

COVER LETTER

Chairul Hudaya, Ph.D
Department of Electrical Engineering, Universitas Indonesia
chairul.hudaya@ui.ac.id
081295166665

Depok 24 April 2025

Dear Prof. Andi Adriansyah
Editor-in-chief of SINERGI

We wish to submit an original research article entitled "Risk-based predictive maintenance of medium voltage network switching equipment using analytical hierarchy process as an analytical tool" for consideration by SINERGI.

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. We promise not to withdraw this article after it has been processed by the Editorial Team. If there is a withdrawal, we are willing to pay a penalty of USD 150 (IDR 2000K) to the SINERGI Editorial Team.

In this paper, I/we report on / show that:

Field	:	Electrical Engineering
Topic	:	Power Engineering
Brief Background	:	Switching equipment in medium voltage networks (MVNs) is vital for ensuring reliable electricity distribution, especially for companies like PT PLN (Persero) in Indonesia. Despite the increasing use of SCADA systems for monitoring, the lack of skilled personnel, outdated maintenance instructions, and poor maintenance strategies have led to frequent anomalies and inefficiencies. These issues necessitate a more systematic, risk-informed maintenance model to enhance reliability and minimize operational disruptions.
Research Problem	:	There has been no in-depth study focused on prioritizing maintenance for MVN switching equipment using risk analysis. The challenge lies in determining which components require urgent attention based on their risk of failure and operational impact. Ineffective maintenance strategies can lead to unplanned outages, reduced reliability, and increased costs. Therefore, a structured approach is needed to prioritize equipment

SINERGI

Universitas Mercu Buana

p-ISSN: 1410-2331; e-ISSN: 2460-1217

<http://publikasi.mercubuana.ac.id/index.php/sinergi>

		maintenance based on potential risk and operational impact.
Overview of Method	:	<p>This study proposes a risk-based predictive maintenance model using:</p> <ol style="list-style-type: none"> 1. Analytical Hierarchy Process (AHP) – to prioritize equipment based on criteria like age, condition, and failure history. 2. Z-score analysis – to assess the likelihood of risk events occurring. 3. Monte Carlo simulation – to evaluate the impact level of equipment failure. 4. ISO 31000:2018 risk management framework – to guide the risk identification, analysis, evaluation, and treatment process. <p>The model was applied to 12 types of switching equipment at PT PLN (Persero) UP2D Kaltimra.</p>
Significant finding	:	<p>The analysis revealed that:</p> <ul style="list-style-type: none"> • Lightning Arrester (26.04%), Fuse Cutout (20.62%), and Potential Transformer (13.78%) were the top three components in maintenance priority. • Several components, like UP2D.2025.C4 (Pole Mounted Circuit Breaker) and UP2D.2025.C8 (Ground Wire), had high likelihoods (>90%) of failure and severe impact levels (>60%), classifying them as "Extreme" risks. • The integration of AHP, Z-score, and Monte Carlo simulations provides a robust method to prioritize and schedule maintenance effectively, thus reducing potential failures and optimizing resources.

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

Sincerely,



Chairul Hudaya, Ph.D

AUTHORSHIP STATEMENT

I/We wish to submit an original research article entitled “[*title of article*]” for consideration by SINERGI.

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

Author 1	
Name	: Erick Satriyo Gumilang
Affiliation	: Department of Electrical Engineering, Universitas Indonesia
Email Address	: erick.satriyo@ui.ac.id
Author 2	
Name	: Budi Sudiarto
Affiliation	: Department of Electrical Engineering, Universitas Indonesia
Email Address	: budi.sudiarto@ui.ac.id
Author 3	
Name	: Faiz Husnayain
Affiliation	: Department of Electrical Engineering, Universitas Indonesia
Email Address	: faiz.h@ui.ac.id
Author 4	
Name	: Chairul Hudaya
Affiliation	: Department of Electrical Engineering, Universitas Indonesia
Email Address	: chairul.hudaya@ui.ac.id

POTENTIAL REVIEWERS

Please send 3 (three) prospective reviewers (who are not yet registered in SINERGI) to speed up the review process who are competent for the topic and have a good reputation in the field. Please ensure that **they are willing to review** this paper.

Reviewer 1	:	
Name	:	Dr. Zainal Arifin
Affiliation	:	PT PLN (Persero)
Email Address	:	zainal.arifin22@pln.co.id
Scopus url	:	https://www.scopus.com/authid/detail.uri?authorId=57685840300
Google Scholar url	:	
Reviewer 2	:	
Name	:	Prof. Iwa Garniwa
Affiliation	:	Institut Teknologi PLN
Email Address	:	iwagarni@gmail.com
Scopus url	:	https://www.scopus.com/authid/detail.uri?authorId=6506813293
Google Scholar url	:	https://scholar.google.com/citations?user=dnYF3bcAAAAJ&hl=en&oi=ao
Reviewer 3	:	
Name	:	Dr Dian Widi Astuti, ST, MT
Affiliation	:	Universitas Mercu Buana
Email Address	:	dian_widia1@yahoo.com
Scopus url	:	https://www.scopus.com/authid/detail.uri?authorId=57201736195
Google Scholar url	:	https://scholar.google.co.id/citations?user=vytVtvIAAAAJ&hl=id