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

[SDGs 7] Affordable and Clean Energy

[7.2.2] Does your university as a body have plans to upgrade existing buildings to higher energy efficiency?

NCUT's Policy and Plans to Upgrade Existing Buildings for Higher Energy Efficiency

NCUT has a comprehensive policy to upgrade existing buildings to higher energy efficiency, guided by the ISO 50001 Energy Management System and Taiwan's EEWH Green Building Label.

Between 2011 and 2024, NCUT systematically renovated major facilities—including the Mechanical Building, Management Building, Library, Engineering College, Research Hall, dormitories, and the Cultural and Leisure Hall—covering **176,172 m²**. Key upgrades include:

- **LED lighting (100% coverage)**
- **High-efficiency air conditioning (98.8%)**
- **Energy-saving drinking water machines (100%)**
- **Smart monitoring systems** for electricity, water, and indoor air quality
- **Solar PV and solar-thermal systems** on rooftops, with generation data publicly available

NCUT's energy policy, endorsed by the President, emphasizes **environmental protection, energy conservation, and low-carbon development**, earning recognition as a **National Green University Model School**.

Contribution to SDGs

- **SDG 7 – Affordable and Clean Energy:** Improving building energy performance and renewable integration.
- **SDG 9 – Industry, Innovation, and Infrastructure:** Smart building upgrades and innovative energy systems.
- **SDG 11 – Sustainable Cities and Communities:** Creating an eco-friendly and sustainable campus environment.
- **SDG 13 – Climate Action:** Reducing emissions and enhancing climate resilience.

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
1	The Building of Machine Tool , NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X	X	X	X	X		X	14,055.53
2	Management building, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X			X	X	X	X			X	21,522.82
3	Activity Center, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X			X	X	X	X			X	18,879.98
4	Dormitory I, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X		X	X			X	18,985.32
5	College of Engineering Building, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X			X	X	X	X			X	30,939.19
6	The Library, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X	X	X	X			X	19,490.53
7	Newly Renovated Faculty Research Building, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X			X		X	X			X	1,048.43
8	Yanghao Dormitory, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X		X	X			X	18,031.66
9	Luming Terrace, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X	X	X	X			X	2,790,99
10	Innovation R&D Building	Taichung, Taiwan	X		X	X	X	X	X	X	X			X		X	X			X	5,097.97
11	Cultural and Leisure Center	Taichung, Taiwan	X		X	X	X	X	X	X	X			X	X	X	X			X	2365.45
12	Guoxiu Building, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X	X		X	X	X	X			X	18871.3
13	Industrial Engineering and Management Building, NCUT	Taichung, Taiwan	X		X	X	X	X	X	X	X			X	X	X	X			X	3995.31
	Total																				176,172.49

