

A Brief (and incomplete) Review of ML/AI Applications in Artificial Lift

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Talk prepared for the ALRDC Artificial Lift Conference 2022

Artificial lift digitization generates large amounts of data used by operators for surveillance and for improving the function and health of lift equipment, surface facilities, wellbore, and possibly reservoir. As oil and gas companies move towards digital transformation, ML/AI application in artificial lift space is considered a 'low-hanging' fruit. However, there is a considerable FUD and FOMO regarding ML/AI applications amongst artificial lift practitioners. ESP failure prediction, rod pump diagnostics, gas-lift multi-well-asset optimization, plunger lift optimization, and virtual flow metering are ML applications that often appear in commercial presentations. This talk presents a few reported and not-reported use cases of ML/AI in ESP, plunger lift, and rod pumping applications. The inputs (feature sets), solution methodology, and outcomes are discussed and compared for each use case. After an ML/AI model is developed, significant efforts and infrastructure are required to deploy and manage ML/AI models. A key takeaway is that the successful ML/AI deployments succeed with active participation from artificial lift practitioners.