ISSN: 2338-8412 e-ISSN : 2716-4411

Ekombis Review – Jurnal Ilmiah Ekonomi dan Bisnis
Available online at : https://jurnal.unived.ac.id/index.php/er/index
DOI: https://doi.org/10.37676/ekombis.v14i2

Implementation Of Health, Safety, And Environment (HSE) Practices In Achieving A Zero-Accident Record At PT Perta Arun Gas (PAG)

Afgiarsyah [1]; Jaya Addin Linando [2]
[1]Study Program of Management Faculty Of Economics and Business, Universitas Islam Indonesia
[2,3] Department of Management, Faculty Of Economics and Business, Universitas Islam Indonesia
Email: [1] 21311634@students.uii.ac.id

How to Cite :
Afgiarsyah., Linando, J, A. (2026). Implementation Of Health, Safety, And Environment (HSE) Practices In Achieving A Zero-Accident Record At PT Perta Arun Gas (PAG). EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis, 14(2). DOI: https://doi.org/10.37676/ekombis.v14i2

ARTICLE HISTORY
Received [10 August 2025]
Revised [14 April 2026]
Accepted [24 April 2026]

KEYWORDS
HSE, Occupational Safety and Health, Oil and Gas, Zero Accident, Case Study, PT Perta Arun Gas.

ABSTRACT

The oil and gas industry carries high operational risks, making the implementation of Health, Safety, and Environment (HSE) practices crucial. This study aims to explore the implementation of HSE practices at PT Perta Arun Gas (PAG), an LNG terminal company that has successfully achieved a zero-accident record. This research employs a qualitative approach with a case study method. Data was collected through in-depth interviews with the HRD Manager and HSE Staff, supplemented by analysis of supporting documents. The findings reveal that PAG's success is achieved through the integration of three key factors: (1) Technological innovation via the PEKA DIGI application, which facilitates real-time hazard reporting and active participation from all employees; (2) Communication as Proactive management commitment and leadership demonstrated through programs like Daily Brief, Management Walk Through (MWT), Safety Walk and Talk (SWAT) and HSE Values Socialization; and (3) The visual aspect serves as a highly effective tool for conveying constant and memorable safety messages through HSE Posters. It is concluded that PAG's zero-accident achievement is not the result of a single factor, but rather an outcome of a comprehensive and integrated HSE system where technology, leadership, and culture reinforce each other. This study recommends enhancing PEKA DIGI's predictive analytics capabilities and establishing a more structured feedback mechanism to further strengthen a sustainable safety culture.

INTRODUCTION

The global oil and gas industry is characterized by high operational risks, including exposure to hazardous materials, high-pressure systems, and work environments with the potential for severe accidents (International Association of Oil & Gas Producers [IOGP], 2021). In Indonesia, incidents such as the 2023 Pertamina Plumpang depot fire and a fatal workplace accident at Pertamina Hulu Rokan underscore that the effective implementation of Health, Safety, and Environment (HSE) practices is not merely a regulatory obligation but a critical operational strategy for business sustainability and workforce protection (Gunawan, 2023; Febrianna, 2023).

Amidst this high-risk landscape, PT Perta Arun Gas (PAG), an LNG terminal and regasification company, has achieved a remarkable feat: a zero-accident record. This accomplishment presents a critical phenomenon for investigation, given the inherent complexities and dangers of the oil and gas sector. Therefore, this study aims to conduct an in-depth exploration of the implementation of HSE practices at PAG that underpin this success. It seeks to uncover the integrated mechanisms, innovations, and supporting factors within the company's HSE system, positioning it as a potential best-practice model for similar companies.

The motivation for this research is to address a gap in the literature by providing a comprehensive case study of an organization that has successfully fostered a safe work environment within a high-risk industry. While previous research has often focused on analyzing failures and accident causation, this study highlights a success story.

This study employs a qualitative approach using a case study method. This approach was selected to gain a deep, contextual understanding of the phenomenon of HSE implementation at PAG (Creswell, 2014; Yin, 2018). Primary data was collected through in-depth interviews with two key informants: the HRD Manager and an HSE Staff member, who were selected purposively for their strategic roles in formulating and implementing HSE policies. The data was analyzed using thematic analysis and validated through source triangulation and member checking to ensure the credibility and accuracy of the findings (Creswell & Creswell, 2017).

