

An Efficient Intelligent Oil Well Monitoring System for Niger Delta Oil Fields

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Abstract: Oil well monitoring has metamorphosed over the years from Dump Wells completion and the era of permanent gauges through to the hydraulic control wells until this era of intelligent Well completion. These efforts are geared towards an era where Well data can be collected and interpreted with no human intervention. The aim is to improve recovery (optimization), minimized OPEX and CAPEX, and general efficiency. However, intelligent monitoring by virtue of intelligent Well completion is still an expensive venture. The paper presents an efficient IoT-based monitoring system whereby an ESP32 microcontroller and sensors are used to monitor the Well pressure, temperature, level, and flow rate on a real-time basis. The data from the oil well is available to the user at any remote location because the sensor data is sent to a cloud service on the internet. The cloud service used is the MQTT protocol and the MIT APP Inventor. The sensor data is also viewed in an android Mobile App.

Keywords: Oilfields, Intelligent Oil-well, IoT, Monitoring System, ESP32, Sensors.

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