



國立勤益科技大學
NCUT
NATIONAL CHIN-YI UNIVERSITY OF TECHNOLOGY

University : National Chin-Yi University of Technology
Country : Taiwan
Web Address : www.ncut.edu.tw



[SDGs 7] Affordable and Clean Energy 可負擔能源

[7.2.4] Does your university as a body have an energy efficiency plan in place to reduce overall energy consumption?

Faced with the growing trend of **net-zero carbon emissions** and rising electricity costs, **National Chin-Yi University of Technology (NCUT)** achieved **ISO 50001 certification** in 2021. This certification reflects the university's commitment to implementing an **Energy Management System (EMS)** as a foundation for sustainable operations. The **ISO 50001 standard** offers a structured approach for optimizing energy use, reducing electricity consumption, and lowering carbon emissions. It supports schools, enterprises, and government agencies in realizing energy conservation goals while ensuring stable operations.

The Role of Energy in School Operations

Energy consumption, particularly electricity, is one of the primary contributors to carbon emissions in organizations, categorized as **Scope 2 emissions** in carbon inventories. For many entities, including educational institutions like NCUT, electricity use is central to carbon footprints. As the pressure to achieve net-zero carbon emissions mounts and electricity prices continue to rise, developing robust energy policies becomes essential. Improving **energy efficiency**, reducing electricity consumption, and curbing carbon emissions are critical steps toward sustainable, stable operations and net-zero targets.

Global Perspectives on Energy Efficiency

The **International Energy Agency (IEA)** estimates that improving energy efficiency can reduce global carbon emissions by approximately **37%**. Similarly, the **American Council for an Energy Efficient Economy (ACEEE)** advocates for energy efficiency as a cost-effective, practical way to reduce carbon emissions. They suggest that organizations should prioritize energy efficiency initiatives to meet their **Environmental, Social, and Governance (ESG)** goals in the short term.

In Taiwan, the **2050 Net-Zero Emission Transformation Strategy Plan** encourages industries to adopt energy management systems in line with the ISO 50001 standard, helping businesses enhance their energy efficiency and reduce their carbon footprint.

Implementing ISO 50001 for Sustainable Energy Use

The **ISO 50001 Energy Management System (EnMS)** offers a framework for more efficient energy use by leveraging **Energy Performance Indicators (EnPI)** and **Energy Baselines (EnB)**. These tools help organizations track and improve energy performance based on established energy policies. The



system follows the **Plan-Do-Check-Act (PDCA)** cycle to drive continuous improvement in energy efficiency and carbon reduction.

By integrating digital tools, NCUT aims to enhance energy efficiency across its operations, lower operating costs, and significantly reduce **greenhouse gas emissions**. This strategic approach helps the university and other institutions align with global sustainability efforts while maintaining operational stability.

Campus-Wide Energy Monitoring System: NCUT is advancing its commitment to energy efficiency by planning and implementing a campus-wide energy monitoring system, with the contract officially awarded this year. The system is scheduled for completion by December. Once operational, it will provide real-time electricity consumption data, enabling direct energy-saving management and control. This system will play a crucial role in strengthening the university's energy-saving mechanisms and optimizing resource usage.

Energy-Saving Promotion: To promote energy conservation and carbon reduction, NCUT has taken visible and impactful measures:

- Large-scale energy-saving and carbon-reduction banners have been hung on the outer walls of key buildings like Guoxiu Building and Ching-yong Hall. These banners serve as constant reminders for teachers, students, and visitors to integrate energy-saving practices into their daily lives.
- LED marquees across the campus continuously display the ten major energy-saving and carbon-reducing measures, ensuring that the message reaches the campus community day and night.
- Energy-saving reminders, such as guide stickers, are placed near light switches in every building, encouraging mindful energy usage.

Automated Energy-Saving Measures: In public areas, all water dispensers have been programmed with automatic on/off switches. These dispensers are set to power off at 11:00 p.m. and automatically power on at 6:00 a.m. the following day. This automated schedule effectively reduces energy consumption, contributing to the university's overall energy-saving initiatives.

