e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:05/Issue:01/January-2023 Impact Factor- 6.752 www.irjmets.com

UNDERGROUND TUNNEL CABLE MONITORING – A REVIEW PAPER

Mr. Pravin Kshirsagar[*1], Vishwajeet Shende[*2], Abhishek Abhay Ramteke[*3], Prasanna Titarmare[*4], Ashish Polke[*5], Prasanna Pothi[*6]

[*1,2,3]UG Students, Department Of Electrical Engineering, S.C.E.T., Vihirgaon, Nagpur, Maharashtra, India.

[*4]Head Of The Department, Department Of Electrical Engg., S.C.E.T., Vihirgaon, Nagpur, Maharashtra, India.

[*5,6]Assistant Professor, Department Of Electrical Engg., S.C.E.T., Vihirgaon, Nagpur, Maharashtra, India.

DOI : https://www.doi.org/10.56726/IRJMETS32880

ABSTRACT

This paper addresses a robot which can be utilized to recognize and screen any unusual circumstances happening in at the underground link area. These strange circumstances might be now and then unsafe for people. Subsequently, we can utilize this robot where people can't go or is inside out of human reach. This robot will identify any sort of temperature increase, gas release, fire, cut off., and send the gathered date to the hand held gadget. Thus, the shortcoming is cleared productively and quicker than expected. We have likewise utilized a GPS beacon, which will help us in seeing as the specific shortcoming area of issue happened underground.

I. INTRODUCTION

Transmission of power is fundamentally finished by two techniques, above and underground. The above technique I sold however somewhat hazardous. They are defenseless against lighting stroke, storm or some other kind of normal or counterfeit mishaps. The other technique for transmission of power is the underground strategy. In this strategy, as the links are laid underground and consequently is a lot more secure than the above strategy for transmission as it can't be harmed effectively by normal incidents. However, there stay alive one quandary of underground technique that, the area of the happened issue can't be distinguished precisely. Hence the robot in our venture will be exceptionally useful in dispensing with this issue. Until this innovation was presented in the link assessment, the issue examination and finding the shortcoming was made by generally finding the area of the issue happened and afterward makes an opening by uncovering at the spot. However, this technique would take long time and furthermore cost more work charges. Once in a while the area of the shortcoming that was found would be misguided or remote the genuine shortcoming site. This errand was all done truly and subsequently took a incredible arrangement of time. Consequently, to conquer this bother the robot has been arranged. A similar philosophy is utilized to identify any shortcoming happened on the transport channel also. A transport conduit is additionally like link yet further developed strategy, different kinds of transport channels are accessible. Some are introduced above, in conduits or underground also. The straightforward sort of shortcoming that might happen in the transport conduit is protection disappointment. This protection disappointment causes warming for example temperature mount and feasible short out issue too. The equivalent robot can be utilized for shortcoming location of a transport pipe and of a link. Accordingly different applications are conceivable with one expense viable robot. This model gives decline in the in general shortcoming recognition and examination cost and furthermore builds efficiency of the labourers and the shortcoming is cleared all the more effectively[Bhambulkar, A.V. ,2011;Ganorkar R. A. et al. ,2014;Rahul Mishra et al.,2013;John, B., 2012].

II. PROBLEM ANALYSIS

The fields where the cables are placed are where the robot is actually put to use. In this case, the robot is large and bulky. As a result, a replica of the real robot is created for purposes of presentation, and fault finding is carried out on a wire that is placed on the ground.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:05/Issue:01/January-2023 Impact Factor- 6.752 www.irjmets.com

Use of a straightforward, low speed DC motor drive is advocated because precision is more important. A stepper motor can be utilised for movement that happens more quickly. However, the price of the motor and motor drive is high.

Additionally, open loop circuit testing is possible. However, because of time restrictions and the need for a powerful amplifier circuit, it was agreed to hold off on this for the time being.

III. EXISTING FRAMEWORK

Various advances and tests are right now accessible to assess underground links however there is in many cases little connection between the indicative outcomes and the real degradation. The disappointments of underground power dispersion links addresses a serious danger to the unwavering quality of force framework .Substitution should be done specifically since link substitution is costly, being assessed at no less than hundred thousand bucks for each kilometer of link in region.

IV. PROPOSED FRAMEWORK

To beat the above circumstances, we are carrying out a robot that have a camera, temperature sensor, pressure sensor and so on which is utilized to recognize the break and conditions The robot likewise faculties temperature, pressure and so forth of the lines where the link is laid .The robot contains an inherent camera which catches the pictures of issue site and sends it to the end clients through Bluetooth to an android app. This method is likewise valuable in deciding the breaks and blames in oil and gas pipelines .The proposed framework is less costly and strong contrasted with the past frameworks since it has every one of the elements to distinguish the temperature, tension, and link issues in a single framework. It is shown in fig. 1

