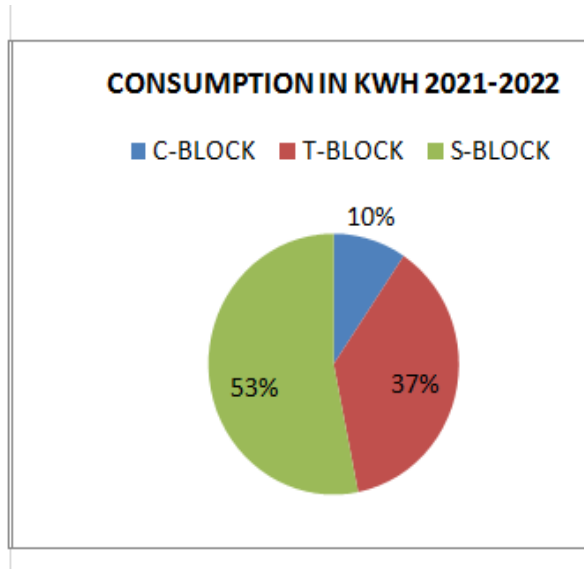
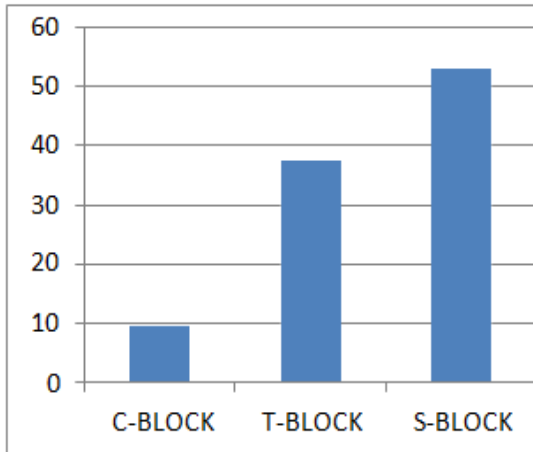
S.no	Name of the Block	Consumption in Kwh 2019-20	Block wise percentage consumption 2019-20
1	C - Block	2622.45	20.11
2	S- Block	7195.71	55.19
3	T - Block	3219.81	24.06
	Total	13036.00	



S.no	Name of the Block	Consumption in KwH 2020-21	Block wise percentage consumption 2020-21
1	C - Block	2622.45	20.11
2	S - Block	7195.71	55.19
3	T - Block	3219.81	24.06
	Total	13036.00	



S.no	Name of the Block	Consumption in KwH 2021-2022	Block wise percentage consumption 2021-22
1	C - Block	1564.29	9.44
2	M - Block	6193.23	37.4
3	N - Block	8795.38	53.1
	Total	16552.9	



**The electrical bills as per consumption is as follows**

<b>S.NO</b>	<b>Bill Month</b>	<b>CMD</b>	<b>RMD</b>	<b>KVAH/UNITS</b>
1	26-Feb-19	40	36.1	5157
2	26-Jan-19	40	26.9	3024
3	26-Dec-18	40	23.3	3201
4	26-Nov-18	40	36.4	5682
5	26-Oct-18	40	7638	4512
6	26-Sep-18	40	42.4	6254
7	26-Aug-18	40	34.2	4512
8	26-Jul-18	40	27	3625
9	26-Jun-18	40	26.9	4204
10	26-May-18	40	38.9	6214
11	26-Apr-18	40	36.8	6548
12	26-Mar-18	40	43.3	6201

<b>S.NO</b>	<b>Bill Month</b>	<b>CMD</b>	<b>RMD</b>	<b>KVAH/UNITS</b>
1	26-Feb-20	40	68.1	5241
2	26-Jan-20	40	49.5	3314
3	26-Dec-19	40	68.9	4125
4	26-Nov-19	40	94.2	7541
5	26-Oct-19	40	100	6245
6	26-Sep-19	40	103.6	7541
7	26-Aug-19	40	92.8	7541
8	26-Jul-19	40	55.7	3750
9	26-Jun-19	40	76.8	4512
10	26-May-19	40	94.7	7858
11	26-Apr-19	40	106.8	7548
12	26-Mar-19	40	88	6854

