

ProductionManager™ Well Test



Maximize Well Production

ProductionManager™ Well Test allows you to maintain accurate allocation measurement while achieving facility cost reduction goals. This application facilitates scheduled, automated well testing or manual well test operations. Well Test is compliant with the latest API 20.5 well testing guidelines. Well Test generates test reports, which can be approved manually or automatically. Now you can rest easy knowing that potential issues with allocation, scheduling, multiple testers and optimal test results are resolved.

Get More from Your Wells

Well Test leverages previously built ProductionManager™ Equipment Module well and separator train objects for use in well testing, simplifying configuration. When used in conjunction with ProductionManager™ Well Optimization, Well Test can coordinate well optimization as part of the test schedule. Based on feedback of optimization results, Well Test will complete the test cycle or extend the well test to allow further optimization. This process interaction ensures keeping overall testing time to a minimum while maximizing well production.

Features

■ Manual/ Automated Valve Support

Well Test can support various valve systems. Manual and automatic valve setups are welcome.

■ Scheduling

Schedule your tests when you need them, on one tester or several. The schedules can be modified as needed, and wells can be inserted as required for retesting. Well Test takes care of the rest.

■ 24 Hour Equivalent

There is no longer a need for concern over valves being switched manually before their designated time. Well Test's 24 hour equivalent provides a daily total of flow volumes.



Emerson Impact Partner



- **Comprehensive Reporting Process**
Receive all of your reports immediately at the end of the test. You can expect accurate results every time. The reports facilitate manual and automatic acceptance.
- **Multiple Tester Support**
There is no need for multiple PLC systems. You can run multiple testers all at once, automatically. View your results in one, convenient location.
- **Test Results Management**
Provides the ability to automatically accept test results based on user defined criteria, manually accept test results, or hold test results for completion of retesting the well.
- **Supports the API 20.5 Well Testing Recommended Practice**

User Interface

Well Test is accessed utilizing FBxConnect™ software, a Microsoft® Windows® based program created to configure, monitor and service Emerson's FB3000 RTU and applications. Well Test's graphical user interface allows you to easily facilitate scheduled, automated well testing or manual well testing. Configurations are represented visually within the application. You can easily view data and reports, making changes and adjustments as required.

Connectivity/Requirements

Once connected, you can access all features, including editing objects, setting alerts, reporting, diagnostics and more.

- FBxConnect™ access
- FB3000 RTU
- PMWT licensing
- Local connectivity via USB, serial or Ethernet* *

*If you already have a method to connect to the FB3000 RTU remotely for SCADA access, you can use FBxConnect™ and that same remote link to connect to PMWT and all other apps in the ProductionManager EDGE™ suite. Once connected, you can access all features, including editing objects, selecting auto adjustment parameters, setting alerts, reporting, diagnostics and more.

Configuration

Well Test Overview

This summarizes all well test statuses and provides shortcuts to testers, wells and reports. This overview also gives operational messages and alerts.

Status	Well Name	Enabled	Message Timestamp	Operational Message	Test Report	Alarm Message	Alarm Status	Assigned Tester
In Prod	Theodore	Yes	13-Jan-2021 11:49:03	Well Off Cycle	Report	No Alarms	0	Tester_1
In Test	Everett	Yes	13-Jan-2021 12:04:03	Test In Progress	Report	No Alarms	0	Tester_1
In Prod	Rosalie	Yes	13-Jan-2021 14:19:09	Well Off Cycle	Report	No Alarms	0	Tester_2
In Test	Ashton	Yes	13-Jan-2021 14:34:09	Test In Progress	Report	No Alarms	0	Tester_2
N/A	Isabella	No	02-Dec-2020 17:03:05	Well Off Cycle	Report	No Alarms	0	Unassigned
N/A	Winston	No	02-Dec-2020 17:03:05	Well Off Cycle	Report	No Alarms	0	Unassigned
N/A	Abigail	No	02-Dec-2020 17:00:36	Well Off Cycle	Report	No Alarms	0	Unassigned

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Testers Overview

This summarizes wells assigned to a tester, current test status, scheduling and live test data.

