

INTELLIGENT FRACTURING | OCTIV® INTELLIGENT FRACTURING PLATFORM

Octiv® Auto Frac Service

Automated frac control service

BENEFITS

- Consistent fracture execution eliminates variability in operation, well conditions, and other factors that influence performance
- Automated pressure/rate controller provides efficiency gains
- Screenout risk detection and programable responses for mitigation help reduce risk
- Consistent surface-equipment control improves subsurface treatment delivery

FEATURES

- Pump schedules and automation recipes are configured from a remote location and delivered to the frac spread control system through cloud infrastructure
- Every frac stage can be controlled based on operator inputs with no changes to decision making shift-to-shift or stage-to-stage
- Reduced surface execution variability accelerates decision making and improves job data
- Autonomous rate, proppant, chemical, and pressure control
- Input parameters based on bench, well, and stage



Overview

Execution variability is ever-present during fracturing operations. Even when completion designs are planned to be constant, execution decisions are made frequently on every job site. This can lead to inconsistent fracture execution and inefficient operations. Common decisions include how to step up to rate, when to maintain or reduce rate, how to run proppant, when and how to proceed offline, and how to react to unexpected situations, (i.e., maximum pressure limitations, etc.). These choices impact stimulation performance, operational costs, risk avoidance, and asset performance.

Intelligent control of frac execution

The Octiv® Auto Frac service is designed to deliver fracture execution consistency. Operators use the Auto Frac service to configure the automation settings for each fracture stage and the system executes those decisions through control of the entire frac spread. The system constantly references the base frac design, automation settings, and real-time data to control the frac delivery each second. It is configurable to address the unique requirements of operators and their assets, benches, and wells. The operator determines access to these automation settings and maintains control either onsite or from a remote location.

In addition to the base frac design, examples of configurable automation inputs include:

- Pressure and rate targets
- Rate controller aggressiveness
- Proppant timing rules
- Flush timing rules
- Ramp down control
- Screenout risk alerts and programmable responses

Frac automation to maximize completion performance

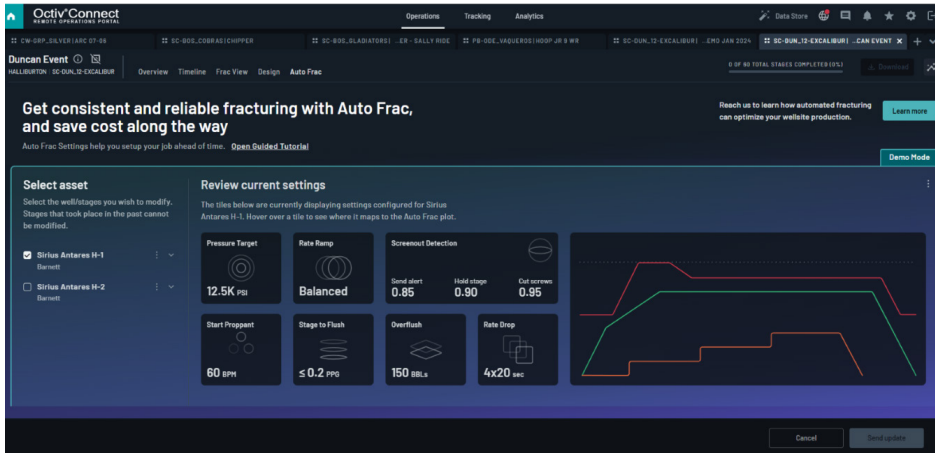
Operators can pump a stage at the wellsite just by clicking “Go.”

The pump operator selects the well/stage and begins the operation. This action loads the pump schedule and automation settings that were configured by the operator from the Octiv® Connect remote operations portal, which are presented on the screen as a visual confirmation of the desired job execution.

Once inputs are confirmed, the system begins automated control, monitors well conditions, and executes the stage to plan.

Operators can monitor the automated stage execution through remote access to the Octiv® platform or through the real-time interface in the frac van. If desired, manual control is one click away, and manual adjustments can be made at any time to individual design elements with the system in or out of automation.

The Octiv platform delivers a transparent view into the control system as it responds in real-time to well conditions as they change.



» FIGURE 1 - Octiv® Auto Frac service automation settings configuration

» FIGURE 2 - Octiv® Auto Frac service example job

Figure 1

Autonomous Control of frac job execution

- **Intelligent controls**
automate execution of entire frac stage
- **Reduce variability**
by centralizing controls decisions
- **Optimize performance**
by configuring automation sequences to your job

Pumped by Experience

Octiv® Auto Frac

Figure 2

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