The findings reveal that PAG's zero-accident achievement is not the result of a single factor, but rather the outcome of a comprehensive and integrated HSE system. The key findings are organized into three central pillars: (1) Technological Innovation: PAG developed and implemented the PEKA DIGI (Digital Safety Observation) application, which enables all employees to report unsafe acts and conditions in real-time. This application transformed the reporting system from manual to digital, fostering active participation and enabling data analysis for continuous improvement. (2) Communication: Management commitment is tangibly demonstrated through programs such as the Daily Brief, Management Walk Through (MWT), and Safety Walk and Talk (SWAT). The presence of leaders on the front lines serves not as a ceremonial act, but as a platform for two-way communication to reinforce safety values and solve problems directly. (3) Participatory Safety Culture: This pillar is cultivated through the continuous socialization of HSE values, tiered training, and the use of visual media like HSE posters as constant reminders. These efforts foster a collective awareness that "HSE is everyone's responsibility."

This study offers significant theoretical and practical contributions. Theoretically, it enriches the HSE management literature by presenting an integrative model that links technology, leadership, and culture in achieving top-tier safety performance. Practically, the findings can serve as a benchmark and guide for companies in the oil and gas industry and other high-risk sectors to evaluate and strengthen their HSE systems toward the goal of zero accidents.

LITERATURE REVIEW

The oil and gas industry is globally recognized as a high-hazard sector due to its involvement with flammable materials, high-pressure processes, and complex operations, which inherently carry risks of major accidents (International Association of Oil & Gas Producers [IOGP], 2021).

In Indonesia, as a cornerstone of the national economy (Kementerian ESDM, 2023), the industry has witnessed tragic incidents that underscore the dire consequences of HSE failures, such as the fatalities at Pertamina Hulu Rokan and the Plumpang depot fire (Gunawan, 2023; Febrianna, 2023). These events highlight that robust HSE practices are not merely a regulatory formality but an essential operational imperative for protecting human life, the environment, and asset integrity.

HSE refers to an integrated management framework designed to ensure that industrial activities are conducted safely, with regard for worker health and environmental protection. In the oil and gas context, HSE transcends basic compliance; it represents a comprehensive system for hazard identification, risk assessment, and control (Fernández-Muñiz et al., 2012). It is multidisciplinary, aiming to guarantee and protect worker safety and health through the prevention of work accidents and occupational diseases (Government of Indonesia, 2012). A core objective of leading HSE systems is the pursuit of "zero harm," encompassing targets like zero fatalities and zero lost-time injuries (Antara News, 2024).

The digital transformation, often termed Industry 4.0, is reshaping HSE management. The integration of digital tools facilitates a shift from reactive to proactive and predictive safety. The implementation of digital platforms, such as real-time reporting applications, allows for faster hazard identification, transparent data tracking, and sophisticated analytics (Adikwu et al., 2024). This technological leap, part of the "HSE 4.0" paradigm, can significantly reduce workplace accidents, though it introduces new challenges related to data security and user adoption (Akyildiz, 2023). The critical success factor, however, remains not the technology itself, but its ability to foster a "participative approach between management and employees," which is essential to enhancing the overall safety culture (Ahmad et al., 2025).

Technology alone is insufficient without a strong human foundation. The role of leadership is paramount in cultivating a positive safety culture. Proactive commitment from management, demonstrated through direct engagement like site walks (Management Walk Through) and open dialogues (Safety Walk and Talk), is a powerful driver. Research in the oil and gas sector confirms that practical management actions, clear safety communication, and consistent rule-enforcement directly lead to improved safety compliance and fewer accidents (Ajmal et al., 2022).

This aligns with the concept of "enacted priority," where demonstrated commitment has a stronger impact on safety outcomes than merely espoused policies (Van Dyck et al., 2013). Furthermore, continuous HSE training and socialization are effective in strengthening workers' safety attitudes and beliefs, embedding safety as a core organizational value (Ricci et al., 2016).

The existing literature provides a robust theoretical understanding of HSE components: the high-risk context, the importance of management systems, the emerging role of technology, and the criticality of leadership and culture. However, a synthesis of these works reveals a salient gap. While many studies address these elements in isolation or in the context of accident analysis, there is a scarcity of holistic, qualitative case studies that investigate how these factors interconnect and synergize within a single, successful organization to produce a measurable outcome like a zero-accident record. Most literature focuses on mitigating failure rather than understanding and modeling success.

METHODS

This study employed a qualitative research design to gain an in-depth, contextual understanding of the implementation of Health, Safety, and Environment (HSE) practices at PT Perta Arun Gas (PAG). The following sections detail the sampling strategy, data collection procedures, and measures taken to ensure the trustworthiness of the findings.