NCUT has comprehensively upgraded old buildings to Smart Buildings

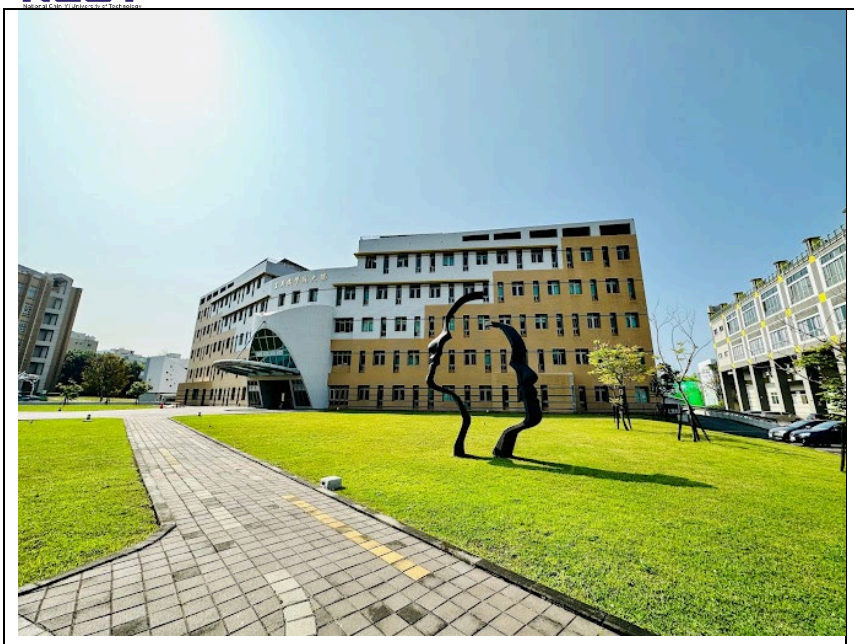
Field		Requirement		Description
B	Automation	B1	BMS	Presence of Building Management System (BMS)/Building Information Modelling (BIM)/Building Automation System (BAS)/Facility Management System (FMS) **(recommended requirement)**
		B2	APP	Interactive support for users via APP or online service
S	Safety	S1	Intruder Alarm System	Intruder alarm system (recommended: interfaced with BMS)
		S2	Fire-fighting	Fire-fighting system (recommended: interfaced with BMS)
		S3	Video surveillance	Video surveillance system (recommended: interfaced with BMS)
		S4	Anti-flooding	Anti-flooding system (recommended: interfaced with BMS)
E	Energy	E1	Monitoring	Automatic acquisition and logging system of energy consumption (recommended: interfaced with BMS)
		E2	Management	Automatic management system for energy supplies and production (recommended: interfaced with BMS)
A	Water	A1	Monitoring	Automatic acquisition and logging system of water consumption (recommended: interfaced with BMS)
		A2	Recovery	Rainwater recovery system for covering the flushing and irrigation
I	Indoor environment	I1	Thermal comfort	Monitoring (recommended: interfaced with BMS) of environmental parameters related to thermo-hygrometric comfort (i.e. air temperature, relative humidity, air velocity, etc.)
		I2	Air quality	Monitoring (recommended: interfaced with BMS)of pollutants (i.e. VOC, PM, CO_2 ...)
		I3	Real-time	Programming and management in real time according to the occupancy profile of the premises (recommended: interfaced with BMS)
		I4	Passive system	Passive cooling and/or exploitation/limitation systems for free supplies
L	Lighting	L1	LEDs	High-efficiency luminaires (LEDs)
		L2	Sensors	Automatic lighting control (recommended: presence/illuminance sensors interfaced with BMS)
		L3	Shielding	Shielding adjustment and solar control
		L4	Natural light	Passive systems for natural light exploitation

Smart building implementation

$$\frac{\boldsymbol{total\ smart\ building\ area}}{\boldsymbol{total\ building\ area}} \times 100\%$$

