

Rod Pump Monitoring and Optimization: New Physics for Today's Problems

Today an upstream engineer has to understand the running condition of every well he is in charge of in order to optimize production, usually by adjusting various setpoints. Typically he will use data recorded by a pump-off controller (POC), fluid level shots, etc. as well as often coupling this wellhead-level data with intermittent information from stock tanks or test batteries.

To make things more complicated, most of the data generated by sensors on a field stays on the field controller's local memory with very few selected data points actually transferred via low-bandwidth SCADA to a host server and made readily accessible to engineers. Typically, this system is good enough to allow an engineer to diagnose crude issues and major failures. More modern systems send data to centralized control rooms far from the field, almost always unstandardized and unsanitized – as a result, more data sent means more man-hours needed to actually parse and analyze it which often falls by the wayside. In addition, it is often impractical to fully instrument a field with traditional automation solutions given the overwhelming infrastructure required and installation burden. As a consequence, most operators rely on incomplete data, leading to significant inefficiencies along with high operating costs.

In this presentation, we introduce state-of-the-art developments, both in terms of hardware technologies and mathematical data processing to automatically interpret data, as well as how these developments effectively leverage data points across the field to reduce the cost of monitoring assets by an order of magnitude, improve the efficiency of both boots on the ground and engineers in the office, and supplant and/or augment traditional POC setups to drastically increase accuracy in challenging environments.

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