Banua: Jurnal Kesehatan Lingkungan
e-ISSN 2797-8184 | p-ISSN 2797-8176
Volume 5 Issue 2, 2025, page 125-134
DOI: 10.33860/bjkl.v5i2.4251
Website:http://jurnal.poltekkespalu.ac.id/index.php/bjkl/
Publisher: Poltekkes Kemenkes Palu

Original Article

Case Study: Implementation of Occupational Health and Safety for Engineering Officers at PT. PLN (Persero) ULP Regency X

Novita Romadhoni*, Solikhati Indah Purwaningrum
Environmental Science Study Program, University of Bojonegoro, East Java, Indonesia
Corresponding author: novita.rmd99@gmail.com

ARTICLE INFO

Article History:
Received: 2025-10-28
Accepted: 2025-11-23
Published: 2025-11-30

Keywords:

Occupational health safety (OHS); critical control verification (CCV); personal protective equipment (PPE); inspection; safety culture

ABSTRACT

Background: This study was conducted to determine the extent to which the implementation of the K3 program has been carried out, including aspects of work procedures, use of Personal Protective Equipment (PPE), and monitoring of work X. This case study is focused on providing a comprehensive picture of the challenges faced by PT. PLN (Persero) ULP Regency.
Methods: This study uses a qualitative descriptive method with a purposive sampling technique. The population and sample used in this study were morning shift engineering workers, while the duration of the study was carried out for 2 months starting from February-March 2025. Data analysis was carried out using the Miles and Huberman interactive model.
Results: The results show that K3 practices have generally been implemented, but are still less than optimal, particularly in (1) inspection procedures which are hampered by delays and lack of communication and (2) compliance with the use of PPE. Meanwhile, CCV reporting was implemented effectively as evidenced by 408 reports recorded during the study period.
Conclusion: The implementation of K3 at PT. PLN (Persero) ULP Kabupaten X has achieved a Zero Accident status, despite facing challenges such as a lack of discipline in the use of PPE due to size mismatches and delays in work permit approvals. The author recommends improving communication between management and field workers to improve compliance and safety performance as well as improving PPE procurement.

INTRODUCTION

Occupational safety and health must be implemented in every workplace and for every individual worker as a form of fulfilling the right to protection while working; this is not only an aspect of financial gain, but also related to humanitarian, legal, and responsibility aspects (Adi & Kushartomo, 2023; Rahman, Rahma, Susanto, Djuanda, & Agung, 2025). National regulations related to K3 refer to Law No. 1 of 1970 and Government Regulation No. 50 of 2012 concerning the Occupational Safety and Health Management System (SMK3). According to data from the Indonesian BPJS Employment, the number of work accidents increased from 370,747 cases in 2023 to 462,241 cases (BPJS Ketenagakerjaan, 2024).

PT. PLN (Persero) is a State-Owned Enterprise (BUMN) that has the responsibility to manage resources engaged in the provision and distribution of electricity from power plants to end users. The commitment to prioritize OHS aspects is achieved by implementing ISO 45001:2018, the Occupational Safety and Health Management System (SMK3), Government

Regulation Number 50 of 2012, and is supported by the implementation of the Contractor Safety Management System (CSMS) to vendors to build an OHS culture.

Based on PLN's 2010-2024 sustainability report, the highest number of cases occurred in 2017, with 117 cases, and in 2020, with 190 cases. However, the number of work accidents in this industrial sector has decreased significantly over the past five years, with 55 cases in 2024. This implies that the improvement in K3 implementation at PT. PLN (Persero) has had a significant impact.

These work accidents are caused by several factors, namely the lack of work permits, incompetent workers, not using PPE, working not in accordance with SOPs, no K3 work supervisors, and inadequate work tools. Of these various causes, the dominant factors were working not in accordance with SOPs (138 cases), not using PPE (56 cases), and inadequate work equipment (39 cases).

PT. PLN (Persero)'s policy in managing occupational safety and health is stated in the Decree of the Board of Directors of PT. PLN (Persero) No. 134.K/DIR/2007 concerning the Occupational Environment, Health and Safety (LK3) Policy. Although PT. PLN (Persero)'s policy on OHS has been strict, but implementation in the field still encounters obstacles, namely inadequate equipment conditions and a lack of awareness in the use of PPE (Meilani, 2024; Palit, Karambut, & Longdong, 2024).