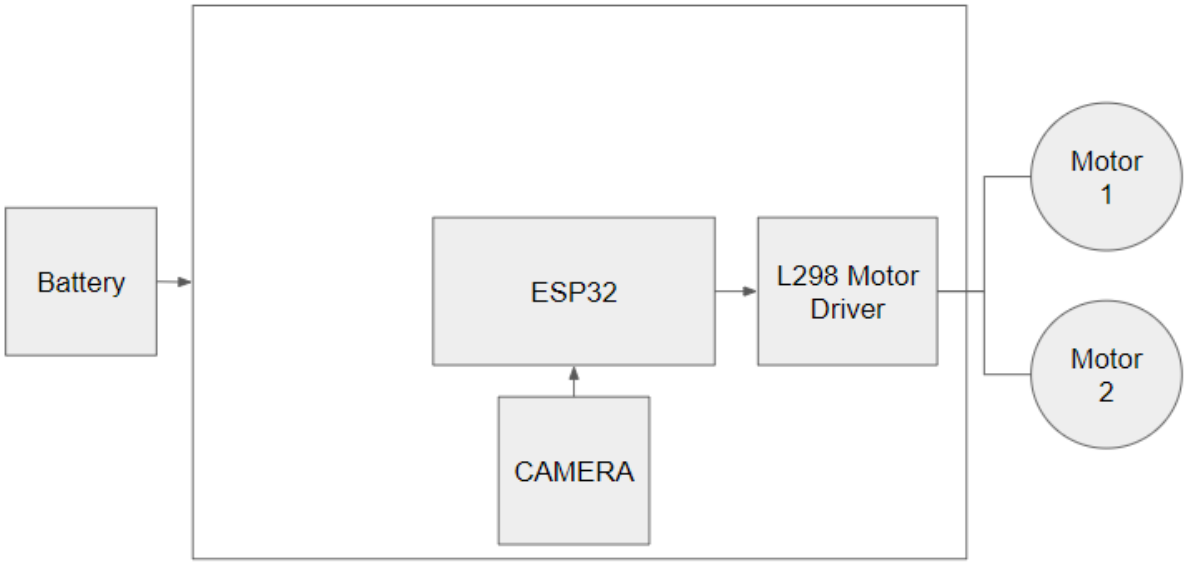

Fig. 1:- Block Diagram

V. CONCLUSION

We can significantly lowering the cost necessary to check for subterranean faults and oil pipeline flaws by creating this project. Since this single unit can be utilised to diagnose defects as well as in the oil industries. By adding a metal detector, we may improve this model even further and use the same approach to detect any metals or alloys that may be present underground.

VI. REFERENCES

[1] Muhammad, J. I., Muhammad, M. I., Iftikhar, A., Madini, O. A., Ahmed, S. A., and Ahmed, A. (2021). Real-Time Surveillance Using Deep Learning. Hindawi Security and Communication Networks. 1-17. https://doi.org/10.1155/2021/6184756.

[2] Wilfred, J. V., Sravani, P., Roshan, B. S., Shilpashree, V., and Shridevi, P. (2020). Military Surveillance Robot. International Journal of Innovative Science and Research Technology. 5(3), 1398-1401.

[3] Mayank, D., Vatan, G., Priyanka, K., Reeta, C., Aayush, J., Sharadkumar, G. (2018). IOT Based Surveillance Robotic Car Using Raspberry PI. International Research Journal of Engineering and Technology (IRJET). 5(3), 422-425

[4] S. Nio and Y. Maruyama. Remote-operated Robotic System for Liveline Maintenance Work. 425-435. 1993. ESMO-93 Sixth International Conference on Transmission and Distribution Construction and Live Line Maintenance.

[5] M. Boyer. Systems Integration in Telerobotics: Case Study: Maintenance of Electric Power Lines. 2, 1042-1047. 1996. IEEE International Conference on Robotics and Automation.

[6] S. Montambault, J. Cote, and M. St.Louis, "Preliminary Results on the Development of a Teleoperated Compact Trolley for Live-Line Working," Proceedings of 2000 IEEE ESMO - IEEE 9th International Conference on Transmission and Distribution Construction, Operation and Live-Line Maintenance, 2000, pp. 21-27.

[7] N.Ishikawa and K.Suzuki, "Development of a Human and Robot Collaborative System for Inspecting Patrol of Nuclear Power Plants," Proceedings of the 6th IEEE International Workshop on Robot and Human Communication, 1997, pp. 118-123.

[8] Seungho Kim, Seung Ho Jung, and Chang Hoi Kim, "Preventive Maintenance and Remote Inspection of Nuclear Power Plants Using Tele-Robotics," Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems, vol. 1, 1999, pp. 603-608.

[9] Zagler and F. Pfeiffer, ""MORITZ" a Pipe Crawler for Tube Junctions," Proceedings of IEEE International Conference on Robotics and Automation, vol. 3, 2003, pp. 2954-2959.

[10] S. G. Roh, S. M. Ryew, J. H. Yang, and H. R. Choi, "Actively Steerable in-Pipe Inspection Robots for Underground Urban Gas Pipelines," Proceedings 2001 ICRA IEEE International Conference on Robotics and Automation, vol. 1, 2001, pp. 761-766.

[11] H. T. Roman, B. A. Pellegrino, and W. R. Sigrist, "Pipe Crawling Inspection Robots: an Overview," IEEE Transactions on Energy Conversion, vol. 8, no. 3, pp. 576-583, 1993.

[12] Bhambulkar, A.V. (2011). Municipal Solid Waste Collection Routes Optimized with ARC GIS Network Analyst. International Journal Of Advanced Engineering Sciences And Technologies, 11(1): 202-207.

[13] Ganorkar RA, Rode PI, Bhambhulkar AV, Godse PA, Chavan SL. Development of water reclamation package for wastewater from a typical railway station. Int J Innov Technol Res. 2014;2(2):841–846 http://ijitr.com/index.php/ojs/article/view/288/pdf.

[14] Rahul Mishra and Vaibhav Dewangan, —Optimization of Component of Excavator Bucket, International Journal of Scientific Research Engineering & Technology (IJSRET), Vol. 2, Issue2, pp 076-078, May 2013.

[15] John, B. (2012). Analysis of effectiveness and outcome of organizational development interventions in Bhilai Steel Plant. PhD Thesis; School of Management Studies & Research;MATS University, Raipur (India).