



ENERGY EFFICIENCY CONSULTING FOR NON-RESIDENTIAL BUILDINGS

2. ACTIVITY 02 | Energy efficiency assessment & consulting for non-residential buildings



Energy Efficiency Assessment & Consulting for pilot projects

04

Selected Buildings



Name of building	Le Van Luong Office Building	Vinaconex Tower	Horison Tower	Thanh Tam School
Building information	<ul style="list-style-type: none">• Location: Hanoi• Type of building: Administrative and office building	<ul style="list-style-type: none">• Location: Hanoi• Type of building: Administrative and office buildings	<ul style="list-style-type: none">• Location: Hanoi• Type of building: Administrative and office buildings	<ul style="list-style-type: none">• Location: Danang• Type of buildings: School



HIGHLIGHT RESULTS

Buildings have not fully utilized and have not fully understood how to properly and effectively operate machinery and equipment systems in the buildings.

Building owners' awareness of the benefits and potential of energy efficient operations is still limited.

Convincing the project to implement the necessary solutions should be presented in a comprehensive plan, which includes cost reduction and attracting customer interest in energy savings.



SITE VISIT & EE STATUS EVALUATION

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SITE VISIT & EE STATUS EVALUATION

OBJECTIVE

Evaluation of Energy usage status

Evaluation of the state of Energy Management

Identify Energy Savings opportunities

METHOD

Evaluation based on information about:

160+ Key identification and findings of the current status of the buildings

11 Building systems are evaluated




Design and
Equipment
Installation



Operation equipment



Maintenance



Energy Management

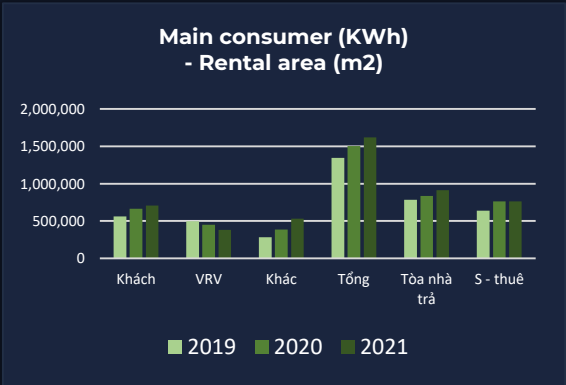
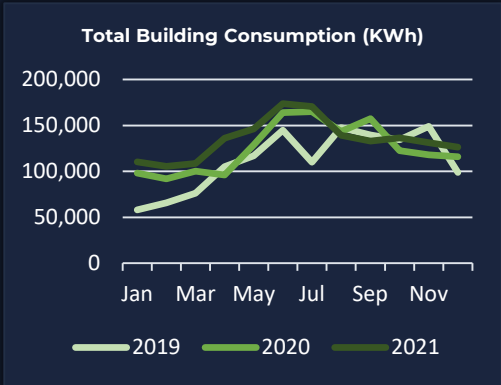
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SITE VISIT & EE STATUS EVALUATION

DETAILED ACTIVITIES

- Collect construction information and data
- Evaluate the current status of energy conservation through:

Analyze energy consumption status



Analyze the current status and performance of each building system



RESULT: WALK-THROUGH AUDIT REPORTS

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SITE VISIT & EE STATUS EVALUATION

ROLES & IMPACTS

BUILDINGS

- Conducting a comprehensive review and evaluating the current performance status of the systems and equipment, as well as the maintenance condition of the construction project.
- Identifying the root causes of operational difficulties and providing directions for improvement based on sustainable energy solutions.
- Recognizing the technical and economic potential of sustainable energy solutions to serve the development needs of the enterprise.

PROJECT TEAM

- Understanding the consumption and energy usage needs of existing projects in the area.
- Providing specific guidance for developing effective energy plans for each project.



HIGHLIGHT RESULTS

MAIN CHALLENGES IN BUILDING OPERATION

In building design, **energy simulation is not commonly performed** for buildings, resulting in poorly designed building envelopes and suboptimal selection of equipment.