PMWtTester_1 (Tester 1)

Testers Overview

Assigned Wells

Status	Well Name	Enable	Test Order	Flow	Correction Factor	Test Report	Production Valve	Test Valve	Last Test Alarm
In Prod	Theodore	<input checked="" type="checkbox"/>	1	1713.024	0.691	Report	Open	Close	No Alarms
In Test	Everett	<input checked="" type="checkbox"/>	2	1464.436	0.82719	Report	Close	Open	No Alarms

Live

Production

Gas: 1882.0198704 Mcf/day

Oil: 32.058208 bbl/day

Water: 34.56 bbl/day

Test

Gas: 1464.6045901 Mcf/day

Oil: 77.140063 bbl/day

Water: 25.92 bbl/day

Test Accums: 144.7541791 Mcf

11.4781557 bbl

3.8565 bbl

Cycle: Test In Progress Status: No Alarms

Cycle Control

Test Mode: Consecutive Auto Test

Pause

Test Well

Well Currently In Test: [Everett](#)

Change Well in Test to: [Everett](#)

Insert Well Once: [Theodore](#)

Optimization Time (Hr)

Preset: 4 PM Well Optimization Restarts: 0

Remaining: 0.1792

Stabilization Time (Hr)

Preset: 0.25

Remaining: 0.0

Test Period (Hr)

Preset: 4

Remaining: 0.4292

Post-Purge Time (Hr)

Preset: 0.0

Remaining: 0.0

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Wells Display

This takes the assigned Equipment Module well object and adds the following:

- Well Test Phase Valve Status
- Well Test Phase Timing Information (Stabilization, Optimization, Testing and Post-Purge)
- Test Validation Settings.

PMwtWells_1 (Theodore)
Wells Display

Well Information

Enable Tag: Theodore Accounting Code: Tester Group Number: 1
 Description: Well 1 Test Order: 1 Tester Group Desc: Tester_1
 Cycle Status:

Max Optimization (Hr)

Stabilization (Hr)

Test Period (Hr)

Define Test Time Here

Post-Purge (Hr)

Well Values

Well Gas		Well Oil		Well Water	
Period Accum	<input type="text" value="0.0"/> Mcf	Period Accum	<input type="text" value="0.0"/> bbl	Period Accum	<input type="text" value="0.0"/> bbl
Gas Value	<input type="text" value="38000.647"/> Mcf	Oil Ratio	<input type="text" value="0.02984"/> bbl/Mcf	Water Ratio	<input type="text" value="0.03216"/> bbl/Mcf
Gas Correction Factor	<input type="text" value="0.691"/> Mcf/Mcf Reset	Flow Rate	<input type="text" value="48.438"/> bbl/day	Flow Rate	<input type="text" value="52.211"/> bbl/day
Flow Rate	<input type="text" value="1623.509"/> Mcf/day	Today's Accum	<input type="text" value="21.645"/> bbl	Today's Accum	<input type="text" value="23.331"/> bbl
Today's Accum	<input type="text" value="725.476"/> Mcf	Yest's Accum	<input type="text" value="33.935"/> bbl	Yest's Accum	<input type="text" value="36.578"/> bbl
Yest's Accum	<input type="text" value="1137.409"/> Mcf	Month Accum	<input type="text" value="368.599"/> bbl	Month Accum	<input type="text" value="397.309"/> bbl
Month Accum	<input type="text" value="12354.479"/> Mcf	Prev Month Accum	<input type="text" value="748.435"/> bbl	Prev Month Accum	<input type="text" value="806.73"/> bbl
Prev Month Accum	<input type="text" value="25085.595"/> Mcf	Total Accum	<input type="text" value="1133.759"/> bbl	Total Accum	<input type="text" value="1222.066"/> bbl
Total Accum	<input type="text" value="38000.647"/> Mcf				

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Test Report Logging

A dedicated Log File exists for each well storing up to 256 test results by serial number. A stored test can be retrieved from the file system by serial number.

