INNOVATION AND DEVELOPMENT OF HYBRID POWERED STREET LIGHT WITH SURVEILLANCE SECURITY

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INTRODUCTI0N

Electricity has a vital role in human life; as the saying goes, "No power, no life". It is now been an integral part of everyday life. As the world's population increases, the demands of electricity also Increase. Hence, advancement and technologies are developed and assessed to meet and satisfy the demands usage. While technological advances are developed, these are being assessed and compared to the existing products to ascertain whether the new product would be ideally suited to its intended purpose.

An example of an advancement of electricity is Street Light. Street lighting, in all of its types, is an essential component of modern life. Particularly, some of the streetlights mounted along the street have a solar photovoltaic system that allows it to charge itself and generate power through the use of sunlight. On the other hand, in rural areas, electricity is a critical challenge. Existing streetlights may be difficult to Install due to the Insufficiency of the power source, and the scarcity of the source access. Presently, streetlights are only built on urban areas and on expressways.

This paper will present the Innovation and Development of a Hybrid Powered Streetlight with Surveillance Security that can be used In rural areas. This device is powered by solar and wind energy, all of which are renewable sources of energy. Added to that, It has advanced technology to convert into electricity, and has a capability of charging.

This device can be used to capture footage of its surroundings using a surveillance camera that operates 24 hours a day, seven days a week. The device has modular framework that can be stacked or rearranged in various formations, is easy to transfer, navigate, and reassembled for flexibility. Enabling the device to be relocated and moved to a location where it is expected to secure access to this eco-friendly.

Objectives of the study:

To design and develop a hybrid power streetlight with security surveillance.

Specific Objectives:

1. To modify and design an advancement to increase the efficiency of electricity

2. To calibrate and create a project that addresses the divisions between solar and wind

3. To promote innovation using the Sustainable and Green Energy Platform
STATEMENT OF THE PROBLEM

This study aims to determine the design and advancement of technologies to Increase the development of hybrid-power using conventional methods.

Specifically, questions: this paper answers the following research

1. What are the characteristics of the device / system in terms of which is currently in use?

2. What improvement can be made out of the existing device / system?

3. What new device / system can be derived with the improvement?

4. What is the level of assessment of the group of respondents on the

developed device/system with the following criteria? significant difference? Is there

4.1 Functionality

4.2 Usability

o Reliability

o Efficiency

o Maintainability

5. What claims can be made from the developed device / system?

METHODS AND MATERIALS

This chapter presents the research methodology, statistical treatment, supplies and materials, tools and equipment, construction procedure, try-out and revision, and the cost analysis of innovation and development of hybrid powered streetlight with surveillance security

Research Methodology and Sampling

The research study aims to give peaceful environment and a lesser crime rate to its surroundings. The device will help not only to maximize its potential energy, as well as to give better and secured place to its people

The device has a vital rade in the modern society. The Hybrid Powered Streetlight with Surveillance Security System is not only design to be place in urban areas, the device also aims to be place in rural where some part of it is not accessible by electricity. The device is design of an advance technology which provides renewable sources of energy powered by solar and wind energy that are efficient and very eco-friendly.

In modern days, crimes are not only happening in the city, it also reaches most of the rural areas where quietness and peacefulness seems to happen. This study develop also to capture footage for a better place to live for the people. The device is flexible and can be relocated where it is expected to move.

Evaluation

The project was evaluated on the following criteria namely:

➢ Functionality

- Usability

➢ Reliability

➢ Efficiency

➢ Maintainability

SUMMARY OF FINDINGS

This chapter shows the findings resulting from this study.

1. Who are the beneficiary of this project?

The people who reside in rural regions are the primary beneficiaries of this project. It will help facilitate their access to this type of streetlight; during night time, it has the ability to illuminate and secure particularly the gloomy areas. Added to that, this project will also benefit the environment because it aims to be eco-friendly by utilizing renewable energy sources such as solar and wind power.

2. How can it help in street areas?

Hybrid powered streetlights may be utilized not only in streets, but also in rural parts of our country, particularly in locations where energy is difficult to access. It also has a camera attached to record what is occurring on around it.

3. Is the device can still be used in places where electricity is not available?

Certainly, because the system is battery powered and has a charger controller to manage the power generated by wind and solar energy. It is available 24 hours a day, seven days a week. It is intended to offer light and security, particularly in rural locations where power is a big issue.

4. What is the assessment of the three groups of respondents namely; Students,

Professional, and Community in terms of the following criteria? Is there any significant difference?

The three categories of respondents, Students, Professionals, and the Community, assessed the following criteria.

A. ASSESSMENT ON FUNCTIONALITY

TABLE 1: ILLUSTRATION ON FUNCTIONALITY ASSESSMENT

Indicators	Students		Professional		Community	
	WM	VI	WM	VI	WM	VI
1. Functional Completeness. Degree to which the set of function covers all the specified tasks and user objectives.	4.70	E	4.10	E	4.40	E
2. Functional Correctness. Degree to which the System provides the correctness of results with the needed degree of precision	4.40	E	4.10	E	4.20	E
3. Functional appropriateness. Degree to which the functions facilitate te accomplishment of speciad tasks and objectives	4.80	E	4.10	E	4.50	E
Overall Weighted Mean	4.63	E	4.10	E	4.37	E

Composite Mean		Rank
WM	VI	
4.4	E	3
4.23	E	2
4.46	E	1
3.90	HE	

The Students, Professionals and community on Functionality rated most of the indicators as "Excellent" even for functional correctness and functional appropriateness which received "Excellent" rating from the group having an overall mean values of 4.63 for the Students and 4.10 for the Professionals and 4.37 for the community as evidenced by the obtained weighted mean values of 4.70, 4.40 and 4.80 for the Students; and 4.10, 4.10,4.10 for the Professionals, and 4.40, 4.20 4.50 for the community respectively.

