

Onshore Wellhead Automation

Efficiently install new wells, optimize production, and lower wellhead costs

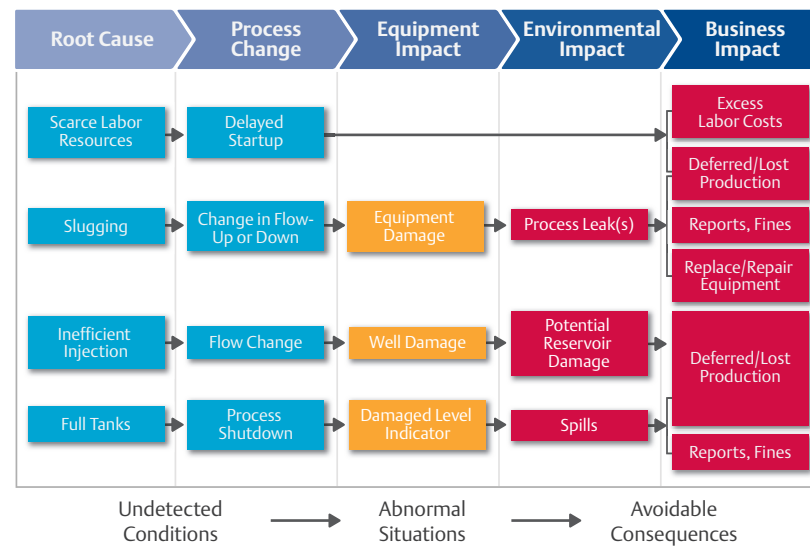


Need a Better Return from Your Wellhead Operation?

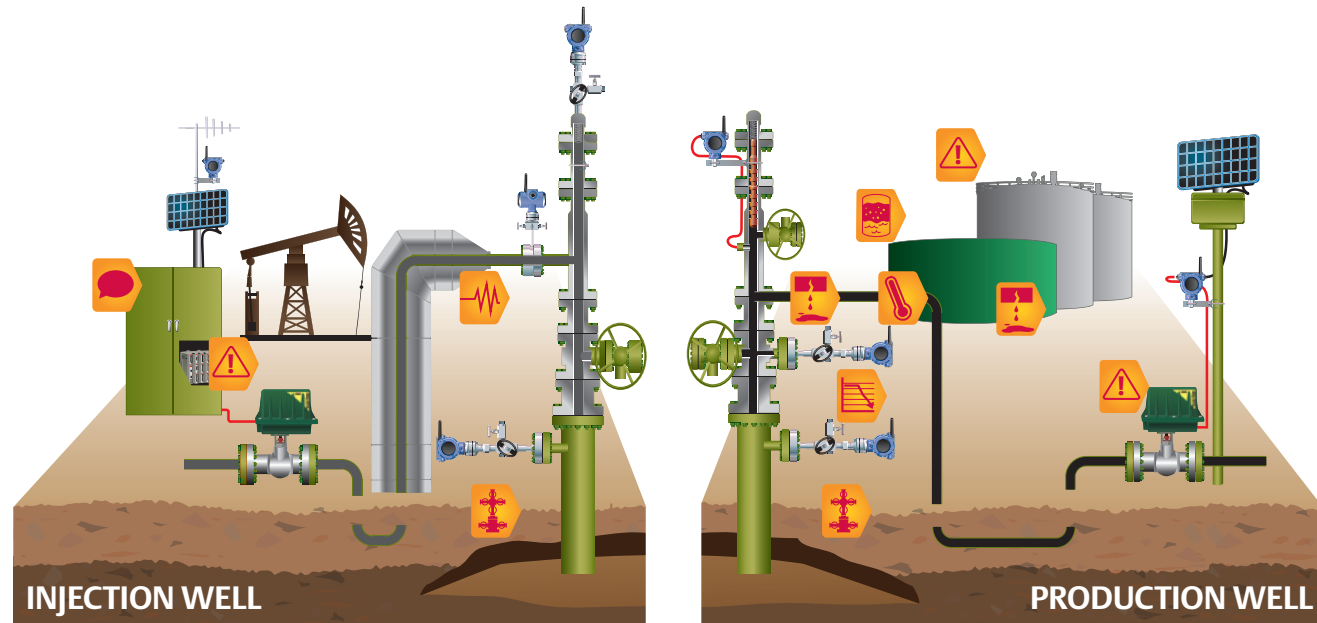
Whether bringing your first well online or managing a mature field, you face certain barriers common to all operators. With global production declining, how do you prioritize where to invest your time and resources? How do you get to first production quickly, easily, and economically? How do you balance safety, maintenance, and regulatory compliance without sending technicians into the field too often? When great distances separate wells and fields, how do you manage your staff – especially since the available pool of skilled personnel is shrinking? Ultimately, how can you keep your field profitable, while extending its life?

You need to be certain your wells are performing at capacity, but good data is hard to come by. Installing integrated wellhead automation can be complex and time-consuming – but manual data collection is too expensive and potentially dangerous. To achieve optimal production, you juggle equipment, crews, schedules, data, processes, costs, and regulations – some of which are variable and inefficient. As a result, you're constantly one step behind.