During the acceptance phase, **the lack of clear regulations on air distribution** resulted in uneven temperature distribution between different areas, leading to reduced thermal comfort in the building. This situation increased electricity consumption and equipment investment costs for the investor.

During the building operation phase, **inflexible operating mechanisms** can pose difficulties in energy management. Some typical issues include:

- Neglecting or underutilizing essential control system features.
- Overprovisioning fresh air supply, leading to excessive cooling load due to high humidity and temperature.
- Energy waste from equipment and socket systems.
- Inefficient heat recovery due to improper design, lack of appropriate controls, or non-utilization.

Equipment operating instructions for the technical department are very sketchy, operating instructions to save energy are not available in 100% of places.



SOLUTION CONSULTATION & ACTION PLAN

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SOLUTION CONSULTATION & ACTION PLAN

OBJECTIVE:

Comprehensive & detailed planning for the implementation of Energy Saving Solutions, aiming to optimize Energy Efficiency & Reduce operating costs of buildings.

METHOD

Solution consultation based on:

04
ACTION PLANS

150+
SOLUTIONS

25% Total energy saving per year
~ 475.300 Total kWh saved per year
~ 987 millions VND Total cost savings per year

29 No-cost solutions
123 Investment costs are required



Change, improve and upgrade equipment



Operational changes and improvements



Changes and improvements Maintenance



Building an Energy Management System

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SOLUTION CONSULTATION & ACTION PLAN

Developing a list of solutions.

Solutions with no cost

- ✓ Building the process and implementing "Flexible scheduling of equipment operation for energy management."
- ✓ Building the process and implementing "Flexible indoor temperature settings for energy management."
- ✓ Establishing a Monitoring and Verification System for regular

Required investment solutions but bring significant results

- ✓ Replacing the existing equipment system.
- ✓ Installing additional supporting devices (controllers, inverters, variable frequency drives).
- ✓ The payback period is typically less than 1 year on average.

Energy Efficiency solutions with multiple benefits

- ✓ Building a simple energy management system.
- ✓ Coordinating with customers.
- ✓ Providing training and workshops to enhance capacity and raise awareness.
- ✓ Guiding the assessment for green building certification.

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SOLUTION CONSULTATION & ACTION PLAN

Conducting action plans

Develop **Project Energy** Action Plan

Develop a **comprehensive Energy** Action Plan

Develop Energy goals for **the next 1 year period**

Coordinate with the Investor to select the solutions to be implemented first and the roadmap for implementing the remaining solutions.

Outstanding solutions are prioritized for implementation

HVAC system: flexible temperature setting adjustment, flexible running time setting, condenser cover, flexible chiller setting

Lighting system: change to 10W reflector lamp, change to LED light

Construction cover: apply sunscreen film, install curtains

Energy management: upgrade BMS system

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SOLUTION CONSULTATION & ACTION PLAN

HORISON TOWER

Elevating the value of Green Office
Optimize costs – Enhance comfort

Energy reduction objective

5% entire building **10%** HVAC

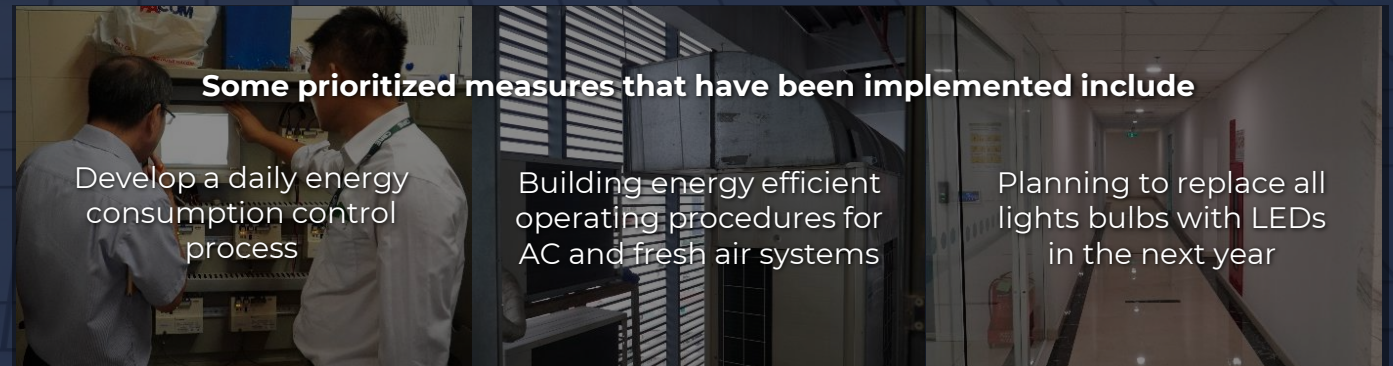
In coordination with EEB2023, the Building presented the Investor an Action Plan, including:

36 solutions
(11 no-cost solutions)

Ms. Do Thi Tuyet Le, Head of Horison Building Management Board



“With a long-term vision towards the goal of a Green building, Horison Building Management Board has currently been implementing the solutions that EEN-Vietnam has offered. We will pursue this project to the end to achieve the best results.”



Some prioritized measures that have been implemented include

Develop a daily energy consumption control process

Building energy efficient operating procedures for AC and fresh air systems

Planning to replace all lights bulbs with LEDs in the next year

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LE VAN LUONG OFFICE BUILDING

Green Building integrating ESG principles
Sustainable objectives and social responsibility

Mr. Nguyen Minh Son, Head of Building Management Board



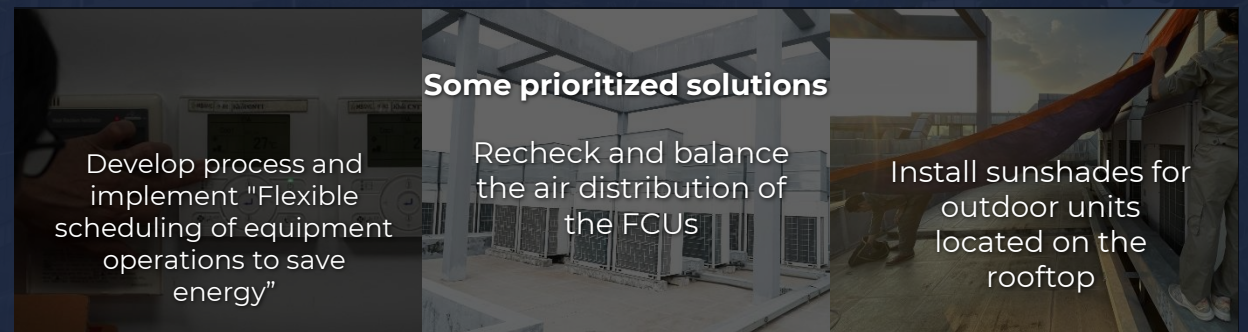
"Our building has been diligently partnering with EEN-Vietnam and has successfully completed 2/3 of the journey, yielding significant results. We will continue to collaborate with EEN-Vietnam to strive for Green Building certification and go even further to become a leading example of Energy Efficiency."

Energy reduction objective

5% entire building **10%** HVAC

In coordination with EEB2023, the Building presented the Investor an Action Plan, including:

54 solutions
(8 no-cost solutions)



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SOLUTION CONSULTATION & ACTION PLAN

VINACONEX BUILDING

Energy efficiency

A comprehensive picture for efficient building operation

Mr. Nguyen Van Tien, Head of Building Management Board



"The Building Management Board desires that with the expertise of the project, the facility will have a more comprehensive overview of energy management, including identifying any deficiencies and determining the necessary actions for resolution. It also aims to assess the adequacy of the current operations. Based on this, there will be directions on what can be immediately addressed, and any matters requiring the attention of the investor will be presented and reported accordingly."