登錄證書

此證書授予

國立勤益科技大學

臺中市太平區坪林里中山路二段57號

其領域如下

圖書資訊館、國秀樓與青永館之教學、研究、行政管理相關活動

之能源管理系統符合以下標準

ISO 50001:2018

驗證稽核已通過並予以登錄

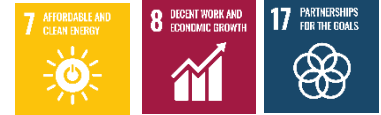
登錄號碼： 21ENA31387
登錄日期： 2021 年 09 月 03 日
發證日期： 2021 年 09 月 03 日
有效日期： 2024 年 09 月 02 日
驗證週期起始日： 2021 年 09 月 03 日
核 准：



環球國際驗證股份有限公司
UNIVERSAL CERTIFICATION SERVICE CO., LTD.

Management System
Certification
MS008

1. 本證書所有權歸環球國際驗證股份有限公司，自北市松山區南京東路4段21號4樓之1。
2. 證書登錄資料可於本公司網站www.ucs-cert.com.tw查詢。
3. 本證書之有效性維護，每年需接受例行性之稽核，若無法配合例行性巡查活動，則註銷證書有效性登錄。



NCUT actively builds a renewable energy system, and uses solar power systems to reduce peak power consumption and achieve the purpose of saving electricity.

NCUT's Commitment to Renewable Energy

National Chin-Yi University of Technology (NCUT) is leading the charge toward a sustainable future by actively investing in renewable energy systems, particularly solar power. These initiatives are not only aimed at reducing electricity consumption but also at harnessing the abundant energy of the sun to create a more sustainable and eco-conscious campus environment.

Solar Power for Peak Power Reduction

One of NCUT's flagship projects is the implementation of solar power systems across its campus. These systems are strategically designed to **reduce peak power consumption**, which is not only cost-effective but also environmentally responsible. By generating electricity from the sun during peak demand periods, NCUT is able to alleviate stress on the grid and reduce its reliance on conventional power sources.

Benefits of Solar Power at NCUT

1. **Sustainable Energy Source:** Solar power is a clean and renewable energy source that produces electricity with minimal environmental impact. NCUT's commitment to solar energy aligns with its dedication to sustainability.
2. **Cost Savings:** Solar power systems generate electricity at a lower cost over time, reducing the university's energy bills and providing long-term financial benefits.
3. **Emission Reduction:** Solar power significantly reduces greenhouse gas emissions associated with conventional electricity generation, contributing to a cleaner environment.
4. **Educational Opportunities:** NCUT's investment in solar power also serves as an educational tool, allowing students to learn about renewable energy technologies and their role in combating climate change.

National Chin-Yi University of Technology's proactive approach to renewable energy, particularly solar power, reflects its commitment to environmental responsibility and sustainability. By harnessing the power of the sun, NCUT not only reduces electricity costs but also sets an example for its community and the broader society. The university's investment in renewable energy aligns with its mission to create a greener and more sustainable campus for the benefit of current and future generations.



The solar power generation system has been installed on the rooftop of the Engineering Building with the purpose of storing and supplying electric energy to the building during periods of peak power demand.



The thermal power generation system has been constructed on the uppermost floor of the Engineering Building. This innovative system harnesses the sun's ultraviolet rays to irradiate an electric heating system, effectively converting thermal energy into electricity.



A solar power generation system with a capacity of 332.64 kilowatts has been installed in the Machine Tool building. This system enables real-time monitoring of power generation data through online platforms.



The Chin-Yi student dormitory is equipped with a solar power generation system boasting a capacity of 90.72 kilowatts. This installation allows for the convenient retrieval of real-time power generation data via the Internet.