<b>S.NO</b>	<b>Bill Month</b>	<b>CMD</b>	<b>RMD</b>	<b>KVAH/UNITS</b>
1	26-Feb-21	40	52.7	7548
2	26-Jan-21	40	46.6	6485
3	26-Dec-20	40	36.5	5400
4	26-Nov-20	40	52.5	8245
5	26-Oct-20	40	56.6	7654
6	26-Sep-20	40	62.9	7254
7	26-Aug-20	40	54.7	7541
8	26-Jul-20	40	36.2	5415
9	26-Jun-20	40	30.7	9741
10	26-May-20	40	68.9	7854
11	26-Apr-20	40	67.5	8541
12	26-Mar-20	40	49.3	5624

<b>S.NO</b>	<b>Bill Month</b>	<b>CMD</b>	<b>RMD</b>	<b>KVAH/UNITS</b>
1	26-Feb-22	40	51.54	7502
2	26-Jan-22	40	33.58	4520
3	26-Dec-21	40	36.08	5620
4	26-Nov-21	40	48.8	8400
5	26-Oct-21	40	53.76	5624
6	26-Sep-21	40	54.76	8425
7	26-Aug-21	40	54.92	8231
8	26-Jul-21	40	56.5	7421
9	26-Jun-21	40	51.8	5642
10	26-May-21	40	70.3	8421
11	26-Apr-21	40	74	10352
12	26-Mar-21	40	71.2	9562

The consumption of power increases in the months of February, March and April as there are exams and practical's being conducted in the electrical machines lab.

## **Energy audit and proposals for last 5 years**

Conservation of energy has been the top priority of the management and various initiatives have been taken to utilize energy in an efficient manner.

The approach to energy efficiency at the institution is as follows

### **Measure**

The internal energy audit from the department of electrical engineering has taken exercises in ascertaining the amount of energy utilized in the campus block wise. The rationale behind this task is that, “what we can measure, we can control”. The process of measurement is the first step in energy audit assessment. The campus has a dedicated sincere team which ensures periodic measurement of energy consumption and infer the consumption pattern.

### **Monitor and control**

The team as a next step monitors the consumption pattern and builds approaches to control and minimize wastage of energy. The team has developed checks and balances to control inefficient use of energy.

The air conditioners are operated in 24<sup>0</sup>c temperature setting and thus have an energy efficient approach

### **Adopt new technologies**

A constant search for new technologies to reduce energy consumption has been adopted at the institution level. This translates to not only replacing old equipment with energy efficient ones, but also for all new procurement emphasis is given on highly energy efficient equipment.

This approach has been followed by the institution for conserving energy. The college has conducted internal energy audits and conserved significant energy. The energy audit has become a practice at the institution and activity was started in the year 2015.

The team has been consistently carrying out the energy audit, and notwithstanding that an external agency verifies the measures and also suggest improvement mechanism.

Some of the initiatives for conservation of energy include

- Replacement of conventional tubes lights with energy efficient LEDs
- Replacement of CRT Monitors with LCD monitors
- Replacement of old air conditioners with energy efficient 3 star A/c
- Installation and operation of power factor controller for maintaining powerfactor
- Substitution of conventional energy with renewable energy by installinggrid integrated solar Photo voltaic panels in progress
- Replacement of incoming transformer from present 80KVA t0 120 KVA toavoid penalty for exceeding contract demand



**Conventional Tube light**



**LED Tube light**



3 Star AC



Old AC

This transformer up gradation is in progress to a 120 KVA higher rating energy efficient transformer in conjunction with the Solar PV system for roof top





The generator is used for only emergency conditions and periodic maintenance is carried out. The LSHSD procured for the Generator is blended bio fuel from the nationalized fuel delivery stations of national oil companies