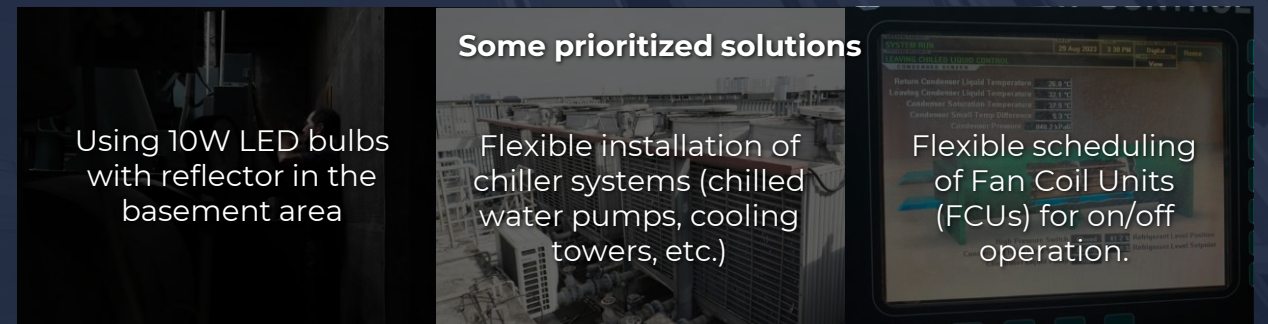
Energy reduction objective

5% entire building

In coordination with EEB2023, the Building presented the Investor an Action Plan, including:

40 solutions

(01 no-cost solutions, 12 low cost solutions)



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SOLUTION CONSULTATION & ACTION PLAN

THANH TAM PRIVATE SPECIALISED SCHOOL

Safe - Comfortable - Environmentally friendly

Energy reduction objective

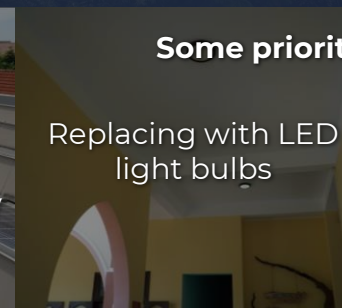
10% entire building blocks

In coordination with EEB2023, the Building presented the Investor an Action Plan, including:

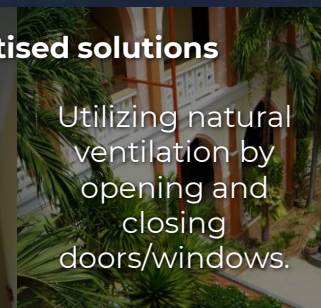
22 solutions
(9 no-cost solutions)



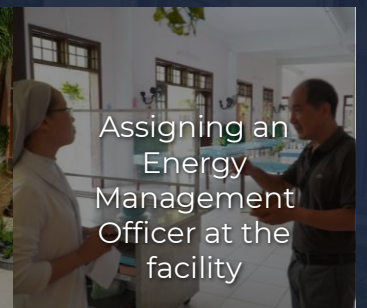
Restoring the operation of 2 Renewable Energy Systems



Replacing with LED light bulbs



Utilizing natural ventilation by opening and closing doors/windows.



Assigning an Energy Management Officer at the facility

KEY FINDINGS

● Energy efficiency is closely linked to the economic, environmental, and social benefits of a business

Energy efficiency brings significant economic benefits to businesses, including reduced energy costs and operational expenses. By implementing energy-efficient measures, businesses can lower their electricity bills and increase profitability. Moreover, energy management practices contribute to a more sustainable environment by reducing greenhouse gas emissions, conserving natural resources, and promoting corporate social responsibility.

● There is significant potential for no-cost solutions in both existing and new buildings

These solutions include implementing flexible monitoring and operation systems to track energy consumption, adopting efficient cooling and ventilation technologies. By leveraging these solutions, buildings can optimize energy usage, improve comfort for occupants, and reduce environmental impact without requiring significant upfront investment costs.

● It is necessary to implement and execute the approved action plans

To fully harness the potential of energy-saving measures, effective implementation of approved action plans is crucial. This requires the commitment of businesses to allocate resources, train staff, and establish mechanisms to ensure progress monitoring and accountability. Close collaboration with external partners such as technical solution providers and technology product suppliers is also necessary to optimize the effectiveness of energy efficiency solutions.

● Developing an energy management process and continuously improving the process

Building a comprehensive process that involves assessment, planning, and implementation is crucial. This process should include a detailed evaluation of energy consumption, identification of areas for improvement, and development of appropriate strategies. It is important to continuously improve and implement this process over time to achieve long-term energy efficiency goals.