



innovation day

SOLUCIONS DE TALENT

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GRUPOADTEL

Enhancing Energy Efficiency for Adtel Group

-----BIOCLIMATIC SKIN, RECYCLING, ENERGY MONITORING SYSTEMS, SOLAR ENERGY EFFICIENCY

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GRUPOADTEL



Adtel Group



Design Team



Yang Mei

Doctoral student at UAB, senior architect, green building expert of Hainan Provincial Government, China, with 10 years of architectural design experience and 2 green building design patents.



Yaru Liang

Master's student in the Faculty of Economics and Business at UAB. Graduated master degree from the MBA program at Yunnan University, accumulating extensive management and leadership experience. Possesses keen insight into economic trends and market dynamics. Familiar with the investment field and dedicated to the study of market economy, business innovation, and international economics.



Dr. Anna Petit-Boix (Tutor)

PhD in Environmental Science and Technology ICTA at UAB. Her area of expertise is urban and industrial ecology, and her thesis dealt with the eco-efficiency assessment of urban sanitation and drainage systems. In her interdisciplinary studies, she applies tools such as life cycle assessment (LCA), life cycle costing (LCC), eco-efficiency or urban metabolism in combination with other methods.



INTRODUCTION

Idea construction

The Current Status of Green Building Development:

- In Spain, over 2 million square meters of property are registered in the VERDE system, with 63 buildings receiving VERDE certification. The number of registered and certified projects has increased by 40% compared to 2018.
- There is a growing enthusiasm for green buildings in the Spanish construction industry, partly driven by major funds, real estate investment trusts, and building owners.

Target Market and Competition

New and Old Buildings: Including commercial buildings such as office buildings (Blue Ocean), residential properties, hotels, and residential areas (Red Ocean).

Intense Competition: As of December 2019, Spain had a total of 766 buildings registered in the LEED system, of which 378 received certification, resulting in a success rate of 49.3%. This is only 7.4 percentage points lower than the United States, which ranks first in the world with a success rate of 56.7%. Currently, Spain ranks ninth globally and first in Europe for LEED-certified buildings.

Challenges/Innovations

According to the 2011 Population and Housing Census data from Spain, currently, 57% of properties in the country were built before 1980, when the Spanish government had just introduced its earliest laws regarding minimum energy efficiency in buildings, which are far from today's standards. Consequently, by 2050, it is estimated that 80% of the buildings still in existence will have been constructed today. Therefore, establishing energy efficiency standards in the construction industry at this time is crucial for achieving global carbon neutrality by 2050.

Case study

ADTEL Group

A global solutions integrator

ADTEL Group is the convergence of telecommunications, audiovisual, security, electricity and construction. We offer complete technology solutions in different markets.

Enhancing Energy Efficiency for Adtel Group



The slide features a decorative graphic on the left side consisting of four hexagons: a large orange one at the top, a light blue one at the bottom, a white one on the left, and a light blue one on the right. In the center of these hexagons is a stack of papers with various charts and graphs, including line graphs and bar charts, representing data analysis.

Current State of AdtelGroup

- No significant issues detected in the current environment.
- Interest in energy savings and cleaner energy solutions.

Key Activities Undertaken

1. Information Gathering:

- Meeting with Adtel Group manager.
- Staff discussions at Adtel Group office.

2. Survey Design:

- Developed and discussed an energy improvement survey.

ADTEL GRUPO Energy Improvement Survey

Section 1: Building Structure

1. Do you feel the building's exterior structure provides adequate insulation? ✓
2. Are there any windows that lack airtightness or show signs of damage? X
3. Is there any damage to the curtain wall? X
4. Are any doors damaged? X
5. Are there any signs of dampness inside the rooms? small 污渍 (五楼角)
6. Is there any leakage from the roof? Small
7. What is the structural system of your building? 半的钢筋混凝土
8. Do you frequently notice condensation or mold on the window glass? X
9. Is there an issue with sun exposure from the west? X
10. Is the current lighting system adequate? Does it use LED lights, and are there control systems for internal lighting?
- 11.