Based on data from the Ministry of Manpower, there were 462, 241 work accident cases in Indonesia from January to December 2024 (Kementerian Ketenagakerjaan, 2025). Internal PLN reports indicate a 52% reduction in work accidents from 2019 to 2022, reflecting the progress in implementing OHS management; however, challenges persist in ensuring compliance at the operational level (Syofiadi, 2023). However, it cannot be denied that risks do not only come from one particular factor. According to the internal data from PT. PLN (Persero) reports that over the past 3 years, there have been 75 cases with details of 29 cases in 2022, 22 cases in 2023, and 24 cases in 2024. This gives PLN's OHS maturity level a value of 4.47 on a scale of 5. This study was conducted to determine whether standard work procedures have been implemented by officers and whether there are still differences between OHS policies at the management level and their implementation in the field. A case study is needed to capture the reality of this gap.

METHODS

This study used a descriptive method with a qualitative approach to provide an overview and describe the implementation of K3. This study applied purposive sampling to select participants whose roles best represented the characteristics of the engineering workforce, with two primary informants and two field workers.

This research and data collection received official permission from PT. PLN (Persero) ULP Regency X at the initial meeting and the initial stage of article preparation. Each informant was given a complete explanation regarding participation, and interview transcripts were guaranteed confidentiality by mentioning the informant's and the company's initials and not mentioning the research location in the publication of the article. In addition, data deletion will be carried out after the publication of the article as part of a data confidentiality agreement. Data were collected through case studies. Primary data were obtained through interviews and field observations, while secondary data were obtained from public documents in the form of company profiles and official documents (regulations and internal reports).

Supporting data, such as previous research deemed relevant, were obtained from research databases via Google Scholar, Semantic Scholar, and other online repositories. This study applied Miles and Huberman's (1994) interactive model, which consists of three systematic stages: data reduction, data presentation, and conclusion drawing. The reduction stage involves sorting and simplifying relevant information, the data presentation stage involves organizing the information into a descriptive form, and the conclusion-drawing stage involves ensuring the validity of the findings through triangulation techniques (Angraeni & Yudhanegara, 2025).

Data triangulation is essential to ensure the credibility and reliability of research findings that utilize multiple data sources (Alfansyur, 2020; Mekarisce, 2020). The interviews in this study

were unstructured, as each informant had their own unique characteristics, and questions were tailored to specific and spontaneous situations (Sari, Aprisilia, & Fitriani, 2025). Questions addressed to key informants covered OHS implementation, including safety morning briefings, CCV input, and inspection. Field informants, on the other hand, addressed compliance with PPE use during work and the consistent presence of OHS supervisors in the field.

The application of this method is expected to provide an accurate and in-depth picture and description of the implementation of occupational safety and health at PT. PLN (Persero) ULP Regency X for 2 months (February - March 2025).

RESULTS

This study involved 17 people from various job positions on the morning shift for 2 months of implementation, starting from 7 a.m. to 5 p.m. Four informants were used as key informants with the criteria of work implementers (field workers and field coordinators) and K3L officials (in this study, there were two informants due to job transfers during the study). At this study location, several regulations apply to the implementation of K3, namely the Contractor Safety Management System (CSMS), inspectors, Personal Protective Equipment (PPE), and Critical Control Verification (CCV) input. The findings of this study provide an overview of the gap between structural policies and challenges in the field. This study involved key informants with the following information.

Table 1. Identity of key informants

No	Initial Name	Department	Age (Years)	Working time (Years)
1	C	Team Leader K3L	28	5
2	A	Team Leader K3L	32	3
3	J	Field Coordinator	37	6
4	A	Field Informant	23	2

Source: Primary data, 2025

Based on the research conducted, the results were presented in tabular form to facilitate understanding and interpretation.

Table 2. Data reduction

No	Data source	Findings	Category	Reduction
1	Observation and interviews	There are workers who do not use gloves.	Compliance with PPE	SOP Violation
2	Interview (employee)	The size of the gloves is not suitable	PPE Comfort	PPE comfort affects K3 compliance
3	Observation and interviews	Supervision is not optimal	Field work monitoring	Absence of work supervisor
4	Interview	Delay in approval of working permit	K3 culture	Lack of coordination

Source:Primary data, 2025

Observations and interviews were conducted directly in the field when researchers discovered discrepancies, such as SOP violations. Interviews with the K3L Team Leader were conducted at the PT. PLN (Persero) ULP office in Regency X. In the electricity sector of PT. PLN (Persero), the types and classifications of PPE have been determined based on PT. PLN (Persero)

Board of Directors Decree No. 0170.K/DIR/2023 concerning Personal Protective Equipment (PPE).