Report Logs
Last Alarm: 0

Logs Available:

Newest Log Record: 13-Jan-2021 11:49:02 S/N 24437

Oldest Log Record: 27-Sep-2020 05:04:26 S/N 24182

Retrieve Serial #: Retrieve

Serial Number:

HyperSerial Number:

Factors / Ratios

Gas Factor:

Gas Eqv Factor (GEF):

Oil Ratio:

Water Ratio:

Validation

User Defined 1:

User Defined 2:

Averages During Test

Tubing: Casing: Choke Position:

Accums

	Period	24 Hr Equivalent
Well Gas	<input type="text" value="178.134"/>	<input type="text" value="1068.802"/> Mcf
Test Gas	<input type="text" value="178.368"/>	<input type="text" value="1070.205"/> Mcf
Injection Gas	<input type="text" value="34.513"/>	<input type="text" value="207.08"/> Mcf
Casing Pack	<input type="text" value="0.0"/>	<input type="text" value="0.0"/> Mcf
Test Oil	<input type="text" value="5.344"/>	<input type="text" value="32.063"/> bbl
Test Water	<input type="text" value="5.758"/>	<input type="text" value="34.548"/> bbl
Gas Eqv Vol (GEV)	<input type="text" value="0.0"/>	<input type="text" value="0.0"/> Mcf
Gas Eqv Total (GET)	<input type="text" value="178.368"/>	<input type="text" value="1070.205"/> Mcf

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Reports

This summarizes four completed well test results into one centralized display. The four reports are:

- **Last Completed Test**

Last unaccepted completed test results

- **Current Test Values**

Current accepted completed test results. These results are typically used for allocation measurement purposes

- **Previous Test Values**

Previous accepted completed test results

- **Held Test Values**

Unaccepted completed test results being held until the well can be re-tested. Once the well is re-tested, either “Held Test” results or “Last Completed” results can be accepted or rejected.

PMWtrpts_1 (Report_1) ▼

Tag: Theodore Accounting Code:

Desc: Well 1 Tester: Tester_1

Clear Test Report

Current Test Values

Curr Alarm: 0 Verification Type:

Test Time		Factors / Ratios	
Start Date/Time	13-Jan-2021 07:49:02	Gas Factor	0.6910019 Mcf/Mcf
End Date/Time	13-Jan-2021 11:49:02	Oil Ratio	0.0298352 bbl/Mcf
Test Duration	4.0 Hr	Water Ratio	0.0321591 bbl/Mcf
		Gas Eqv (GEF)	0.0 Mcf/bbl

Accums		
	Period	24 Hr Equivalent
Well Gas	178.8966974	1073.3801846 Mcf
Test Gas - Injection	179.1095217	1074.65713 Mcf
Injection Gas	34.416046	206.4962762 Mcf
Casing Pack	0.0	0.0 Mcf
Test Oil	5.3437768	32.0626605 bbl
Test Water	5.76	34.5599999 bbl
Gas Eqv Vol (GEV)	0.0	Mcf
Gas Eqv Tot (GET)	179.1095217	Mcf

Averages	
Tubing	378.3595928
Casing	624.2395073
Choke Position	79.3770076

User Defined Validation	
User Defined 1	0.0
User Defined 2	0.0

Previous Test Values

Prev Alarm: 0 Verification Type:

Test Time		Factors / Ratios	
Start Date/Time	12-Jan-2021 23:19:00	Gas Factor	0.6901808 Mcf/Mcf
End Date/Time	13-Jan-2021 03:19:00	Oil Ratio	0.0299594 bbl/Mcf
Test Duration	4.0 Hr	Water Ratio	0.0322817 bbl/Mcf
		Gas Eqv (GEF)	0.0 Mcf/bbl

Accums		
	Period	24 Hr Equivalent
Well Gas	178.1336076	1068.8016458 Mcf
Test Gas - Injection	178.367501	1070.205006 Mcf
Injection Gas	34.5132709	207.0796252 Mcf
Casing Pack	0.0	0.0 Mcf
Test Oil	5.3437768	32.0626605 bbl
Test Water	5.758	34.5479999 bbl
Gas Eqv Vol (GEV)	0.0	Mcf
Gas Eqv Tot (GET)	178.367501	Mcf

Averages	
Tubing	378.2731169
Casing	623.865914
Choke Position	79.5802038

User Defined Validation	
User Defined 1	0.0
User Defined 2	0.0

Last Test Values

Last Alarm: 0

Test Time		Factors / Ratios	
Start Date/Time	13-Jan-2021 07:49:02	Gas Factor	0.6910019 Mcf/Mcf
End Date/Time	13-Jan-2021 11:49:02	Oil Ratio	0.0298352 bbl/Mcf
Test Duration	4.0 Hr	Water Ratio	0.0321591 bbl/Mcf
		Gas Eqv (GEF)	0.0 Mcf/bbl

