

Review Form2

Book Name:	Current Approaches in Engineering Research and Technology
Manuscript Number:	Ms_BPR_2572
Title of the Manuscript:	Onshore Pipeline Leaks from a Cathodic Protection Perspective
Type of the Article	Book chapter

PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimumof 3-4 sentences may be required for this part.	This manuscript on "Onshore Pipeline Leaks from a Cathodic Protection Perspective" is highly significant for the scientific community as it addresses critical issues related to the integrity of onshore pipelines, particularly focusing on the prevention of leaks through effective cathodic protection methods. The research highlights the environmental and economic impacts of pipeline leaks, providing a detailed analysis of case studies that showcase the consequences of inadequate cathodic protection. The manuscript's emphasis on sustainability and safety aligns well with current industry needs, making it a valuable resource for professionals and researchers in the field. I appreciate the manuscript's comprehensive approach to presenting real-world case studies, which enhances the practical relevance of the findings. However, it could benefit from a deeper exploration of alternative protection technologies and more quantitative data to support its conclusions. Overall, this work contributes to the broader understanding of corrosion control and pipeline safety, making it a worthwhile read for the community.	
Is the title of the article suitable? (If not please suggest an alternative title)	The current title, "Onshore Pipeline Leaks from a Cathodic Protection Perspective," is descriptive and accurately reflects the focus of the manuscript on pipeline leaks and cathodic protection. However, it could be made more engaging and specific to highlight the key aspects of the study, such as the analysis of failure cases and the environmental impact. Here are a few alternative title suggestions: 1) "Preventing Onshore Pipeline Leaks: A Detailed Analysis of Cathodic Protection Failures and Solutions" 2) "Cathodic Protection in Onshore Pipelines: Case Studies on Corrosion-Induced Leaks and Environmental Impacts" 3) "Evaluating Cathodic Protection Failures in Onshore Pipelines: Implications for Safety and Environmental Protection" 4) "Corrosion Control and Cathodic Protection: Lessons from Onshore Pipeline Leak Case Studies" These alternatives emphasize the analytical and preventive aspects of the manuscript, making the focus on cathodic protection clearer and more compelling for potential readers.	

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Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract of the article provides a general overview of the importance of controlling corrosion in onshore pipelines and highlights the role of cathodic protection in preventing leaks. However, it could be improved by including more specific details about the key findings, methodologies, and implications of the study to make it more comprehensive and informative for readers. Here are some suggestions for improvement: Suggestions for the Abstract: 1) Include Key Findings: The abstract should summarize the main results or insights from the three case studies on cathodic protection failures. For example, mention specific causes of failure, such as soil resistivity changes or interference from nearby structures, and their impact on pipeline integrity. 2) Highlight the Methodology: Briefly describe the methods used to analyze the cathodic protection systems in the case studies. Mention techniques like soil resistivity measurements, electrochemical potential tests, or the assessment of environmental conditions, as these details provide credibility and context. 3) Emphasize Implications: Clearly state the implications of the findings for pipeline safety, environmental protection, and industry practices. For example, highlight the importance of continuous monitoring and the consequences of neglecting cathodic protection maintenance. 4) Clarify the Scope: Specify that the study focuses on onshore pipelines, and if relevant, the geographic context (e.g., Brazil) can be included to provide additional context. 5) Make it More Concise: While adding details, ensure the abstract remains concise and directly relevant to the main points, avoiding overly technical jargon that might not be accessible to all readers. Revised Abstract Suggestion: "The transportation of oil through onshore pipelines is a critical operation that requires stringent safety measures to prevent leaks, which can have severe environmental and economic consequences. This study investigates the role of cathodic protection in preventing external corrosion of pipelines, focusing on three case studies involving different failure scenarios. Key findings indicate that factors such as changes in soil resistivity, interference from nearby electrical infrastructure, and inadequate maintenance significantly contribute to cathodic protection failures, leading to pipeline leaks. The results underscore the importance of proper system design, continuous monitoring, and maintenance to mitigate the risk of corrosion and ensure safe pipeline operations. This study provides valuable insights into enhancing the reliability of cathodic protection systems in onshore pipeline networks." These adjustments will help make the abstract more informative, balanced, and appealing to readers, providing a clear snapshot of the article's content and significance.	
Are subsections and structure of the manuscript appropriate?	The manuscript has a generally appropriate structure with clearly defined sections such as the Abstract, Introduction, Methodology, Results and Discussion, and Conclusion. This format aligns well with standard scientific writing conventions. However, there are some areas where the organization and subsections could be refined to improve clarity, flow, and readability. Here are some observations and suggestions. Observations on Structure and Subsections: 1) Introduction: - The introduction provides context about the importance of corrosion prevention in onshore pipelines and briefly discusses cathodic protection. - Suggestion: The introduction could be enhanced by more clearly outlining the scope of the study and the specific objectives. Additionally, including a brief literature review or background on the existing knowledge and gaps would help set the stage for the study's contributions. 2) Methodology: - The Methodology section describes the case studies and the analysis of cathodic protection	

