



SmartProcess™
Oil & Gas Applications

Well Test Manager



Maximize well control
for a more efficient
allocation of resources

Well Test Manager is an application for Emerson's ROC800-Series RTU. The application determines gas and liquids allocation volumes for up to 64 wells by sampling from a test separator containing a gas meter and liquid meters.

Well Test Manager can run automatically or manually. In the automated mode, the application automatically starts and stops the well test based on individual test times. In manual mode, users manually align the header valves and manually start and stop the well test.

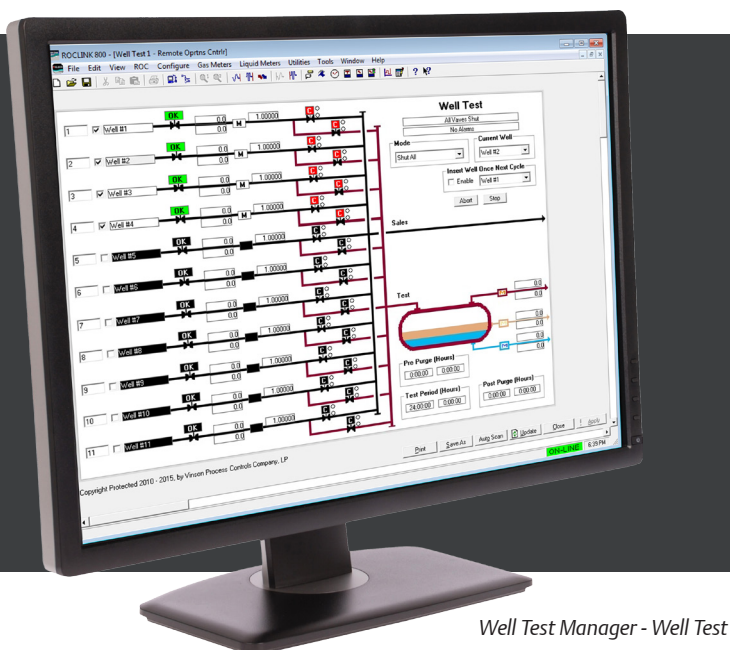
Well Test Manager supports multiple operational scenarios. The smallest option supports 11 wells, the mid-size supports 32 wells, and the largest size supports up to 64 wells. In addition, the application supports up to three well testing systems concurrently in the same RTU for flexible operations.

Individual Well Meters Scenario

This scenario uses physical individual well meters measuring two or three phase flow directly at the wellhead. The supported meter types are orifice, V-Cone or linear meters. During each individual well test cycle, the liquids and gas volumes produced by the test separator are accumulated. At the completion of the test period these accumulated volumes are recorded in the test results and used to generate a gas correction factor that is assigned to the wellhead meter along with gas to oil and gas to water ratios. The gas correction factor and liquid ratios are used to calculate well head gas and liquid volumes between well test cycles.

Total Sales Meter and Virtual Well Meters Scenario

This scenario provides the same results as the Individual Well Meter Scenario without using physical meters at the wellhead. Gas and liquid accumulations are recorded in the test report and gas to liquid ratios are calculated at the end of the test cycle. The difference between the two scenarios is that the program calculates the gas correction factor by a ratio of test gas to total facility gas. This gas correction factor and liquid ratios are used to calculate wellhead gas and liquid volumes between well test cycles.



Well Test Manager - Well Test

Overview and Features

- ROC800-Series application
- Work in conjunction with Coriolis NOC/PVR for 2 Phase test trains
- Multiple program sizes supporting up to 11, 32, or 64 virtual meters
- Ability to enable wells for test, set test order and insert a well for a single test upon completion of current test
- Support for automation testing or manual testing with 24 hour equivalent results

Individual Well Configuration:

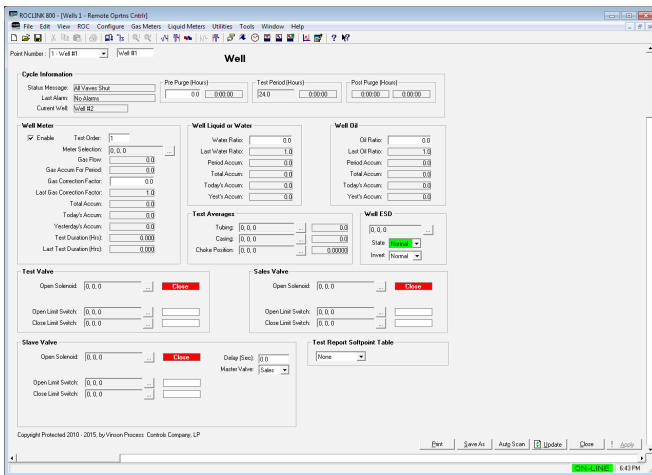
- Configure well test time
- Configure automated valves
- View Current accumulations based on last validated factors and ratios