國立勤益科技大學
NCUT





NCUT is actively committed to establishing a robust renewable energy infrastructure, prominently employing solar power systems to effectively mitigate peak power consumption and facilitate electricity conservation. The university has undertaken several key initiatives in this direction:

1. The Engineering Building hosts a solar power generation system on its highest floor, wherein electric energy is efficiently stored and subsequently distributed to the building during periods of peak power demand.
2. Similarly, the engineering hall boasts a thermal power generation system on its uppermost floor. This innovative setup harnesses the sun's ultraviolet rays to irradiate an electric heating system, seamlessly transforming thermal energy into electricity.
3. The machine tool building has been outfitted with a formidable 332.64 thousand-watt solar power generation system. This installation provides the advantage of real-time power generation monitoring accessible via the Internet.
4. The Chin-Yi student dormitory is equipped with a capable 90.72-kilowatt solar power system, further enhanced by the provision of real-time power generation data accessible through online platforms.

Through these initiatives, NCUT demonstrates its dedication to sustainable practices and the integration of modern technologies for efficient energy utilization.

Building	Device capacity (kWp)	Date	Power generation/Month (kWh)	Cumulative total power generation (kWh)
Chin-Yi student dormitory	90.72	2022-08	11,248	64,440
Chin-Yi student dormitory	90.72	2022-09	11,258	75,698
Chin-Yi student dormitory	90.72	2022-10	10,623	86,321
Chin-Yi student dormitory	90.72	2022-11	8,370	94,691
Chin-Yi student dormitory	90.72	2022-12	7,573	102,264
Chin-Yi student dormitory	90.72	2023-01	9,476	111,740
Chin-Yi student dormitory	90.72	2023-02	10,020	121,760
Chin-Yi student dormitory	90.72	2023-03	10,798	132,558
Chin-Yi student dormitory	90.72	2023-04	10,522	143,080
Chin-Yi student dormitory	90.72	2023-05	13,253	156,333
Chin-Yi student dormitory	90.72	2023-06	9,561	165,894
Chin-Yi student dormitory	90.72	2023-07	11,962	177,856
Chin-Yi student dormitory	90.72	2023-08	10,376	188,232
Chin-Yi student dormitory	90.72	2023-09	10,854	199,086
Chin-Yi student dormitory	90.72	2023-10	9,918	209,004
Chin-Yi student dormitory	90.72	2023-11	8,532	217,536
Chin-Yi student dormitory	90.72	2023-12	9,021	226,557
Chin-Yi student dormitory	90.72	2024-01	8,540	235,097
Chin-Yi student dormitory	90.72	2024-02	7,942	243,039
Chin-Yi student dormitory	90.72	2024-03	10,945	253,984
Chin-Yi student dormitory	90.72	2024-04	11,903	265,887
Chin-Yi student dormitory	90.72	2024-05	9,222	275,109
Chin-Yi student dormitory	90.72	2024-06	10,565	285,674
Machine Tool building	332.64	2023-06	42,675	118,311
Machine Tool building	332.64	2023-07	44,053	162,364
Machine Tool building	332.64	2023-08	39,467	201,831
Machine Tool building	332.64	2023-09	40,130	241,961
Machine Tool building	332.64	2023-10	37,910	279,871
Machine Tool building	332.64	2023-11	30,903	310,774
Machine Tool building	332.64	2023-12	28,108	338,882
Machine Tool building	332.64	2024-01	34,807	373,689
Machine Tool building	332.64	2024-02	36,885	410,574
Machine Tool building	332.64	2024-03	39,123	449,697
Machine Tool building	332.64	2024-04	37,984	487,681
Machine Tool building	332.64	2024-05	43,915	531,596
Machine Tool building	332.64	2024-06	32,294	563,890
Machine Tool building	332.64	2024-07	41,966	605,856
power generation yearly			762,702	

Additional evidencelink: <https://esh.ncut.edu.tw/var/file/7/1007/img/223598267.mp4>

[大同公司|太陽能即時監控系統 \(tatungsolarweb.azurewebsites.net\)](https://esh.ncut.edu.tw/var/file/7/1007/img/551194127.mp4)

<https://esh.ncut.edu.tw/var/file/7/1007/img/551194127.mp4>