Research Context and Unit of Analysis: The research was conducted as a single case study, with the unit of analysis being the organization itself PT Perta Arun Gas (PAG). PAG was selected as a critical case (Yin, 2018) due to its exceptional achievement of maintaining a zero-accident record within the high-risk oil and gas industry. This context provided a unique opportunity to investigate the integrated HSE practices that contribute to outstanding safety performance.

Sampling Strategy and Respondent Profile: A purposive sampling technique was used to select informants who possessed the most relevant knowledge and experience regarding the phenomenon under investigation (Palinkas et al., 2015). This approach is aligned with the goals of qualitative research, where depth of information is prioritized over statistical representativeness. Two key informants were selected:

HRD Manager: With 18 years of experience, this individual provided strategic insights into HSE policy integration, employee awareness campaigns, training programs, and the organizational culture surrounding safety.

HSE Staff Member: With 8 years of experience, this informant offered a technical and operational perspective on the daily implementation of HSE procedures, the use of safety tools and applications, and frontline challenges.

The principle of data saturation was considered, whereby the interviews with these two strategically positioned informants yielded comprehensive and mutually reinforcing data, deemed sufficient to address the research question (Guest, Bunce, & Johnson, 2006).

Primary data was collected through in-depth, semi-structured interviews. This method was chosen for its flexibility, allowing for probing questions to explore complex processes and personal perspectives in detail (Creswell, 2014). Prior to the interviews, two agreements were secured from the participants: consent to audio-record the conversations and an outline of the central topic: "The implementation of HSE practices to achieve a zero-accident record."

Each interview lasted approximately 90 minutes and was conducted separately. The interviews were designed to elicit detailed narratives on the company's HSE strategies, the role of technology (e.g., the PEKA DIGI application), leadership activities (e.g., Management Walk Through, Safety Walk and Talk), and the overall safety culture.

RESULTS

This study sought to explore the implementation of HSE practices at PT Perta Arun Gas (PAG) to understand how the company achieved its zero-accident record. The analysis of in-depth interviews and supporting documents revealed that this achievement is not the result of a single initiative, but rather the product of an integrated system built on three core pillars: (1) Technological Innovation, (2) Communication, and (3) a Participatory Safety Culture. The findings for each pillar are presented below.

A central finding of this study is the pivotal role played by digital transformation in PAG's HSE management. The company developed and implemented the PEKA DIGI (Digital Safety Observation) application, which has revolutionized hazard reporting and monitoring.

The application serves as a real-time reporting tool for unsafe acts and conditions, accessible to all employees via mobile and web platforms. This system replaced a manual, paper-based process, leading to greater efficiency and transparency. The HRD Manager emphasized the democratic nature of this tool, stating:“...everyone has the right to submit what is called PEKA... whenever someone finds something unsafe, they can report it and it will then be

followed up by HSE or the relevant function... The more people report, the more potential hazards can be detected."

The data collected through PEKA DIGI is not only for immediate response but also for strategic analysis. The application is equipped with features for HSE inspections, risk assessments (including a HIRA matrix), and a data visualization dashboard. This allows management and the HSE team to identify incident trends, monitor key performance indicators, and track the status of corrective actions in real-time, enabling data-driven decision-making for continuous safety improvement.

The findings clearly indicate that technological tools are effectively leveraged through strong, visible leadership commitment. PAG's management actively demonstrates that safety is a non-negotiable core value through several structured communication routines:

Daily Briefings: These are mandatory meetings held before the start of each workday. They serve as a direct communication forum where supervisors and workers discuss daily plans, identify potential hazards, and reinforce safety standards, ensuring collective awareness and early risk anticipation.

Management Walk Through (MWT): This is a routine activity where management and directors conduct direct visits to the workplace. The HSE Staff confirmed that MWT is designed for leaders to monitor the implementation of safety procedures on-site, listen to workers' concerns, and set a visible example of compliance.

Safety Walk and Talk (SWAT): Different from the more supervisory MWT, SWAT is an interactive program focused on two-way communication. It encourages open dialogue between management and workers about safety conditions, experiences, and suggestions for improvement.

The HSE Staff underscored the importance of these activities, noting:"Several routine activities are carried out from the management level up to the board of directors, such as Management Walk Through (MWT), Safety Walk and Talk (SWAT), and the socialization of HSE culture. These activities are specifically designed to ensure that all elements of the company... share the same level of awareness and commitment toward workplace safety."