Separator Meter Setup:

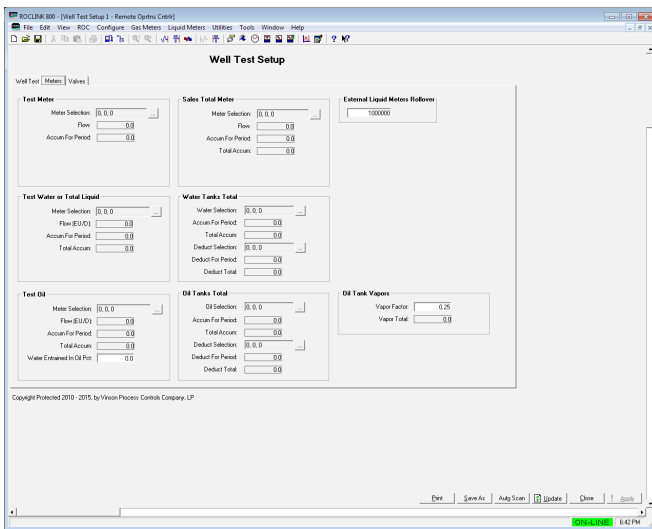
- Gas factor is percent of total gas sales vs tested amount
- GOR/GWR can be calculated using gas factor or oil factor and water factor can be calculated as percent of total oil or water produced if used in conjunction with Tank Manager

Reports:

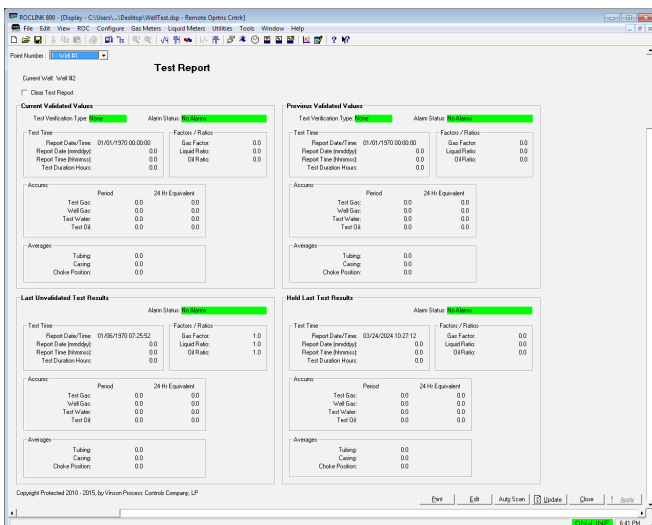
- Automatic or manual validation
- Record current, previous, and un-validated test results
- Allow tests results to be held for comparison after retest
- All report variables are SCADA accessible parameters



Individual Well Configuration



Separator Meter Setup



Well Test Manager Reports

Additional Program Features

- The automated testing order can be specified for each well
- A one-time insertion of a well into the testing order is possible
- Cycle status text messages (can be used on a LCD display)
- Alarm text messages (can be used on a LCD display)
- Current well text messages (can be used on a LCD display)
- Optional status message alarm logging
- Optional gas correction factor event logging
- Optional application of each well's meter gas quality to the test meter
- Minimum test time before factors are applied
- Accept or reject tests automatically or manually
- Validation criteria including gas correction factor minimum threshold, current vs. last tolerances for gas, oil and water factors
- Valve position verification and actions on failure
- An option to hold last test results will allow a retest before both are accepted or rejected into the test report (one set of hold registers for all wells)
- For predominately gas production, liquid factors can be based on liquid/gas ratios
- For predominately liquid production, liquid factors can be based on oil and water accumulations from the Tank Manager application
- Optional normalization of off cycle well gas correction and liquid ratios, so all values equal 100% of Sales measurement (virtual meters only)
- Post-purge cycle test valve leak detection
- Oil tank vapor estimation
- Valve position verification and actions on failure
- ESD valve monitoring for each well with actions on failure
- Well test reports for the current and previously validated tests for each well are stored in program records or Soft Point tables, each easily accessible by SCADA systems



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