**Raising the safety, efficiency, and sustainability of electrical installation maintenance in Dulag national high school**

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Electrical maintenance is a detailed procedure that includes checking, examining, servicing, and repairing electrical systems, equipment, and parts. This dedicated approach makes sure of the safe, effective, and reliable operation of power supply systems at the residential, commercial, industrial, and institutional levels.

An enormous amount of writings on the subject of electrical maintenance is available in the form of textbooks to research papers and industry standards set by organizations like IEC, IEEE, and NFPA. These resources provide detailed knowledge about maintenance procedures, safety measures, equipment specifications, troubleshooting techniques, and compliance with regulations.

The significance of the electrical maintenance cannot be overemphasized in both the local and international levels. Locally, it ensures the wellbeing of electrical systems in homes, businesses, public facilities, and infrastructure projects through safety and reliability, as a result, there are no accidents, fires, and disruptions. Globally, it is critical in manufacturing, energy, transportation, health, telecommunications, and IT industries. It is a tool to enhance efficiency, cost effectiveness, energy efficiency, and sustainability efforts.

The electrical maintenance involves adherence to safety standards like NFPA 70E and OSHA regulations, the implementation of preventive maintenance strategies, the use of technological advances such as IoT and AI, the development of skills through training and certifications, and the taking into consideration the environmental aspects for sustainable practices.

In summary, electrical maintenance is a multi-dimensional domain that is essential in order to keep the lifespan, safety, efficiency and sustainability of electrical infrastructure in local, industrial and global levels.

**OBJECTIVE**

The purpose of this research is to examine, evaluate, and draw up ways for improving the safety, productivity and sustainability of electrical installation maintenance in Dulag national high school.This includes:

1. Analyzing all the available information, including the literature, industry best practices (for example, IEC, IEEE, NFPA), and local regulations pertaining to electrical maintenance.

2. Analyzing existing electrical maintenance procedures in Dulag national high school, covering safety regulations, preventative maintenance systems, technology use (like IoT and AI), and environmental factors among others.

3. Examining the efficiency of the current maintenance procedures so as to guarantee safety, reliability, and durability of the electrical systems being used in the residential, commercial, and industrial environments within Dulag national high school.

4. Identify the possible issues or the deficiency in the existing electrical maintenance system and propose new innovative solutions or improvements to deal with them.

5. Creating suggestion on follow up of best practices in electrical maintenance that fit standards, regulations and sustainability targets in Dulag national high school region.

6. Setting out the policies on training, certification, and skill enhancement programs for the enhancement of the skills of the maintenance team in Dulag national high school.

7. The economic impact of improved electrical maintenance practices, such as cost savings, energy efficiency gains, and less downtime for businesses and infrastructure in Dulag national high school will be investigated.

8. Exploring the environmental advantages of the implementation of environmentally clean electrical maintenance procedures including carbon emission reduction, waste minimization, and environment-friendly technology promotion.

9. Working jointly with local stakeholders, industry specialists, and governmental authorities to implement measures that create awareness, compel adherence, and enhance continual improvement of Dulag national high school electrical maintenance standards and practices.

10. Formulating actionable insights including the suggestions that can act as a map to the policymakers, practitioners, and stakeholders as to how the electrical maintenance processes and outcomes of Dulag national high school can be improved for the electrical infrastructure to be safer, more efficient and sustainable.

**The Scope and Delineation of the Research**.

Procedure, Study Layout, Study Area, Time Spent, Population, Sample Size:Procedure, Study Layout, Study Area, Time Spent, Population, Sample Size:

The mixed-methods approach is employed in this study so that the understanding of the maintenance of the electricity installation of Dulag national high school can be well obtained. It involves the administration of surveys, conducting cross-sectional research, and organized interviews with different stakeholders that include specialists, technicians, authorities, and locals. The 6-month study investigates different areas of the Dulag national high school municipality such as commercial, industrial, and residential zones. The population includes every stakeholder and the sample size is selected carefully to ensure a representative population.

**Tools Employed, Verification, and Procedures:**

An array of pilot studies were conducted to establish the validity of the instruments, such as questionnaires, interview guides, observation checklists, and document analysis tools. Protocols stand for the implementation of the confidentiality policies, permission process, and ethical rules.

**Collecting and Analyzing Data:**

the research begins with a review of the literature and finally follows with surveys, interviews, and on-site observations. Different methodologies including qualitative and quantitative methods are utilised in the analysis, and ethical considerations and triangulation are the main tools to enhance the reliability.

**GAP OF THIS STUDY**

While the outlined objectives comprehensively address various aspects of electrical installation maintenance in Dulag national high school, there are several key gaps that this study aims to fill:On reading the aim there is no ambiguity that the general goals cover different aspects along the electrical installation maintenance in Dulag national high school but nevertheless some gaps around them are the reason for this study.

1. Lack of Specific Local Data:It may be the case that the workshop centering around the local conditions and legislations, and the absent presence of the current situation of reporting the electrical faults and its remediation practiced in Dulag national high school is the main problem. And therefore, the center of the study will be to close this gap in the publications by providing the results of deeper research studies.

2. Limited Focus on Technological Integration: The objectives raised accomplishments through the integration of latest technologies such as IoT and AI; but it will be good if Dulag national high school studies further on the integration of AI and technology in maintenance techniques can also help to enhance its efficiency.

3. Insufficient Attention to Environmental Sustainability:Systematic deforestation and excessive utilization of resources occurs. Nonetheless, they tend to pass over and omit the tasks as how to surpass the current situation and maintain the sustainability by practical unveiling of strength of renewable energy or adopt the disposable resource that is not negative to the environment.

4. Inadequate Exploration of Economic Impacts:This piece of writing deals with merely the economic aspect of the power supply improvement but doesn’t offer both the full picture of the financial effect and the types of ROI, reduction of costs and long-term financial benefits these investments can bring for the Dulag national high school stakeholders.

5. Limited Stakeholder Engagement:Although stakeholders collaboration was in the content, yet it warrants explaining the modes local companies, agencies, and neighborhoods use to be responsive to the designing and putting in place of strategies as a source of enhanced electrical maintenance practices.

This would not only enrich the theoretical content by cognition of the Dulag national high school community members about electricity maintenance, but would also give them hands on experience along with safety, efficiency, and sustainability lessons on power infrastructure of this place.