The third pillar encompasses the ongoing efforts to embed HSE into the organizational DNA, making it "everyone's business." The findings show that this is achieved through continuous socialization and reinforcement.

A key strategy is the continuous socialization of HSE values through training sessions, seminars, and internal campaigns. This is complemented by the strategic use of HSE posters placed across all work areas. These visual aids act as constant, memorable reminders of safety protocols, helping to maintain vigilance and internalize HSE principles.

This cultural effort is supported by a system of rewards and consequences, as mentioned by the HRD Manager. Employees who proactively report hazards through PEKA DIGI are recognized and rewarded, while violations of safety procedures are addressed according to clear company guidelines. This structured approach reinforces desired behaviors and strengthens the shared sense of responsibility for safety.

Table 1. (Research Findinds)

No	Findings	Description
1	PEKA DIGI	A digital platform for real-time reporting of unsafe acts/conditions.
2	Daily Brief	A pre-work meeting between supervisors and teams.
3	MWT	Routine site visits by management and directors.

4	SWAT	Interactive discussions focused on safety between management and workers.
5	HSE Values Socialization	Ongoing training, seminars, and internal campaigns.
6	HSE Poster	Visual safety reminders strategically placed in work areas.

Source: Data Processed, 2023

DISCUSSION

The primary purpose of this study was to conduct an in-depth exploration of how Health, Safety, and Environment (HSE) practices are implemented at PT Perta Arun Gas (PAG) to achieve and sustain a zero-accident record. In a sector plagued by high operational risks, PAG's success is not an anomaly but a demonstrable outcome of a strategic, integrated system. This discussion reaffirms the study's importance by synthesizing the findings, relating them to existing literature, and elucidating their broader theoretical and practical implications.

The findings reveal that PAG's achievement stems from a powerful synergy between three interconnected pillars: technological innovation, proactive leadership, and a participatory culture. First, the implementation of the PEKA DIGI application represents a practical manifestation of the HSE 4.0 paradigm. This finding aligns with contemporary research highlighting that digital technologies can revolutionize safety management by enabling real-time reporting and data-driven decision-making (Adikwu et al., 2024; Akyildiz, 2023). However, this study moves beyond the technical functionality to highlight its role in fostering a "participative approach," a factor deemed essential for enhancing safety culture (Ahmad et al., 2025). PEKA DIGI democratizes safety, empowering every employee to become an active agent in hazard identification, thereby operationalizing the principle that safety is a shared responsibility.

Second, the effectiveness of this technology is critically dependent on the second pillar: Communication. Programs like Management Walk Through (MWT) and Safety Walk and Talk (SWAT) are not merely procedural checkboxes. They are tangible demonstrations of what Van Dyck et al. (2013) term the "enacted priority" of safety, which has a stronger impact on employee behavior than merely espoused policies. This finding corroborates studies in the oil and gas sector that confirm practical management actions and clear safety communication directly lead to improved compliance and fewer accidents (Ajmal et al., 2022). PAG's leadership does not just manage safety from a distance; they embody it in the field, building the trust necessary for a robust safety culture.

Third, the routines of Daily Briefings, continuous HSE Values Socialization, and the use of HSE Posters work in concert to create the third pillar: a participatory safety culture. This supports existing evidence that consistent training and communication are effective in strengthening safety attitudes (Ricci et al., 2016). The strategic use of visual safety reminders, as also noted in studies on safety signage, plays a crucial role in maintaining constant vigilance (Davoudian Talab et al., 2013; Harianto et al., 2019).

CONCLUSION

This study concludes that PT Perta Arun Gas's zero-accident record is the direct result of a deliberate and synergistic integration of digital technology, authentic leadership engagement, and a deeply embedded participatory culture. It moves the theoretical discussion beyond isolated best practices to present a coherent model of integrated HSE excellence. For both academics and practitioners, PAG serves as a compelling benchmark, demonstrating that in the pursuit of zero harm, the whole of a well-designed HSE system is profoundly greater than the sum of its parts.

LIMITATION

While this study provides rich, contextual insights, its limitations should be considered. As a qualitative case study of a single organization, the findings are context-specific. The generalizability (external validity) of this integrated model to other companies, especially those with different cultures or resource levels, requires further investigation.