Table 3. Types and Classification of PPE

Types of PPE	Classification of PPE
Head Protection Equipment	
	WhiteRAL 9010
	Red RAL 3000
	Blue RAL 5002
	Yellow RAL 1026
Eye Protection	
	Glasses without side shields
	Glasses with side shields
	Googles
Ear Protectors	
	Foam plug
	Pre-moulded plug
	Banded ear plug
	Ear muff
Hand Protective Equipment	
	Leather gloves
	Aluminum gloves
	Aramid gloves
	Synthetic gloves
	Cloth gloves
	Coated gloves
	Butyl g*loves*
	Rubber gloves (*latex*)
	Neoprene gloves
	Nitrile gloves
	Insulated gloves
Foot Protectors	
	Low cut
	Middle cut
	Boot cut
Protective Clothing	
	Wearpack (*one piece coverall)*
	Separated wearpack(*two piece wearpack*)
	Safety vest
Personal Fall Protection Equipment	
	Personal fall arrest
	Controlled descent
	Rescue
	Ladder Climbing
	Work positioning
	Restraint

Source: Secondary data, 2023

Table 3. Types and Classification of PPE showing that the implementation of K3 in regulatory aspects has been carried out in detail and in accordance with the field protection needs for technical workers. However, there are still some workers who have not complied with the

regulations on the use of PPE. Seeing this, it is necessary to investigate what causes workers' non-compliance in the use of PPE. Mr. J (37 years old / field coordinator), said "Actually, when it comes to the use of PPE, we all know the importance, because lives are at stake. In addition, if the work supervisor is constantly present, we are also afraid and wear complete PPE. But here it is rare, if there is no superior to inspect, they are not in the field."

Table 4. Compliance with the Use of PPE

No	PPE Category	(%)
1	Head's PPE	100
2	Eye PPE	100
3	Ear PPE	100
4	Hand PPE	80
5	Foot PPE	100
6	Protective Clothing	100
7	Individual Falling PPE	100
	Average	97

Source: Primary data, 2025

Table 4. Compliance with the Use of PPE this shows that the average worker compliance with K3 is 97% with a lower level of compliance with hand PPE. A spontaneous interview with a field worker with the initials A (aged 23 years with 2 years of work experience) explained that the reason for not using PPE was because it felt annoying and difficult to carry out his duties if he had to wear gloves. This difficulty was caused by the size of the gloves not fitting the worker's hands. However, the informant admitted that if the risk level was considered high, such as working on a live electrical network, they would still wear gloves despite the difficulties. This shows that awareness of occupational safety and health at PT. PLN (Persero) ULP Regency X has been successfully implemented.

However, based on secondary sources in the form of official internal records of PT. PLN (Persero) ULP Regency X, it appears that this non-compliance behavior does not affect the number of work accidents as shown in Mr. A (32 years old / K3L Team Leader) explained, "During the period from 2024 to the present, we have succeeded in reducing the number of work accidents and received a zero accident award at ULP Regency X. The award is not here, but is in the UP3."

Table 5. Workplace Accidents in the First and Second Quarters of 2025

No	Types of Work Accident Incidents	Amount	
		Quarter 1	Quarter 2
1	Minor injuries	0	0
2	Serious injuries	0	0
3	Death	0	0
	Cesarean Section	0	0

Source: Secondary data, 2025

Inspection is one of the preventive measures in monitoring the work implementation process (Rahman, Rahma, Susanto, Djuanda, & Agung, 2025). Mr. C (28 years old), who is entering his fifth year as an HSE Team Leader, stated, "Inspection work approval (work permit) is carried out every day before work begins or before the briefing. At that time, technical officers will be assigned based on reports of disturbances and also remind them regarding work that will be carried out or that has not been completed, as well as PPE checks." Meanwhile, according to Mr. J (37 years old / field coordinator), although this is done routinely, there are still obstacles such as delays in work approval. He stated, "We more often work on *rabas* work that does not require approval from the manager because it is low risk, what is difficult is when there is other work such as changing substation meters or replacing reclosers which require approval/approval from the

manager. Meanwhile, if the manager is not met to be reminded, it can also delay the work." Overall, the inspection process is illustrated in Figure 1 Inspection flowchart