Accums		
	Period	24 Hr Equivalent
Well Gas	178.8966974	1073.3801846 Mcf
Test Gas - Injection	179.1095217	1074.65713 Mcf
Injection Gas	34.416046	206.4962762 Mcf
Casing Pack	0.0	0.0 Mcf
Test Oil	5.3437768	32.0626605 bbl
Test Water	5.76	34.5599999 bbl
Gas Eqv Vol (GEV)	0.0	Mcf
Gas Eqv Tot (GET)	179.1095217	Mcf

Averages	
Tubing	378.3595928
Casing	624.2395073
Choke Position	79.3770076

User Defined Validation	
User Defined 1	0.0
User Defined 2	0.0

Held Test Values

Held Alarm: 0

Test Time		Factors / Ratios	
Start Date/Time	1/1/2000 0:00	Gas Factor	0.0 Mcf/Mcf
End Date/Time	1/1/2000 0:00	Oil Ratio	0.0 bbl/Mcf
Test Duration	0.0 Hr	Water Ratio	0.0 bbl/Mcf
		Gas Eqv (GEF)	0.0 Mcf/bbl

Accums		
	Period	24 Hr Equivalent
Well Gas	0.0	0.0 Mcf
Test Gas - Injection	0.0	0.0 Mcf
Injection Gas	0.0	0.0 Mcf
Casing Pack	0.0	0.0 Mcf
Test Oil	0.0	0.0 bbl
Test Water	0.0	0.0 bbl
Gas Eqv Vol (GEV)	0.0	Mcf
Gas Eqv Tot (GET)	0.0	Mcf

Averages	
Tubing	0.0
Casing	0.0
Choke Position	0.0

User Defined Validation	
User Defined 1	0.0
User Defined 2	0.0

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How Will Well Test Benefit Your Operation?

If optimizing well production in the field or behind a desk is important to you, Well Test can be of great benefit.

- **Field Operations**
Ease-of-use and configuration, measurement, current operating status, production optimization
- **Facility Engineers**
Standardized deployment of equipment and facilities
- **Production/Reservoir Engineers**
Better reservoir management through captured data and well analytics
- **Management/HSE/Accounting**
Safety controls, standardization, custody transfer measurement and log retrieval
- **SCADA/IT Administration**
Standardized data model provides consistent access to optimization, analytics and operational parameters

Support

- Help desk support is available 24/7.
- Training classes are offered year-round.
- Onsite configuration assistance is available upon request via your local Emerson Impact Partner.

ProductionManager EDGE® Suite

The ProductionManager EDGE® suite of applications is designed to provide standardized yet flexible solutions to common processes in the Oil & Gas production field. The suite is designed to assist with managing the lifecycle of the well (from flowback to abandonment), managing well testing for allocation purposes, and complete fluids management from well-to-sell. This comprehensive suite of applications has been enhanced by input from Major and Independent E&P companies alike, and utilized in North America for over 20 years with tremendous success.

ProductionManager™ Equipment Module (PMEQ)

The ProductionManager™ Equipment Module (PMEQ) gives you the ability to define, build, monitor, track and diagnose the equipment installed on your upstream production site. PMEQ allows for operational analysis and diagnostics of onsite equipment.

ProductionManager™ Well Optimization (PMWO)

ProductionManager™ Well Optimization (PMWO) allows you to optimize production based on industry standard methods. This application provides your operation with continuous, real-time optimization of production, as well as surface and downhole analytics. PMWO records optimization statistics needed to identify key trends, allowing you to better manage your decline curves.

ProductionManager™ Well Test (PMWT)

ProductionManager™ Well Test (PMWT) allows you to maintain accurate allocation measurement while achieving facility cost reduction goals. Now you can rest easy knowing that potential issues with allocation, scheduling, multiple testers and optimal test results are a thing of the past.

ProductionManager™ Surface Controls (PMSC)

ProductionManager™ Surface Controls allows the user to perform control, logic, and mathematical functions using easy to configure pre-designed menus. Surface Controls facilitates configuration of your complete cause and effect narrative, handling temporary or permanent shutdowns, permissives, bypasses, alarming and other utility functions.

Coming Soon

- **ProductionManager EDGE™ Fluid Logistics (PMFL)**
- **ProductionManager EDGE™ Interface (PMEI)**
- **ProductionManager EDGE™ Chemical Manager (PMCM)**

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