SMART OIL WELL CONTROL AND MONITORING BASED ON INTERNET OF THINGS AND MACHINE LEARNING

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1. Introduction

This study aims to control and monitor oil wells based on the internet of things and machine learning. This study provides a solution to increase crew response time to artificial lift performance disturbances and well-operating parameters to contribute to production optimization and predictive maintenance using Machine Learning and Trending data.

2. Methodology

Hardware Installation

In this step is the process of installing the tools Field Hardware Installation, Set Up, Commissioning, Maintenance & Spare Part for smart monioting system, the detail process in figure 1.
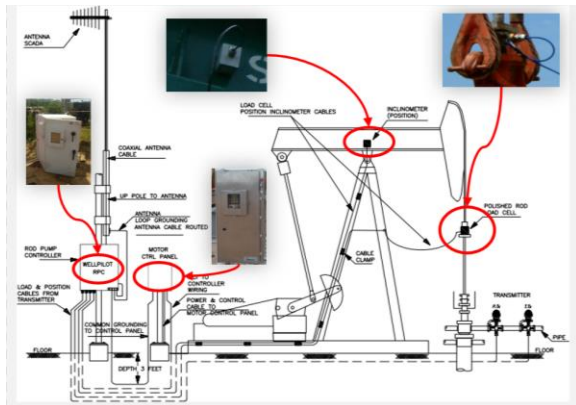

Figure 1. Hardware installation

Smart Oil Well Monitoring Process

The process of oil well monitoring consists of configuration and design such as add, delete, and edit wells data. Then monitor and surveillance (monitor status, alarm, and control wells). After that, control and improve workflow, plan, prioritize and schedule work. Then, analyze and reduce failures, monitoring and track service event. And the last is evaluate result.

3. Results & Discussion

The proposed integrated monitoring system is expected can help facilitate the field operation workers (pumpers, operators, technicians and supervisors) and facilitate knowledge workers (engineers, oil professionals) and decision support jobs at the corporate management level.
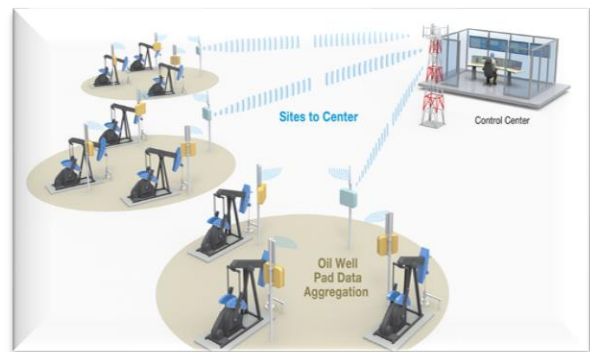

Figure 2. The proposed monitoring system

4. Conclusion

Automation of wells and processes, increase production and reduce cost by making more "informed decisions", lower mean failure rate, increase flow rate, maximize reservoir production, reduce times, maximize human resource potential, enable efficient collaboration, and Optimize production at the well, reservoir and field level.

References

[1] K. Sonawane and S. Bojewar, "IIOT for Monitoring Oil Well Production and Ensure Reliability," in 2nd International Conference on Advances in Science & Technology (ICAST), 2019.

[2] A. Singh and R. Pateriya, "Artificial Oil Lift production forecasting and analysis using Autoregressive and Deep learning Models," Available at SSRN 3396282, 2019.
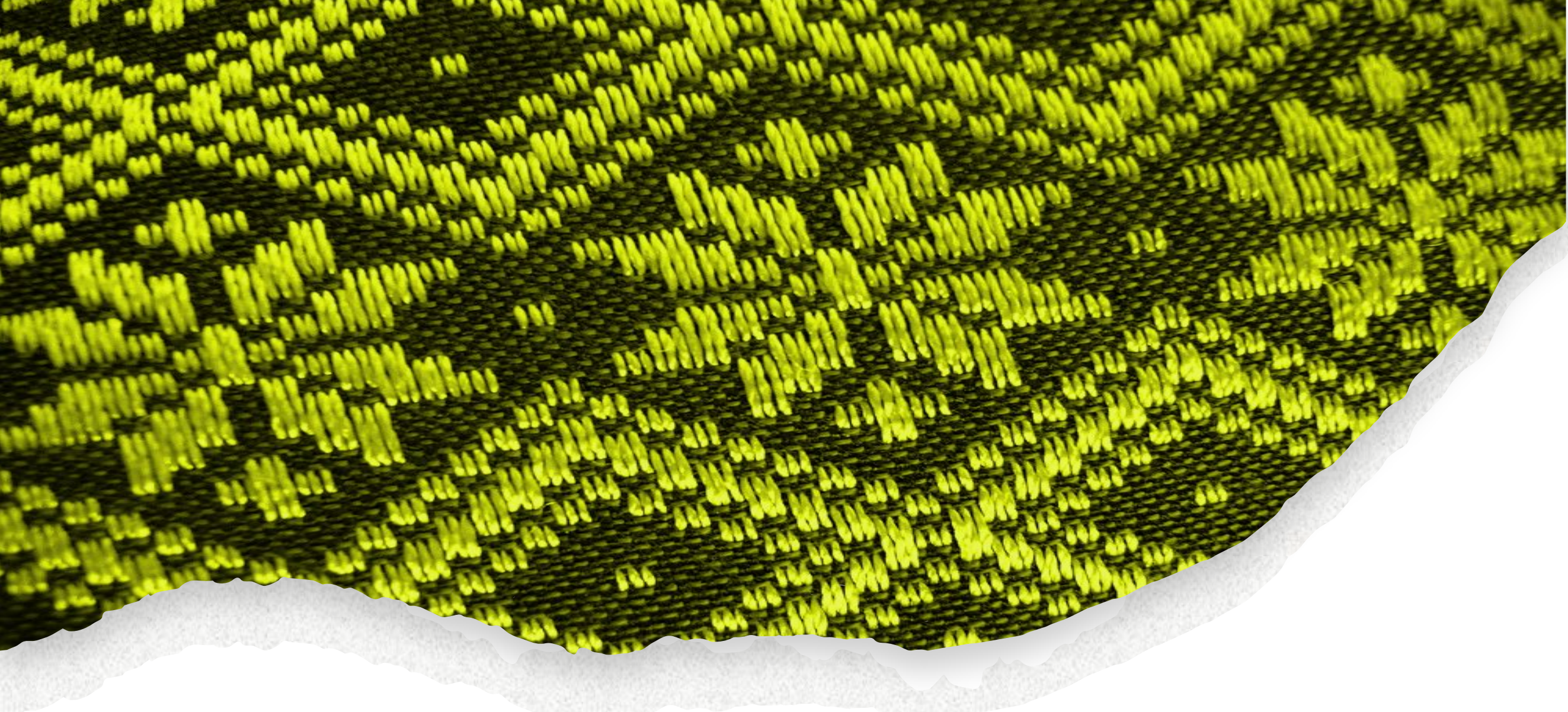
CERTIFICATE
OF PARTICIPATION

This certifies that

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for virtually showcasing the innovation/invention
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