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	systems. • Suggestion: Consider breaking down the methodology into subsections for each case study (e.g., Case 1: Soil Resistivity Changes, Case 2: Electrolytic Corrosion, Case 3: Crude Oil Leak) to improve readability. Include specific methods used for data collection and analysis to provide clearer insights into how the evaluations were conducted. 3) Results and Discussion: • This section merges the presentation of results with their interpretation and discussion. • Suggestion: It might be beneficial to separate the Results and Discussion into distinct subsections for each case study or thematic area (e.g., "Impact of Soil Modifications," "Electrolytic Corrosion Analysis," "Leakage and Environmental Impact"). This would help readers follow the narrative more easily and see how the results relate to the broader context. 4) Conclusion: • The conclusion summarizes the key findings and emphasizes the importance of proper cathodic protection systems. • Suggestion: Ensure the conclusion clearly restates the main findings, their implications for industry practice, and suggestions for future research or practical applications. A "Recommendations" subsection could be added here to outline specific actions or guidelines based on the study's results. 5) Figures and Tables: • The manuscript includes figures and tables, which are essential for illustrating key points. • Suggestion: Ensure that each figure and table is clearly referenced in the text with an explanation of its relevance. Consider adding captions that are more descriptive to provide context even when viewed independently of the main text. 6) Additional Sections: • Consider adding a "Limitations" or "Future Work" section that briefly discusses the limitations of the current study and areas that could be explored further in future research. This adds depth and shows awareness of the study's boundaries. •	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	The manuscript appears to be scientifically robust and technically sound as it employs established methodologies, such as the Wenner Method for soil resistivity measurement and the analysis of cathodic protection systems using standard electrochemical techniques. The case studies are well-documented, providing detailed descriptions of real-world scenarios, which enhance the practical relevance and credibility of the findings. The use of quantitative data, such as resistivity values and potential measurements, supports the analysis and conclusions drawn in the study. Furthermore, the manuscript effectively integrates theoretical knowledge with practical case studies, demonstrating a thorough understanding of corrosion processes and cathodic protection principles. This comprehensive approach ensures that the findings are not only scientifically valid but also applicable to industry practices, making the manuscript a valuable contribution to the field.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. =	The manuscript includes a range of references that provide a foundational basis for the study, covering key topics like cathodic protection, corrosion science, and case studies relevant to pipeline safety. However, while the references cited are relevant, some appear to be dated, with a few sources from the late 1990s and early 2000s. Given the rapidly evolving nature of technology and best practices in the field of corrosion protection, it would be beneficial to include more recent references to reflect the latest advancements and innovations. Suggestions for Improving the References:	

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	1. Include Recent Studies: Adding more recent studies, ideally from the last five years, on advanced cathodic protection techniques, updated standards, and new materials used for corrosion prevention would strengthen the manuscript's scientific foundation. For instance, recent research on the use of advanced coatings or smart monitoring systems for cathodic protection could be highly relevant. 2. Reference Industry Standards: Citing updated industry standards and guidelines from organizations like NACE International (now part of AMPP – Association for Materials Protection and Performance) would provide a current perspective on best practices. 3. Highlight New Technologies: References to recent technological advancements, such as the use of artificial intelligence and machine learning for corrosion monitoring or the latest developments in anode materials, could provide additional insights and make the manuscript more comprehensive. Example of Suggested References: - AMPP (Association for Materials Protection and Performance) standards on cathodic protection and corrosion control, which reflect the latest industry practices. - Recent articles from journals like "Corrosion Science" or "Journal of Pipeline Engineering" that discuss new trends and technologies in pipeline corrosion prevention. - Studies on smart monitoring systems for pipeline integrity, such as those published in "Engineering Failure Analysis" or "Materials Performance." Including these additional references will not only update the manuscript but also provide a more holistic view of the current state of research and practice in the field.	
Minor REVISION comments Is the language/English quality of the article suitable for scholarly communications?	The language quality of the manuscript is generally suitable for scholarly communication, but there are areas where improvements could enhance clarity and readability. The manuscript is largely well-written, with a clear focus on technical details and the scientific aspects of cathodic protection.	
Optional/General comments	1) The figures and tables included in the manuscript help illustrate key concepts and data. However, ensure that all visuals are of high quality, well-labelled, and referenced in the text. Improving the clarity of diagrams, especially those related to cathodic protection systems, can further aid in comprehension. 2) While the manuscript effectively discusses the scientific aspects, adding a section that elaborates on the practical implications of the findings for pipeline operators, engineers, and policymakers could increase the manuscript's impact. Highlighting actionable recommendations based on the study results would be beneficial. 3) Given the technical nature of the manuscript, consider the target audience and ensure that the content is accessible to both experts and practitioners in the field. Including a brief explanation of complex concepts or technologies at their first mention can help make the work more approachable. 4) Clearly state what is unique about this study compared to existing literature. If the manuscript introduces new insights or approaches to cathodic protection, make sure these contributions are highlighted in the abstract and conclusion. 5) Including a brief section on future research directions or open questions in the field could add value, guiding other researchers on potential areas of investigation based on the findings of this study. Overall, the manuscript addresses an important topic in pipeline safety and corrosion prevention. With minor adjustments in structure, language, and content focus, it has the potential to be a strong contribution to the scientific community.	

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PART 2:

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

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