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Please fill in your manuscript title.	Digital Transformation of Electrical System Monitoring for Upstream Oil and Gas Facilities

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Abstract

Objectives/Scope:

This paper shared the approach and strategy of digital transformation of the electrical equipment and system monitoring at PETRONAS Upstream, through integrating and enhancing the existing electrical system and IT infrastructures, to enable remote monitoring and future big data analytics aspiration.

Methods, Procedures, Process:

Gathering of data, past trending or historical records for Upstream facilities especially for remote offshore facilities is always a challenge for onshore subject matter experts or engineers to carry out trouble-shooting and root-cause analysis, as the electrical monitoring system was localized, real time monitoring of offshore electrical equipment and system were not readily available from onshore. Most electrical installation of PETRONAS Upstream facilities built after year 2000 were typically installed with IMCS (Integrated Motor Control System) or ENMC (Electrical Network Monitoring Control) system, however it's electrical data monitoring only resides locally on-site, typically with event records up to 2-3 weeks and no historian data. Realizing the advancement of industrial intelligent electronics device technology, internet communication standards and increased in data broadband transmission nowadays, it made possible to acquire the data to a centralized platform for monitoring, real-time tracking and data processing for analytics of the health and performance critical electrical assets at PETRONAS Upstream facilities. Thus, the digital transformation project begun in 2018 to harness the opportunity or benefits of this untapped on-site data, the process involved data collection and site assessment, IMCS to PI server system integration and configuration, IT-infrastructure configuration, and design and develop algorithm, visualization and alert notification system.

Results, Observations, Conclusions:

In order to obtain the full potential and maximize benefits of the system, the project is strategically to be implemented in three stages for each selected field, namely Basic Foundation, Monitoring Enhancement and Analytics Enhancement. This system, a PETRONAS in-house digital tool would provide faster intervention of anomaly of critical electrical system and equipment, assist PETRONAS Upstream maintenance support team and subject matter experts to work more effectively and efficiently in managing and assuring the reliability and uptime of critical electrical equipment and system. It is an enabler for data driven maintenance, faster and smarter decision making.

Novel/Additive Information:

The approach and strategy are making full use of existing equipment and infra-structure capability, and through fit-for-purpose modernization of brownfield facilities to achieve value.