***Total Building Area: 14,055.53m²**

$$\frac{176,172.49\ m^2}{184,610.96\ m^2} \times 100\% = 95.43\%$$



The Building of Machine Tool, NCUT

Machinery Building

NCUT Dormitory

Building of Machine Tool, NCUT

College of Engineering Building

College of Management Building

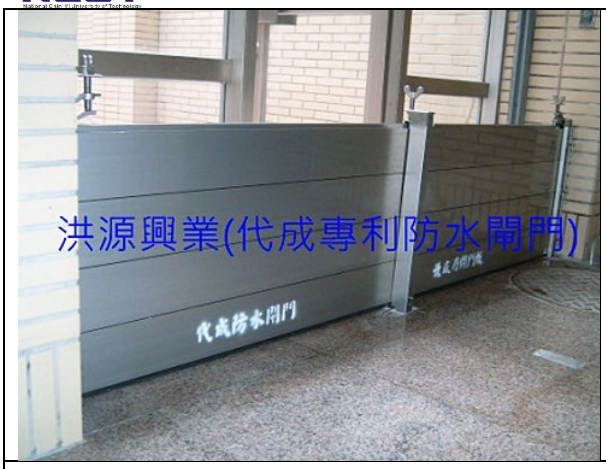
The Library

Newly Renovated Faculty Research Building

Yanghao Dormitory

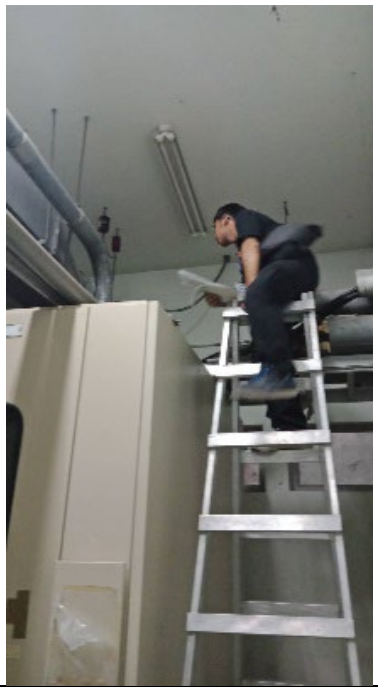
Cultural and Leisure Center

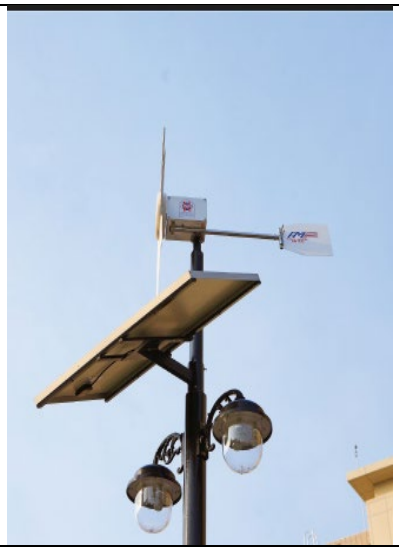
Innovation R&D Building

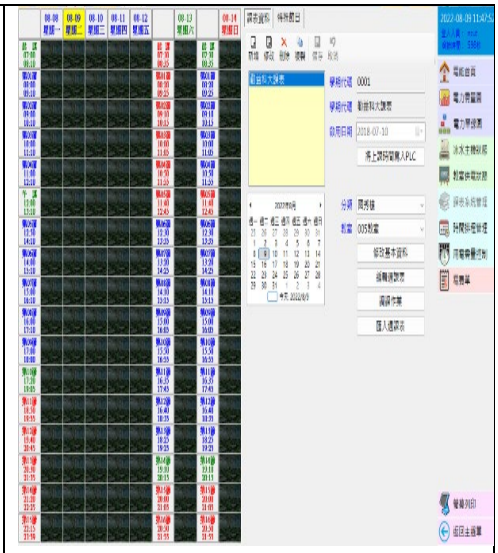


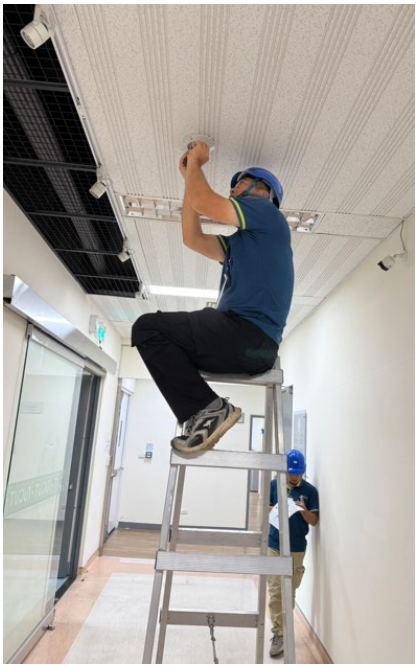
Prevent flood gates

Energy Efficient Appliances Usage









NCUT's Energy-Efficient Lighting Upgrades for Sustainable Savings

NCUT is deeply committed to energy conservation and sustainability. As part of its ongoing efforts, the university has implemented a series of energy-efficient lighting improvement projects across its campus buildings.

These projects involve the installation of LED lamps in various locations, including indoor areas, outdoor spaces, walkways, electronic bulletin boards, and emergency lighting systems. The use of LED technology not only provides better illumination but also significantly reduces energy consumption, aligning with NCUT’s dedication to sustainable practices and environmental responsibility. This initiative reflects the university's broader goal of fostering a green campus while achieving long-term energy savings.

<table>
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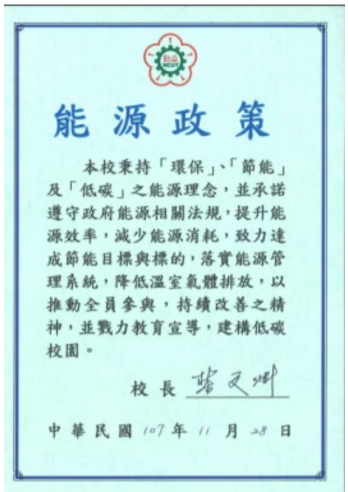
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Wind-solar complementary lamps</td><td>Replace air conditioner</td><td>Energy saving water dispenser</td></tr>
<tr><td colspan="2">  </td><td> 
能 源 政 策
本校秉持「環保」、「節能」及「低碳」之能源理念，並承諾遵守政府能源相關法規，提升能源效率，減少能源消耗，致力達成節能目標與標的，落實能源管理系統，降低溫室氣體排放，以推動全員參與，持續改善之精神，並戮力教育宣導，建構低碳校園。
校 長
中 華 民 國 107 年 11 月 28 日</td></tr>
</table>