Section 2: Building Ventilation

- What is the current ventilation method? 无
- Is it natural ventilation or mechanical ventilation? Has an airtightness test been conducted? 自然
- Have air flow rates been checked? X
- Has the sewer system's airtightness been examined? X

Section 3: Building Heating

- What is the current heating method? 热泵
- Are there any inconveniences during use, such as rising energy costs? Yes
- Do you use hydrogen heaters or fuel electric heaters? X
- Has seasonal heating efficiency been regularly tested? X
- What proportion of the building's energy costs is currently covered by solar energy? 43%

Section 4: Building Cooling

- What is the current cooling method? 和暖气一样
- Are there any inconveniences during use, such as rising energy costs? ✓
- What type of air conditioning system is currently in use? 热泵

Section 5: Solar Energy

- Are you satisfied with the efficiency of solar energy use? ✓
- Does the solar system include collectors without transparent covers on the front? X

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Hello Mei, good day
I answer your email following the same index as your document, if you have any questions you can send me an email or call me at

Section 1 : Building Structure

- 1.- Can be improved with current technical requirements of the building
- 2.- NO
- 3.- There is no curtain wall
- 4.- NO
- 5.- There are more small leaks than moisture
- 6.- Small
- 7.- unidirectional forged and precast concrete
- 8.- NO
- 9.- NO
- 10.- We have to improve de control systems for internal lighting

Section 2: Building Ventilation

- Open Windows
- Natural ventilation and has not airtightness test
- No
- No

Section 3: Building Heating:

- funcoils, splits and heat pumps
- Yes, of course
- NO
- NO
- 43%

Section 4 Building Cooling

- The same than heating
- Yes
- Funcoils, splits and heat pumps

Section 5 : Solar Energy

- Yes, of course
- No, we use only solars panels

Cordialment
Xavier Peiró

Yang Mei, Lydia
Date: 2024.10.23

Questionnaire



Initial prototype design

Survey Insights - 5 Perspectives



1. Building Structure:

- Good overall condition, minor issues with leakage.

2. Ventilation:

- Mainly natural ventilation.

3. Heating:

- Solar panel installation supports 43% energy costs.

4. Cooling:

- Need for improvements identified.

5. Solar Usage:

- Limited use of solar capabilities.

Inspiration from ICTA Building

• **Eight Benefits Observed:**

- Special facade materials.
- Flexible indoor spaces.
- Advanced computer control system.
- 90% reduction in water consumption.
- Light, high-strength materials used.
- Innovative light and air designs.
- Energy-efficient architectural forms.
- Geothermal energy utilization (note: lack of solar integration).

Value Proposition:

1. Promote energy efficiency and create a healthier environment. Innovative Business Model: Use the company's office building as a model, achieve technological breakthroughs, and strive to realize energy savings through green buildings to increase energy revenue.
2. Replicate this technology in bulk for large-scale market application.
3. In market promotion and customer development, share income from industrial operations with clients through equity cooperation, angel investment, and other means.
4. In terms of reducing expenses, in addition to the reduction in energy costs brought about by the technology itself, efforts can be made to obtain energy subsidies, secure bottom-line financing, and gain tax incentives to further lower operational costs.
5. For rental properties, reduced energy expenses can be used to subsidize rent, creating a win-win situation for both clients and owners. Technological breakthroughs: Strive to achieve energy savings in green buildings and increase energy revenue.
6. Replicate this technology in bulk for large-scale application in the market.
7. In market promotion and customer development, share income from industrial operations with clients through equity cooperation, angel investment, and other means.
8. In terms of reducing expenses, in addition to the reduction in energy costs brought about by the technology itself, efforts can be made to obtain energy subsidies, secure bottom-line financing, and gain tax incentives to further lower operational costs.
9. For rental properties, reduced energy expenses can be used to subsidize rent, creating a win-win situation for both clients and owners.



SOLUTIONS

Final design

Proposed Solutions for Adtel Group



Building Structure Enhancements

Implement a bioclimatic skin for energy efficiency.



Water Recycling System

Optimize water usage through rainwater collection and grey water recycling.



Improved Workspace Separation

Use of insulated structures for better climate control.



Enhanced Energy Monitoring Systems

Integrate advanced controls for water management and architectural energy optimization.



Solar Energy Efficiency

Increase efficiency to 90% through upgrades and optimization.

Financial Requirements

Budget: 1,200,000 €

Expected revenue: 90,000 €



Conclusion

- 1. Use certified sustainable building materials. 95% of construction waste is recycled. Promotion of renewable energy devices such as photovoltaic systems, wind turbines, geothermal pumps, and solar thermal energy.**
- 2. Energy conservation and environmental protection.**
- 3. Maximize the use of natural light and rely on zero-emission clean energy for power supply.**
- 4. Install adjustable outdoor lighting systems to reduce light pollution at night.**
- 5. Set up electric vehicle charging stations, reserve parking spaces for shared cars, and establish bicycle parking areas to encourage low-carbon travel.**





Thank you!