What's New in Well Optimization Manager?
Version 4.04

Support for bottom hole pressure

- Reports bottom hole pressure (BHP) as either a calculated or live value.
- Uses the Hagendorn-Brown calculation to estimate BHP:
    - Calculates an updated BHP every 16 minutes without an appreciable increase in CPU loading.
    - Provides a correction factor you can use to correct the calculated value to a known pressure.

- Provides a TLP for live BHP values (if available).

Note: Currently, the BHP is not used in any pre-built optimization function, but both the live or calculated numbers are available as a TLP that could be used for open or closed triggers, for historical archiving or as part of the control in a logic block.

Defined status of downhole mandrel valves based on surface pressure

- Calculates which gas lift mandrel valves are open or closed, by comparing the surface pressure to the opening and closing surface pressure setpoints for each mandrel valve.

- Allows you to define the number and true depth of installed downhole mandrel valves, as well as opening and closing pressure setpoints based on surface pressure.
- Provides a graphic showing the mandrel valve configuration and the valves' open or closed state based on surface casing pressure.
- Validates values after you enter the true vertical depth and opening and closing pressure.

Example of a mandrel valve design report:

Design Report

Valve #	Valve Desc.	TVD ft	MD ft	TV F	TCF	Port Size	R	PT psi	PTR	PSC psi	PVC psi	OP psi	PSO psi	PTRO psi
9	TP-1.5	1750	1751	123	0.8803	12/64	0.0345	553	19	982	1042	1059	999	950
8	TP-1.5	2850	2880	131	0.8672	12/64	0.0345	740	26	957	1052	1063	968	945
7	TP-1.5	3515	3563	135	0.8608	12/64	0.0345	735	25	935	1049	1060	946	935
6	TP-1.5	4180	4249	139	0.8544	12/64	0.0345	730	25	913	1045	1057	925	925
5	TP-1.5	4845	4937	142	0.8497	12/64	0.0345	723	25	890	1040	1051	901	915
4	TP-1.5	5510	5625	145	0.8451	12/64	0.0345	715	25	868	1034	1045	879	905
3	TP-1.5	6175	6316	148	0.8405	12/64	0.0345	706	24	841	1022	1034	853	890
2	TP-1.5	6840	7007	149	0.8390	12/64	0.0345	696	24	818	1013	1024	829	880
1	TP-1.5	7505	7734	150	0.8375	12/64	0.0345			720	928	936	728	805

TV: Temperature of Valve
TCF: Temperature Correction Factor
R: Ap/Ab
PT: Tubing Pressure
PSC: Closing Pressure at Surface

PVC: Closing Pressure at Depth = $(OP)(1 - R) + PTR$
OP: Opening Pressure at Depth = $(PVC - PTR) / (1 - R)$
PSO: Suface Opening Pressure = $OP - DPC$
PTRO: Test Rack Opening Pressure = $(PD\ AT\ F) / (1 - R)$

## Configurable forced injection setpoint adjustment after initial test

- During the program's first averaging period, you can configure an initial post time to record the test's starting value, rather than using the values available when the valves first open. This gives the well time to establish flows rather than posting zeros for the start of the initial test. The default value is 25% of the initial test time. You can adjust the injection rate at the initial posting time.
  - This modification is in response to customer requests to manage the situation when a previously optimized well, following a restart, quickly returned to its "sweet spot." This phase forces a change to the well's operating conditions and initializes an optimization routine.
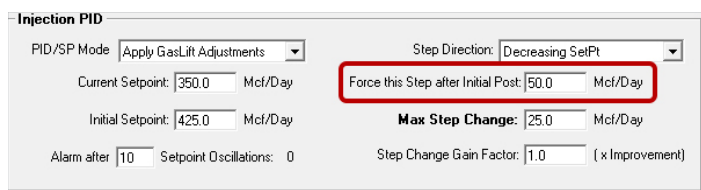
## Configurable remote PID instead of local PID for gas lift injection control

- When a remote PID is selected, the setpoint, mode and output are recorded and handled correctly in the remote device.
- The output feedback is then read from the remote device.