臺中市 > 太平區 > 國立勤益科技大學(工具機大樓) 案場概況 Solar Power Site Information

2024-09-25 11:28

國立勤益科技大學(工具機大樓)

案場資訊

地址：
臺中市太平區中山路二段57號

建置日期：
2020-03-09

維運公司：
大同

太陽能系統規格

並聯電壓：
3相4線220/380V

架設結構：
棚架型/斜屋頂型/平屋頂地面型支撐架

模組規格：
同昱 GTEC-315G6S6A

變流器相關資訊

變流器型號：
盈正
ES52000HC/ES25600HC/ES12000

變流器數量：
2/6/2

發電概況

今日發電度數	裝置容量總計	總即時發電功率	累積總發電度數
557 kWh	332.64 kWp	209.25 kW	1935.171 MWh
模組溫度	日照強度	累積減碳量	累積減破已種植樹量
56.5 ℃	928 W/m²	1031.446 噸	137526 棵

At the forefront of our sustainable initiatives, solar power generation systems and thermal power generation systems have been thoughtfully installed on the highest floor of key campus buildings including the machine tool building, student dormitory, and engineering building. These forward-looking installations harness renewable energy sources to contribute to our institution's energy portfolio while embodying our dedication to environmentally conscious practices. Through these measures, we take strides towards a greener and more energy-resilient future.

NCUT Achieves ISO 50001 Certification: A Milestone in Environmental and Energy Management

In 2011, National Chin-Yi University of Technology (NCUT) attained the prestigious ISO 50001 certification, marking a significant milestone in our commitment to environmental and energy management. This certification highlights our institution's dedication to integrating effective environmental stewardship with robust energy management practices. Achieving this standard not only reinforces our commitment to sustainability but also positions NCUT as a leader in aligning our operations with internationally recognized benchmarks for efficient resource utilization.


Energy Efficient Appliances

NCUT's Commitment to Energy Efficiency and Sustainability

The university's unwavering dedication to promoting energy-efficient electrical equipment is clearly evident across its initiatives. Central to these efforts is President Dr. Chen Wen-yuan's endorsement of the "Energy Policy," which is grounded in the principles of "environmental protection," "energy conservation," and "low carbon." By adhering closely to government energy regulations and efficiency standards, NCUT is steadfast in its mission to reduce energy consumption and achieve energy-saving goals.

A comprehensive energy management system has been implemented to support this mission, with a focus on reducing greenhouse gas emissions. A key aspect of this initiative is fostering a culture of active participation among all university employees. This collective effort is essential to NCUT's vision of cultivating and promoting the concept of low-carbon campuses.

Numerous energy-saving enhancements have been introduced, reflecting the university's proactive approach to sustainability. These improvements include:

1. **Illumination:** Energy-efficient LED lamps have been installed across indoor spaces, outdoor areas, walkways, electronic bulletin boards, and emergency lighting throughout the campus.
2. **Air Conditioning:** The University has upgraded its air-conditioning system, replacing outdated units with energy-efficient models set to maintain a temperature of 26°C.
3. **Safety Lighting:** Fire evacuation direction indicator lights have been replaced with energy-saving LED alternatives.
4. **Water Dispensers:** Existing water dispensers have been replaced with models that are certified for environmental protection and energy efficiency, with energy-saving features that deactivate the units during late-night hours.
5. **Renewable Energy:** Solar power and thermal power generation systems have been installed on the rooftops of key buildings, such as the engineering building, Chin-Yi student dormitory, and the machine tool building. Real-time power generation data is accessible through the university's website.

6. **ISO 50001 Certification:** A significant milestone for NCUT is the attainment of ISO 50001 certification, which verifies the institution's energy management system.

These initiatives collectively underscore NCUT's commitment to fostering a sustainable, energy-efficient campus, contributing significantly to a greener future.

Appliance	Total Number	Total number energy Efficient appliances	Percentage
LED Lamps	23,506	22,031	97.91%
air-conditioners	1,820	1,798	98.79%
water dispensers	152	152	100%
		Average Percentage	**98.9%**