Unnamed Road, Telangana 501506, India

Latitude

17.1743357°

Longitude

78.6590225°

Local 11:40:24 AM

GMT 06:10:24 AM

Altitude 566.4 meters

Wednesday, 22-07-2020

The summary of the energy audit for the last 5 years is as follows

S.no	Name of the project	Energy before the implementation	Energy after implementation
1	Replacement of normal Air conditioners with 3star energy efficient Air conditioners	1.7 KWH/ air conditioner	1.1 KWH/Air conditioner
2	Replacement of old ceiling fans with energy efficient fans	75W/fan	43W/fan
3	Retro fitting of LED tubes in the conventional tube holders as a replacement policy for fused tubes	36W/fixture	14W/fixture
4	Replacement of conventional street lighting with LED	100W/fixture	15W/fixture
5	Replacement of Old CRT monitors with LCD monitors	80W/unit	20W/unit

The above projects have been implemented on replacement policy basis thus there is a consist volume of old equipment being replaced with new energy efficient devices/equipment.

The detailed energy audit is an activity conducted every year at the institution and proposals are verified after due diligence The year wise energy audit reports are maintained and presented to the management for necessary action.

## **Recommendations and suggestions for improving the energy efficiency and energy conservation in the Organization:**

The energy audit included suggestions for energy cost reduction, preventive maintenance and quality control activities, all of which are critical for utility operation in the audit sites.

- Procurement of equipment with energy efficiency (4-5 star rated equipment) during replacement may be considered.
- Sub meters in all the buildings for energy monitoring is recommended so that energy load required and energy consumption in each building may be noted.
- Optimal water usage and temperature settings may be used which are coming under automatic process towards energy savings.
- Continuous monitoring and analysis of energy consumption by dedicated team may be planned within the campus.
- Promoting ECON awareness and practice among the stakeholders may be conducted periodical through Association, Clubs, Forums and Chapters.
- Turn off electrical equipment when not in use
- Maintain appliances and replace old appliances in all laboratories.
- Use computers and electronic equipment in power saving mode.
- Installation of Biogas plant for hostel kitchen as well canteen.
- Automatic switches with occupancy sensors in common areas
- Monthly use of electricity in the College is very high which may be reduce to a greater extent by means of undertaking a periodical energy audit.
- There are fans of older generation and non-energy efficient which can be phase out by replacing with new energy efficient fans.
- Regular monitoring of equipment in all laboratories and immediate rectification of any problems.
- Value added / Non-formal / Certificate / Diploma course on 'Energy and Environment Management Audits' may be conducted for the benefit of students and research scholars to become a certified Lead Auditor

## **Conclusion**

The college has done a commendable job in activities pertaining to energy efficiency water conservation, waste management and other green parameters .this report has been prepared based on the data submitted and initiatives taken by the college during the activities.

## **Acknowledgement**

Power tech Energy Solutions extends its warm thanks to SCIENT Institute of Technology for the opportunity and support rendered during the course of the Energy Audit.

We appreciate the interest, enthusiasm and commitment of the management towards pursuing energy conservation activities within the facility.

Power tech Energy Solutions would also like to specially thank the SCIENT Institute of Technology team for the relentless support and time dedicated towards this study.

We also extend our special thanks to all the personnel from various departments who have helped us in the course of this audit.



# **SCIENT INSTITUTE OF TECHNOLOGY**

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Certification by the auditing agency

**PRINCIPAL**

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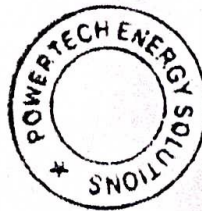


**PowerTech Energy Solutions**  
Conserve to Consume

## ENERGY & GREEN AUDIT COMPLETION CERTIFICATE

This is to certify that following utility has carried out Energy & Green Audit as per guidelines laid down in The Energy Conservation Act, 2001 in the month of November 2021

<b>Name of the Installation</b>	Scient Institute of Technology, Ibrahimpattam. R.R. Dist- 501506.
<b>Details of Facilities Audited</b>	Main college building including laboratories, libraries, etc.
<b>Date of Energy and Green Audit</b>	08 November 2021
<b>Name of Certified Energy Auditor</b>	Mr. Swapnil Gaikwad
<b>Certification No.</b>	EA 20121
<b>Validity of the Certificate</b>	30 December 2022



Signature of Auditor

(Swapnil Gaikwad)

**PRINCIPAL**  
Scient Institute of Technology  
Ibrahimpattam, R. R. Dt. -501 506