They ranked these Indicators as follows: "Functional Appropriateness. Degree to which the set of function covers all the specified tasks and user objectives." (WM-4.531 Ranked 1: "Functional correctness. Degree to which the System provides the correctness of results with the needed degree of precision" (WM-4.23) Ranked 2 and "Functional

Completeness. Degree to which the set Function covers all the specified tasks and user" (WM-4.4) Ranked 3. It is implied that the Functionality covered all the specified task and user objectives, provided correct results with the needed degree of precision, and facilitated the accomplishment of specified tasks and objectives.

Indicators	Students		Professional		Community	
	WM	VI	WM	VI	WM	VI
2.1 Operability. Degree to which the system has attribut	4.70	E	4.20	E	4.70	E

es that make it easy to operate and control.						
2.2 Accessibility. Degree to which the system can be used by people with widest range of characteristics and capabilities to achieve a specified context of use.	4.60	E	4.30	E	4.20	E
Overall Weighted Mean	4.60	E	4.25	E	4.45	E

Composite Mean		Rank
WM	VI	
4.53	E	1
4.36	E	2

The Students, Professionals and the community on Usability rated most of the Indicators as "Excellent" having an overall mean values of 4.60 for the Students and 4.25 for the Professionals and 4.45 for the community as evidenced by the obtained weighted mean values of 4.70 and 4.60for Students; and 4.20 and 4.30 for the professionals and 4.70 and 4.20 for the community, respectively.

In summary, they ranked these indicators as follows: "Operability. Degree to which the system has attributes that make it easy to operate and control." (WM-4.53) Ranked 1; and "Accessibility. Degree to which the system can be used by people with widest range of characteristics and capabilities to achieve a specified context of use." (WM-4.36) Ranked 2 with a grand mean of 4.45 verbally interpreted "Excellent". This implies that the usability covered all the specified task and user objectives in terms of operability in which the system attributes to make it easier to operate and control and its accessibility in which the system can be used by people with the widest range of characteristics and capability to achieve a specified context of use.

TABLE 3: ILLUSTRATION ON RELIABILITY ASSESSMENT

Indicators	Students		Professional		Community	
	WM	VI	WM	VI	WM	VI
3.Maturity. Degree to which the system meets needs for reliability under normal operation.	4.80	E	4.10	E	4.00	E
4. Availability. Degree to which the system is operational and accessible when required for use.	4.60	E	4.10	E	3.70	VG
Overall Weighted Mean	4.70	E	4.10	E	3.85	VG

Composite Mean		Rank
WM	VI	
4.3	E	2
4.13	E	1

The Students, Professional and the Community on Reliability, rated all Indicators as "Excellent" except for the indicator Availability which received a "Very Good" rating from the group of Community having an overall mean value of 4.70 for the Students and 4.10 for the Professional and 3.85 for the community as evidenced by the obtained weighted mean values of 4.80

and 4.60 for the Students; and 4.10 and 4.10 for the Professionals and 4.00 and 3.70 for the community, respectively.

They ranked these Indicators as follows: "Availability. Degree to which the system was operational and was accessible when required for 4s * e ^ x 1474 = 4.13) ranked 1; and "Maturity. Degree to which the system reets needs for rellability under normal operation." (WM-4.3) both Ranked 2 with a grand mean of 3.85 verbally interpreted as "Very d. This implies that the reliability of the system met the needs The reliability under normal operation and that the system This chapter presents the claims and conclusions based on the data analyzed in the summary of findings.

This paper has discussed the design implementation of an Innovation- and-Development-of-Hybrid-Powered-Streetlight-with-Surveillance-Security (IHDPSS). It is designed to create an alternative source of electricity in streetlight especially on rural areas.

CLAIMS:

A IDHPSS charging station comprising:

a hybrid source; solar and wind connected to each charge controller;

a protection device electrically connected to said charge controller;

a said charge controller controls the device voltage and open the circuit;

a wireless connected surveillance camera to mobile phone;

a fully welded plate in the main foundation to secured, support the stability of the main pole.

CONCLUSION:

Based on the findings of the study, the following conclusions are drawn;

A. According to the evaluation result of the functionality of the system, the degree to which the sets functional completeness, correctness, and appropriateness were interpreted as "Excellent" by the respondents, which means that the functionality of IDHPSS provided the specific tasks and user objectives, correctness of results with the needed degree of precision, and facilitated the accomplishments of specified tasks and objectives.

B. According to the evaluation result of the usability of the system, the degree to which the sets operability and accessibility were interpreted as "Excellent" by the respondents, which means that the usability of IDHPSS had an attributes that make it easy to operate and control and can be used by people with widest range of characteristics and capabilities to achieve a specified context of use.

B. According to the evaluation result of the reliability of the system, the degree to which the sets maturity and availability were interpreted as "Excellent" by the correspondents, which means that the reliability of IDMPSS has met the needs for reliability under normal operation and it was operational and was accessible when required for use.

C. According to the evaluation result of the efficiency of the system, the degree to which the sets time behavior, resource utilization and capacity were interpreted as "Excellent" by the respondents, which means that the efficiency of IDHPSS met the requirements of performing its functions.

D. According to the evaluation result of the maintainability of the system, the degree to which the sets modularity, reusability and modifiability were interpreted as "Excellent" by the respondents, which means that the maintainability of was composed of discrete components such that a change to one component had minimal impact on other components, an asset can be used in more than one system, or in building other assets and can be effectively and efficiently modified without introducing defects or degrading existing system quality.