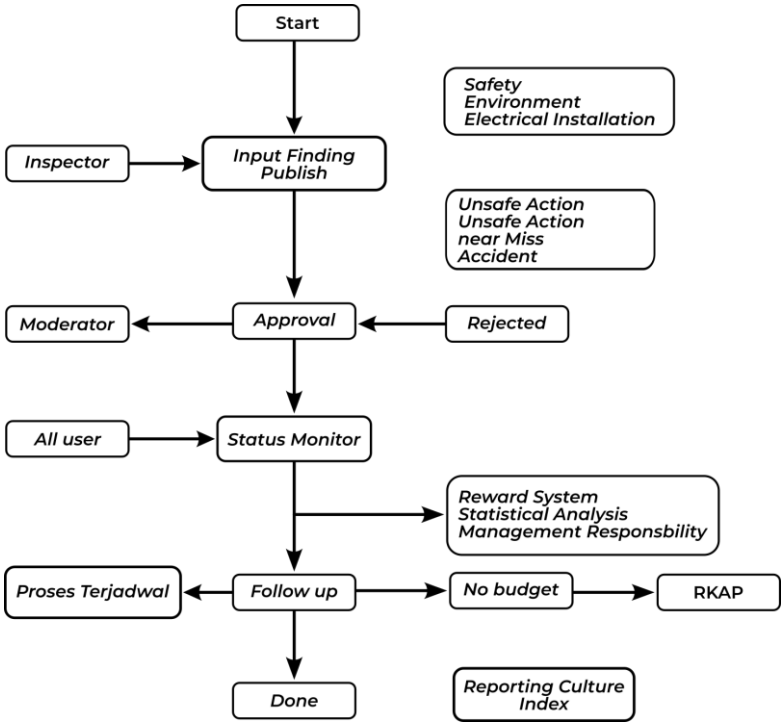

Figure 1 Inspection flowchart

CCV filling is an activity that aims to reduce and control risks by implementing several processes/stages based on Risk Containment (RC). CCV filling itself can be described as in Figure 2. CCV Filling flowchart.

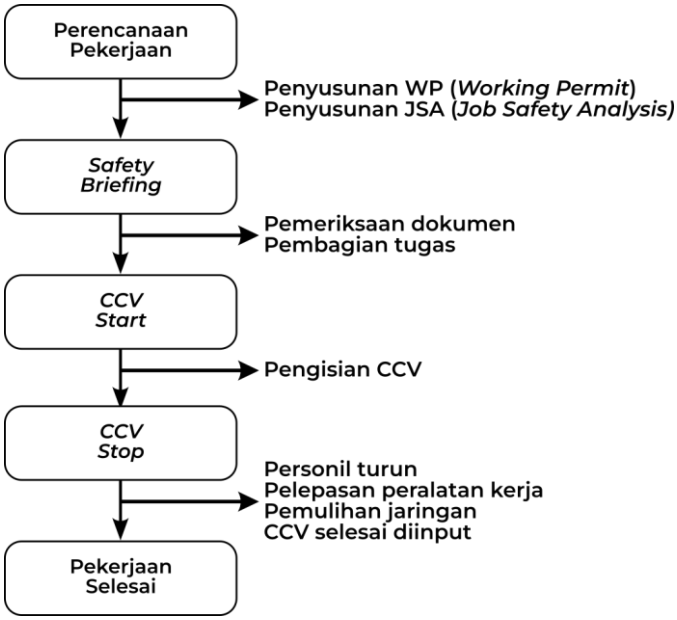

Figure 2. CCV Filling flowchart

Reporting or input of CCV at PT. PLN (Persero) ULP Regency X is done after the shift is finished to ensure that the work is carried out according to SOP, explained Mr. C (28 years old/K3L Team Leader). Table 6. Number of CCV Reportsshows that during the research period, there were 408 jobs inputted.

Table 6. Number of CCV Reports

Time (week)	Total
3-7 February	66
10-14 February	70
17-21 February	52
24-28 February	37
3-7 March	46
10-14 March	51
17-21 March	49
24-27 March	37
Total	408

Source: Secondary data, 2025

DISCUSSION

Interpretation of Key Findings

This case study provides an overview of the implementation of OHS for technical officers at PT. PLN (Persero) ULP Kabupaten X. The main finding in this study is the inconsistency in commitments within the applicable policies. First, the study found that the work permit process still has shortcomings in terms of work approvals, this is caused by a lack of communication between field workers, the OHS team leader, and company management. However, coordination plays a strategic role in an organization to remain integrated in addressing problems and minimizing obstacles (Wang et al., 2021).

Second, the use of PPE is still not optimal (Anggraini, Sari, Km, Aswin, & Kes, 2023; Angraeni & Yudhanegara, 2025). Activities related to electricity will be dangerous if not equipped with personal protective equipment, which is one of the risk control efforts (Ariyani, Suarantalla, & Mashabai, 2021). Improvements in PPE comfort are highly recommended to support the implementation of K3 (Agustigno et al., 2022).