- The ROC or FloBoss™ flow computer automatically tracks the output using feedback to smoothly transfer between the Auto and Manual settings. sing setpoints, the flow computer tracks the PV, smoothly shifting between Manual and Auto mode.
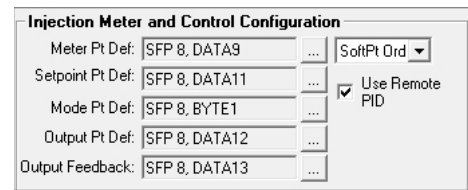

Automatic information retrieval for browsable flow selections

- If you select a standard flow type (such as AGA, 800L, or CLAP liquid), the program automatically retrieves the required values.
- If you select an accumulator from the PMSC utilities, the program automatically retrieves required values.
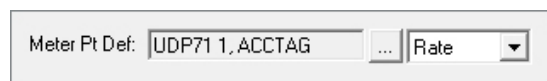

- If you select **SoftPt Order**, that option supports the standard Vinson "batting order" to automatically retrieve required values (the Batting Order White Paper is available upon request).

- You can select other TLPs, but you must define them either as a rate or an accumulator:
  - If you select **Rate** for non-standard flow types, accumulations are not available.
  - If you select **Accum** for non-standard flow types, rate and accumulations are not available.
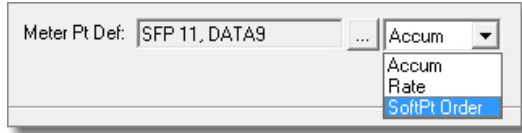

Start-up options for gas lift

- You can start the gas lift test using the settings of initial setpoint and step direction.
- You can also restart the gas lift test from the last known current values of setpoint and step direction.
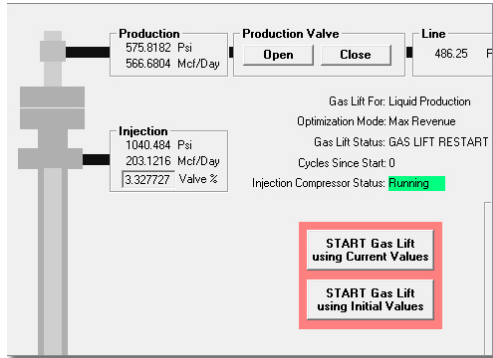
## Individual off timers for injection and production flow rates to validate test results

- You can now define more values for stopping a gas lift test if production or injection stops for more than a defined period.
  - Setpoints are available for time off during a single event or total percent of time during a test cycle.
 - If either setpoint is breached, the test aborts.
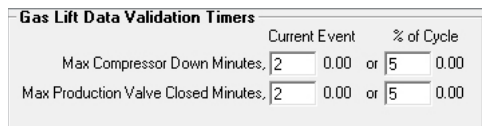
Ramp-up process to the valve sequence startup routine of gas lift

- After the valve startup sequence completes, the program ramps up the setpoint to the optimization setting rather than using a step change.
- You use the **Ramp Rate** field to define this ramp speed in MCF per minute.
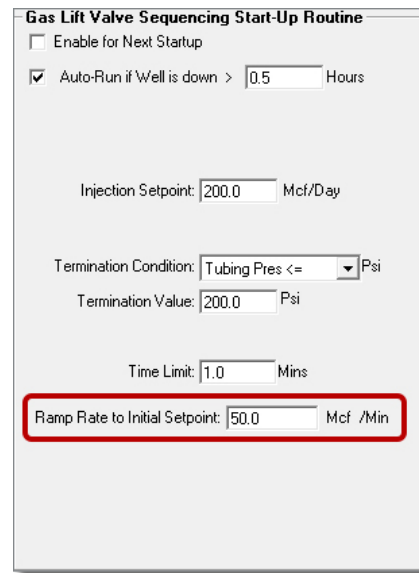
Well nomination through defined flow accumulator instead of well flow rate

