SmartProcess™
Oil & Gas Applications

Well Optimization Manager

Remote Automation Solutions

EMERSON™
Process Management

An advanced user program designed to maximize production from oil & gas wells

Well Optimization Manager is intended for either the ROC800-Series Remote Operations Controller or the FloBoss™ 107 Flow Manager. The program supports multiple industry-standard artificial lift techniques — including intermitter control, plunger lift (conventional and continuous), gas lift (for liquid or gas production), plunger-assisted gas lift (PAGL), and gas-assisted plunger lift (GAPL).

The program also includes a suite of features for enhanced optimization and operation — including the Coleman-Turner critical flow calculation, the Foss and Gaul plunger lift load factor calculation, self-adjustment of plunger triggers, real time value alerts, and nomination period accumulation control.

Well Optimization Manager supports multiple industry-standard artificial lift techniques:

- Plunger lift
- Gas lift
- Gas-assisted plunger lift
- Plunger-assisted gas lift
- Venting
- Intermitter

Program User Interface

The user program interface is divided into five separate ROCLINK™ 800 displays:

- **Units** - provides unit flexibility and internationalization
- **Configuration** - configuration for all aspects of the user program
- **Core Operate** - provides information on the basic well object
- **Gas Lift Operate** - operation and result data for gas lift feature
- **Cyclic Operate** - operation and result data for plunger lift/intermitter features

Well Core Operate

Regardless of the well type and optimization specifics, a common set of basic I/O will exist and must be configured for automation (for example the casing pressure, tubing pressure, gas meter run, etc.). With these inputs, basic statistics on the well — such as averages and accumulations — are recorded. An interfacing showing details of the last five sets of well openings and well closings is included, which provides insight into the well behavior for cyclic operation modes — such as plunger lift or intermitter.

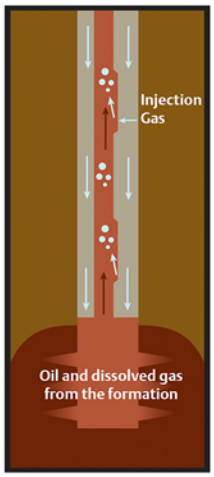
Well Optimization Manager supports various well options such as:

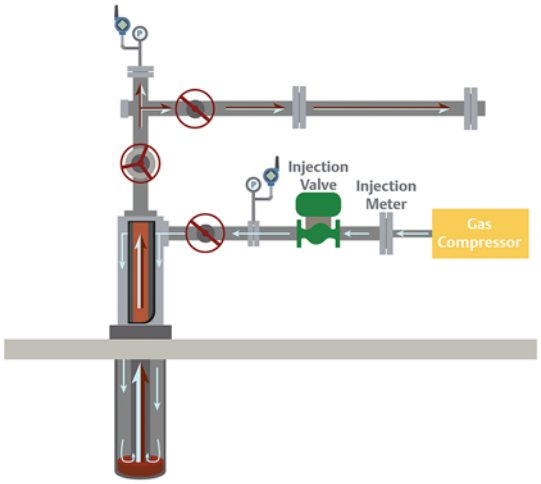
- Use gas lift
- Use cyclic production
- Coleman-Turner critical fow calculation
- Line pressure overrides
- Low pressure overrides when shut-in (Idle Mode)
- Event history writes
- Health check watchdog
- Nominations
- Scheduled events
- Real-time value alerts

Gas Lift Overview

Gas Lift is a method of artificial lift that uses an external source of high-pressure gas for supplementing formation gas to lift the well fluids. The principle of Gas Lift is that gas injected into the tubing reduces the density of the fluids in the tubing, helping to raise the liquids. Gas Lift is used on both primarily oil and primarily gas wells. Gas Lift supports both gas and liquid production, and optimizes injection based on:

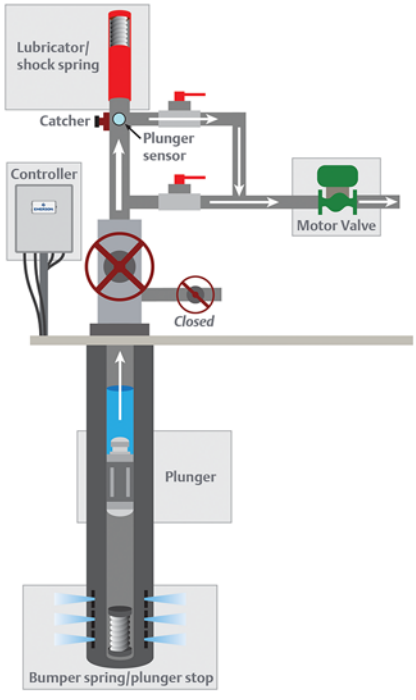
- Production
- Efficiency
- Financial return





Plunger Lift Technique

- Plunger Lift removes liquids from the wellbore so that the well can be produced at the lowest bottom hole pressure. Plunger Lift uses a free piston that travels up and down the well's tubing string. It minimizes liquid fallback and uses the well's energy more efficiently.
- Plunger Lift is typically used in high gas-to-liquid-ratio (GLR) wells (primarily gas wells).
- It is very economical because it needs minimal equipment and uses the well's own gas pressure as the energy source.



The Cyclic Control Operate page allows monitoring and controlling the well from one interface. The stages of the well are color coded to immediately tell which stage of the cycle the well is currently in.

The application provides the user with different tabs to:

- Define vent/GAPL/abort triggers during lift
- Define afterflow closing triggers
- Define plunger drop time
- Define armed shut-in open triggers
- Define one open or close trigger to auto-adjust and the parameters to force the adjustment
- Define as required based on options enabled on the general tab
- Generate recommended opening trigger set points based on plunger specifications using Foss and Gaul
- Define alerts as needed and the action to take when true
- Override built-in line pressure
- Swab, health check comports or other devices, and nominate controls
- Easily monitor and control
- Tune triggers
- Start/stop
- Manual advancing
- View last 10 arrival information
- Enable real time and cyclic alerts

The Gas Lift Operate page allows the user to:

- Monitor the well during the gas lift averaging cycle
- View real time production and economic revenue values
- Edit key gas lift control points
- Display last two completed gas lift averaging cycles and their production results
- View cycle statistics

Cyclic Operate Configuration

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