Based on these limitations, several insightful directions for future research are proposed:

1. Quantitative Validation: A large-scale survey study could be conducted to quantitatively test the relationships and the relative weight of each pillar (technology, leadership, culture) on safety performance metrics across multiple companies.
2. Longitudinal Research: A longitudinal study tracking PAG or a similar organization over time could examine how this integrated HSE system evolves and sustains itself through changes in leadership, market pressures, and workforce demographics.
3. Cross-Cultural and Cross-Industrial Comparison: Future research could compare the implementation and effectiveness of such an integrated model in different national cultures or other high-risk industries (e.g., mining, construction) to identify universal principles versus context-specific adaptations.

REFERENCES

Adikwu, N. F. E., Esiri, N. A. E., Aderamo, N. A. T., Akano, N. O. A., & Erhueh, N. O. V. (2024). Memajukan sistem manajemen keselamatan proses di industri minyak dan gas: Strategi mitigasi risiko [Advancing process safety management systems in the oil and gas industry: Risk mitigation strategies]. World Journal of Engineering and Technology Research, 3(2), 001–010. https://doi.org/10.53346/wjetr.2024.3.2.0058

Ahmad, S., Zain, A. Z. M., Rahman, I. A., Fadzil, S. M., & Zulkifly, S. S. (2025). Dampak hubungan partisipasi karyawan terhadap budaya keselamatan di lembaga pendidikan dan pelatihan kejuruan (TVET) di Malaysia [The impact of the relationship between employee participation on safety culture in vocational education and training (TVET) institutions in Malaysia]. PaperAsia, 41(3b), 322–329. https://doi.org/10.59953/paperasia.v41i3b.406

Akyildiz, C. (2023). Integration of digitalization into occupational health and safety and its applicability: a literature review. The European Research Journal, 9(6), 1509–1519. https://doi.org/10.18621/eurj.1352743

Ajmal, M., Isha, A. S. N., Nordin, S. M., & Al-Mekhlafi, A. A. (2022). Safety-Management Practices and the Occurrence of Occupational Accidents: Assessing the mediating role of safety compliance. Sustainability, 14(8), 4569. https://doi.org/10.3390/su14084569 Antara News. (2024, January 15). Perta Arun Gas Berkomitmen Kedepankan Aspek HSSE di Lokasi Kilang [Perta Arun Gas Committed to Prioritizing HSSE Aspects at the Refinery Site]. Antara News. https://www.antaranews.com/berita/3996960/perta-arun-gas-berkomitmen-kedepankan-aspek-hsse-di-lokasi-kilang

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). Sage Publications.

Davoudian Talab, A., Meshkani, M., Mofidi, A., & Mollakazemiha, M. (2013). Evaluation of the perception of workplace safety signs and effective factors. International Journal of Occupational Hygiene, 5(2), 117–122.

Fernández-Muñiz, B., Montes-Peón, J. M., & Vázquez-Ordás, C. J. (2012). Safety culture: Analysis of the causal relationships between its key dimensions. Journal of Safety Research, 43(3), 283–290. https://doi.org/10.1016/j.jsr.2012.06.001

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. Field Methods, 18(1), 59–82. https://doi.org/10.1177/1525822X05279903

Gunawan, A. (2023, February 26). Kecelakaan kerja migas di Rokan Hilir, Disnakertrans Riau turunkan tim pengawas [Work accident in oil and gas in Rokan Hilir, Riau Manpower Office deploys supervisory team]. Bisnis.com. Retrieved September 1, 2025, from https://sumatra.bisnis.com/read/20230226/534/1631841/kecelakaan-kerja-migas-di-rokan-hilir-disnakertrans-riau-turunkan-tim-pengawas

International Association of Oil & Gas Producers. (2021). Health, safety, and environmental management in oil & gas industry. IOGP.

Kementerian Energi dan Sumber Daya Mineral. (2023). Statistik Energi Indonesia 2023. Pusat Data dan Teknologi Informasi ESDM.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in implementation research. Administration and Policy in Mental Health and Mental Health Services Research, 42(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Ricci, F., Chiesi, A., Bisio, C., Panari, C., & Pelosi, A. (2016). Effectiveness of occupational health and safety training. Journal of Workplace Learning, 28(6), 355–377. https://doi.org/10.1108/jwl-11-2015-0087

Van Dyck, C., Dimitrova, N. G., De Korne, D. F., & Hiddema, F. (2013). Walk the talk: Leaders' enacted priority of safety, incident reporting, and error management. Advances in Health Care Management, 14, 95–117. https://doi.org/10.1108/s1474-8231(2013)0000014009

Yin, R. K. (2018). Case study research and applications: Design and methods (6th ed.). Sage Publications.