

Ensuring Reliable Power: Capturing the Benefits of Electrifying Hydraulic Fracturing Operations

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Abstract

The objective of this paper is to help producers and oilfield service companies understand the tradeoffs, overcome the challenges, and understand the value proposition associated with electrifying hydraulic fracturing and pressure pumping operations, particularly those located in remote areas with limited access to external grids. The paper will discuss integrated power solutions designed for different markets and applications and outline important considerations for successfully developing and deploying full-scale industrial grids (i.e., microgrids).

Availability of reliable power has become a bottleneck in many oil and gas-producing regions. This paper will focus on the key criteria driving different power solutions based on operator requirements and priorities. It will discuss the advantages and limitations of various onsite power generation options, such as diesel engines and industrial and aeroderivative gas turbines. The paper will also outline considerations for selecting power-intensive assets, such as compressors, and discuss opportunities and challenges associated with capturing, treating, and utilizing produced gas (that would otherwise be flared) for onsite power generation.

Major conclusions presented in this paper will include the following:

- **Power solutions must be customized to align with operator objectives and requirements** - The task at hand for operators in power-constrained regions is to deploy efficient generating capacity that can be brought online rapidly. Deploying an integrated solution that delivers maximum value depends on factors such as portability needs, environmental regulations, available fuel source, elevation/temperature of site, etc.
- **Flared gas represents a significant opportunity** – Some producers are flaring close to 10% of their produced gas. As regulations tighten, the need to curtail flaring will increase. One strategy that enables companies to address both power and environmental concerns is to capture the gas and use it to drive power-generating assets.
- **Engaging early is critical** - As operators build out the infrastructure to power well sites, the need to offset rising production costs and land prices will become increasingly important. One strategy owners can adopt to achieve those goals is to engage early with a solutions provider that can handle a large portion of the supply scope. Doing so can generate benefits in the form of streamlined project execution, shorter delivery times, reduced schedule risk, lower CAPEX and OPEX, etc.