CCV input plays a role in risk mapping and control for follow-up as a preventative measure for workplace accidents (Putra & Azizah, 2025; Aeni et al., 2022; Murtiasih & Wirawan, 2022). The relationship between OHS and compliance with SOPs has been studied at PT. PLN (Persero) ULP Paniki, which showed a strong correlation between OHS and SOPs (Palit, Karambut, & Longdong, 2024). Other studies also support this statement that data and information management in the form of documentation can be used to determine risk management priorities and become an indicator of the success of an OHS program (Aeni, Indragiri, Septiani, & Banowati, 2022). Furthermore, the role of SOPs in OHS implementation can reduce miscommunication during work, delimit work areas, and implement OHS policies (Meilani, 2024).

Comparison with Previous Research

The findings of coordination constraints in the WP approval relate to the CSMS, which regulates the management system, from planning, responsibilities, procedures, processes, and resources for the development, implementation, achievement, assessment, and maintenance of the safety management system. The delay in WP approval is also influenced by the low level of employee participation (Adiwibowo, 2021). Periodic evaluation is recommended to address these constraints (Mahdang & Arsad, 2023; Pratomo & Wiryanta, 2025). Furthermore, checking and improving SOPs can be done by establishing a special team or committee to plan and compile documents in accordance with OHS principles (Setiawan, Kakerissa, & Poceratu, 2023).

This study specifically shows that compliance with PPE use cannot always be considered to lead to accidents. Although the compliance rate was at 97%, no accidents occurred, as presented in Table 5. Workplace Accidents in the First and Second Quarters of 2025. This statement was also expressed by other researchers who stated that good and effective occupational safety and health in handling accidents can also be achieved by arranging work shifts to avoid excessive workloads (Abbas & Chaeruddin, 2024). Other solutions that can be provided are communication to create a sense of comfort in using PPE, as well as teamwork to reduce

workloads and minimize accidents (Agustigno et al., 2022; Aruna, Rusba, & Liku, 2024; Husaini, Hasibuan, Yuliana, & Habra, 2024; Tufaila & Santoso, 2021).

Implications for Practical OHS Management

The findings of this study have several important implications for OHS management at PT. PLN Persero or similar institutions to shift compliance-based implementation efforts into a culture. This can be achieved through mediation, team bonding to strengthen cooperation and providing motivation (Husaini, Hasibuan, Yuliana, & Habra, 2024; Ismail, 2019).

Based on the findings of this study, future research should focus on the efforts of managers, K auditors, and top management in addressing implementation challenges. Addressing the limitations identified in this study, such as limited perspectives, will contribute to a more holistic understanding. Furthermore, exploration of the implementation of inspections and CCVs remains under-researched in other settings; it is highly likely that research on these aspects will uncover new dimensions beyond the scope of this study.

Study Limitations

While this study offers valuable insights, several limitations should be acknowledged. First, as a qualitative case study, the findings are specific to the context of PT. PLN (Persero) ULP Kabupaten X and the participants involved, and cannot be statistically generalized to other companies. Second, there is potential bias in that participants may have provided responses they believed the researcher wanted to hear regarding their compliance. Furthermore, this study focused solely on the perceptions of technical officers without the involvement of managers, auditors, or top management who could have provided a more detailed description of implementation challenges.

CONCLUSION

Based on the findings in the study, it can be concluded that the implementation of K3 at PT. PLN (Persero) ULP Regency X in the approval of working permits still faces challenges related to coordination and PPE is still less than optimal as evidenced by the compliance rate of 97%, while the CCV input process has been implemented and runs routinely according to the provisions with a total of 408 inputs during the study. In this finding, the author recommends regular communication and training to policy makers as an improvement step in the implementation of K3.

Author's Contribution Statement: Novita Romadhoni: conducted the analysis, wrote the article, and obtained the observation results. Solikhati Indah Purwaningrum: contributed to the interpretation.

Conflicts of Interest: The authors declare that the research was conducted without any commercial or financial relationship that could be construed as a potential conflict of interest.

Funding Source: There was no funding source for this research.

Acknowledgments: The author would like to express his gratitude to PT. PLN (Persero) Regency X for the support, cooperation, and data assistance provided during the research process for this article. Furthermore, he would like to thank Mrs. Solikhati Indah Purwaningrum, his supervisor, for her patient dedication and time during the preparation of this article.

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