- The program now allows you to use an external flow accumulator to define nominations. This is in response to customer requests to use a flared volume as the nomination point instead of wellhead volume.
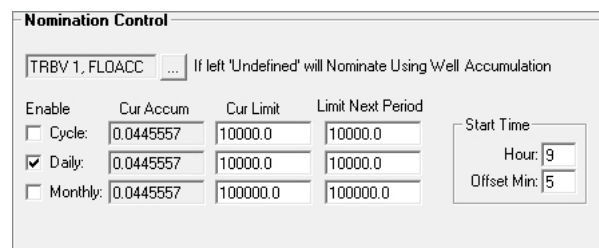
Additional plunger information

- The program maintains more date to track and calculate rise and fall times, as well as plunger lifting ability:
  - Travel miles
  - Inspection date
  - Plunger make and model
  - Fall velocity
    - For improved accuracy in calculating plunger arrival speed on continuous plungers

Enhanced gas lift operation display
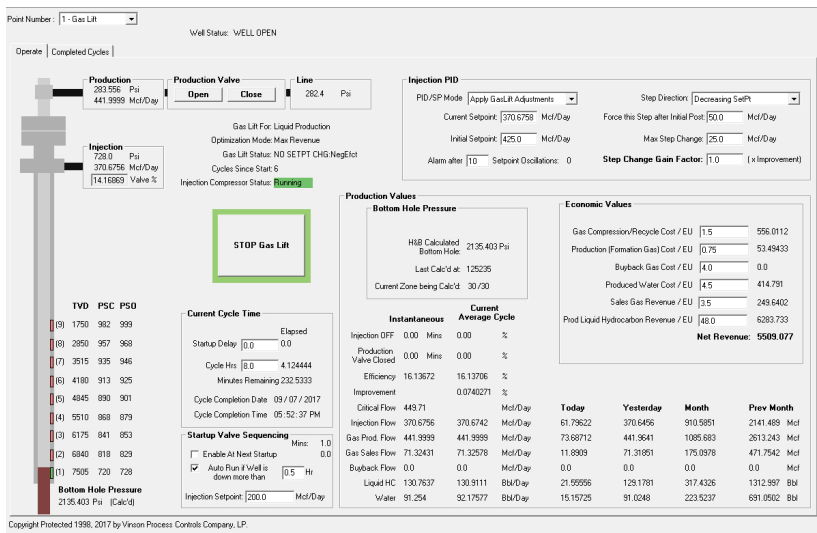
Other enhancements

- Configurable softpoint for the plunger release point
- Variable PID setpoint for gas lift injection at any time
- Redesigned graphics for clarity of the SSD and recovery options of gas lift
- Event logging disabled when retrieving cycle SN
- BHP added to cycle Logs
- BHP and highest mandrel valve open added to gas lift Logs
- Modified and enhanced configuration and operational screens
- Local Display Manager updated to support v4.04

Global Headquarters
North America and Latin America
Emerson Automation Solutions
Remote Automation Solutions
6005 Rogerdale Road
Houston, TX, USA 77072
T +1 281 879 2699
F +1 281 988 4445

www.Emerson.com/RemoteAutomation

Europe
Emerson Automation Solutions
Remote Automation Solutions
Unit 8, Waterfront Business Park
Dudley Road, Brierley Hill
Dudley, UK DY5 1LX
T +44 1384 487200
F +44 1384 487258

Middle East and Africa
Emerson Automation Solutions
Remote Automation Solutions
Emerson FZE
PO Box 17033
Jebel Ali Free Zone - South 2
Dubai, UAE
T +971 4 8118100
F +971 4 8865465

Asia Pacific
Emerson Automation Solutions
Remote Automation Solutions
3A International Business Park
#11-10/18, Icon@IBP, Tower B
Singapore 609935
T +65 6777 8211
F +65 6777 0947

Find us in social media

RemoteAutomationSolutions

Remote Automation Solutions Community

Emerson_RAS

Remote Automation Solutions

EMERSON™