



UI GreenMetric Questionnaire

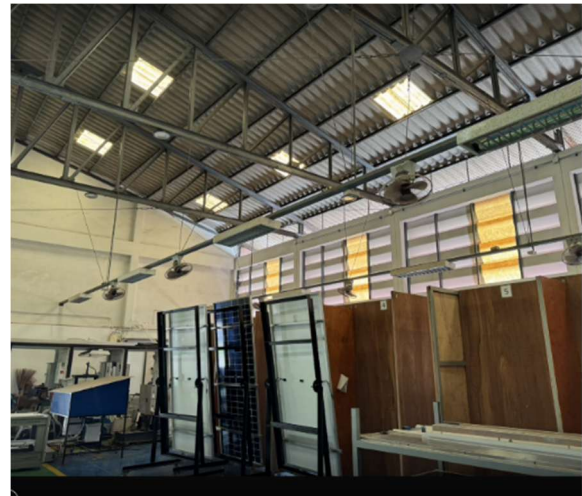
University : SONGKHLA RAJABHAT UNIVERSITY
Country : Thailand
Web Address : www.skru.ac.th

[2] Energy and Climate Change (EC)

[2.13] Number of innovative program(s) in energy and climate change (EC.9)

Automated Building Lighting and Fan Innovation System by Faculty of Industrial Technology Students





Description:

An intelligent energy-saving innovation designed to automatically control lighting and fans within buildings. Developed by students from the Faculty of Industrial Technology, this system optimizes power consumption and paves the way toward sustainable smart buildings.

Solar-Powered Automated Football Pitch Irrigation System, Developed by Faculty of Industrial Technology Students in Collaboration with Relevant Personnel



Description:

This innovative project showcases the development of a self-sustaining, solar-powered automated irrigation system for football pitches, representing a practical collaboration between Faculty of Industrial Technology students and relevant stakeholders. Designed to solve sports field water management challenges, the system utilizes automated controls to optimize watering schedules and volume, reducing staff workload, eliminating electricity costs, and serving as a green technology model for institutional sustainability.

Student Project on Sustainable Agricultural Innovation**Description:**

This student project features the development of an innovative Floating Solar Cell System, offering a cutting-edge approach to energy and water management for sustainable agriculture. Designed for agricultural reservoirs, the system overcomes land space limitations by utilizing water

surfaces. The solar panels on top generate clean, renewable energy to power agricultural equipment, while the water beneath naturally cools the panels to enhance solar efficiency and reduces water evaporation. This project represents a successful integration of energy engineering tailored for modern sustainable agriculture.

Solar-Powered Automated Plant Watering System, Developed by Faculty of Industrial Technology Students



**Description:**

Developed by students from the Faculty of Industrial Technology, this project showcases a solar-powered automated plant watering system that integrates automation technology with renewable energy. The system delivers precise and timely irrigation without relying on the main electrical grid, effectively reducing maintenance labor, eliminating electricity costs, and minimizing environmental impact. It serves as a practical green technology prototype that aligns with sustainable development goals.

Description:

Songkhla Rajabhat University is deeply committed to integrating academic expertise into the research and development of energy and climate innovations. Through the collaborative efforts of our faculty and students, we invent, develop, and implement renewable energy technologies across our campus to maximize resource efficiency and deliver tangible, eco-friendly outcomes. Key initiatives include the following 4 core projects:

1: Automated Building Lighting and Fan Innovation System

- **Concept & Highlights:** A smart building solution designed to optimize indoor energy efficiency. The system autonomously manages building lighting and ventilation controls based on real-time occupancy, significantly reducing unnecessary electricity consumption.
- *Developed by:* Faculty of Industrial Technology Students

2: Solar-Powered Automated Football Pitch Irrigation System

- **Concept & Highlights:** An infrastructure upgrade for campus sports facilities that integrates automated irrigation with clean solar energy. This system ensures precise field maintenance to keep the football pitch in optimal condition, while reducing staff workload and utility costs.
- *Developed by:* Faculty of Industrial Technology Students in Collaboration with Relevant Personnel

3: Student Project on Sustainable Agricultural Innovation (Floating Solar System)

- **Concept & Highlights:** A breakthrough in "Floating Agri-Solar" technology aimed at fostering sustainable agriculture. By utilizing agricultural water surfaces for clean energy generation, the system bypasses land space constraints, minimizes water evaporation, and improves reservoir water quality.
- *Developed by:* Student Research Team

4: Solar-Powered Automated Plant Watering System

- **Concept & Highlights:** A self-sustaining, eco-friendly green space management solution. Powered 100% by solar cells, it drives automated water pumps and tailored irrigation schedules to optimize campus-wide water and energy efficiency.
- *Developed by:* Faculty of Industrial Technology Students

The successful implementation of these 4 innovation projects yields substantial, multi-dimensional benefits for Songkhla Rajabhat University, categorized into four core pillars:

1. Financial & Energy Efficiency

- **Measurable Cost Reduction:** The automated lighting and fan systems directly tackle energy waste under Scope 2 emissions—the university's largest emission source at 98.9%—leading to a noticeable decrease in utility bills.
- **Zero-Cost Clean Energy:** By utilizing 100% solar power for the football pitch, floating platforms, and campus-wide plant irrigation, the university establishes self-sustaining operations with zero long-term grid electricity costs for these facilities.



2. Environmental & Resource Sustainability

- **Optimized Water Management:** Smart automated irrigation prevents water waste by delivering precise amounts based on necessity. Concurrently, the floating solar system preserves the university's water supply by effectively reducing reservoir water evaporation and controlling water quality.
- **Advancing Net Zero Goals:** Every initiative actively drives down the university's total carbon footprint **4,382.68 tCO₂/year** and per capita emission rate **0.33 tCO₂/year** reinforcing our position as a leading sustainable Green University.

3. Operational Excellence

- **Workforce Optimization & Reduced Human Error:** Shifting to automation minimizes operational oversights (such as un-turned-off appliances or irregular watering schedules). This significantly reduces the workload on campus maintenance staff, allowing for better human resource allocation toward high-value tasks.
- **Infrastructure and Landscape Enhancement:** Continuous, automated care ensures that the football pitch and campus green spaces remain in pristine, professional, and functional condition for students and personnel year-round.

4. Academic & Student Empowerment

- **The Campus as a Living Lab:** This initiative successfully transforms the campus into a practical learning ecosystem where Faculty of Industrial Technology students apply classroom theory to solve real-world engineering challenges.
- **Fostering Cross-Functional Collaboration:** The joint development model builds a strong collaborative network among students, faculty, and administrative staff, creating a foundation for future academic publications, research grants, and national innovation awards.