Anatomy of Wellhead Automation Failures



Common Threats to Onshore Wellhead Automation



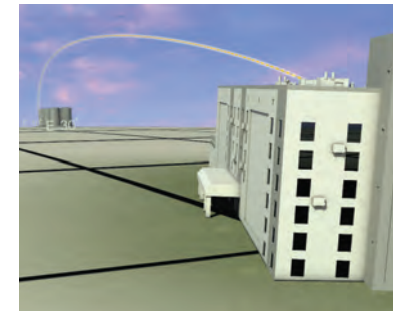
- ENVIRONMENTAL**
Leaks caused by mechanical failures can cause environmental impact. Early detection of abnormal conditions such as corrosion and erosion can help avoid leaks and their consequences.
- TANK MANAGEMENT**
An indication of high level in the oil tanks can indicate that tanks are required to be emptied. Lack of action could result in overflow and environmental spill and loss of production due to well shut-in.
- MAINTAINING ENHANCED RECOVERY**
Non-monitoring of injection rates can lead to increased operating costs and in certain cases decreased recovery efficiency and reduced production.

- COMMUNICATION**
Improper communication can lead to lost production and increased operating costs.
- WELL INTEGRITY**
An increase in either the annulus or bradenhead pressure can result in decreased production, increased workovers, or a potential safety/environmental incident.
- HEALTH & SAFETY**
Time in the field results in personnel risk and potential exposure to hazardous materials.

- CHANGING PRODUCTION**
A change in the flow pressure can indicate a reduction in flow leading to decreased production. Causes can be associated with a change in injection rate or water breakthrough in the reservoir.
- FLOW TEMPERATURE**
A change in the flow temperature can indicate a reduction in flow leading to decreased production. Causes can be associated with a drop in pressure or water breakthrough in the reservoir.

What if you could ensure maximum output and asset lifecycle?

Optimize efficiency and yield by getting your wells up and running faster and easier, reducing operating and compliance costs, and gaining insight and control. Emerson offers complete, integrated automation solutions or components such as Smart Wireless technology, remote monitoring, easy-to-install devices, intuitive hardware and software, and expert training and services.



At the core of all our systems and devices is Human-Centered Design, an intuitive, role-based approach that streamlines installation and empowers your personnel to quickly and easily get up to speed with new technology. Remote intelligent operations such as the OpenEnterprise SCADA system connect the field with the back office in real time, reducing overhead, increasing data reliability, and shifting the burden off your field personnel to collect measurements manually. Predictive diagnostics from AMS Suite, monitoring tools such as Guided Wave Radar tank level measurement, and Smart Wireless solutions can end your maintenance headaches and prevent shut-in wells.

Try Emerson's wellhead automation solutions on an individual well or a pad—knowing you can seamlessly scale up to your entire field—and experience how quick and easy it is to maximize your production return.

Increasing Your Profit

Industry experts suggest that onshore wellhead production is not optimized and that wells are often shut in unnecessarily. Do you want to get that production back?

INPUT

Field Characteristics	
a. Number of well sites	40
b. Gas production per well (mscfd)	5
c. Gas price (\$/1000 standard cubic feet)	\$2.90
d. Oil production per well (barrels/day)	100
e. Oil price (\$/barrel)	\$85
f. Number of maintenance people maintaining manual wells	1
g. Number of operators/pumpers maintaining manual wells	1
h. Annual cost per headcount	\$100,000
i. Number of spills per year	2
j. Average cost of spill	\$7,500

ANNUAL OPERATIONAL BENEFITS

Revenue from Production Increases	
k. Increased gas production from automation (availability and optimal rates)	\$2,117
l. Increased gas production from operator spending time on optimization	\$1,059
m. Increased oil production from automation (availability and optimal rates)	\$1,241,000
n. Increased oil production from operator spending time on optimization	\$620,500
Cost Reduction	
o. Decrease in environmental releases	\$13,500
p. Manpower savings	\$20,000

TOTAL ANNUAL PROFIT INCREASE

\$1,898,176

ASSUMPTIONS

Revenue from Production Increases (Typical)	
q. Increased gas production from automation (availability and productivity)	1.0%
r. Increased gas production from operator spending time on optimization	0.5%
s. Increased oil production from automation (availability and productivity)	1.0%
t. Increased oil production from operator spending time on optimization	0.5%
Cost Reduction (Typical)	
u. Decrease in environmental releases	90.0%
v. Manpower savings	10.0%

Value calculation notes

- Basis: 40 well field with mixed production (gas & oil)
- Production increases based on major oil company data
- mscfd – thousand standard cubic feet per day

Formula calculations

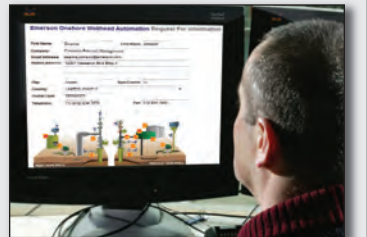
- $K = a \times b \times c \times d \times e \times f \times g \times h \times i \times j \times k \times l \times m \times n \times o \times p \times q \times r \times s \times t \times u \times v \times w \times x \times y \times z$
- $L = a \times b \times c \times d \times e \times f \times g \times h \times i \times j \times k \times l \times m \times n \times o \times p \times q \times r \times s \times t \times u \times v \times w \times x \times y \times z$
- $M = a \times d \times e \times s \times x \times 365$
- $N = a \times d \times e \times t \times x \times 365$
- $O = i \times j \times x \times u$
- $P = v \times x \times (f + g) \times h$
- Total Annual Profit Increase = $k + l + m + n + o + p$

Get Started Today at
EmersonProcess.com/OnshoreWellhead



Take the Tour

Take our virtual tour to experience how wellhead automation solutions can help you reduce or eliminate many of the costs and inefficiencies of production.



Request Information

Use our simple online form to select the options most important to you. An Emerson specialist will contact you shortly.



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Emerson's Onshore Wellhead Automation Products

SCADA SYSTEM



OPENENTERPRISE

Powerful, robust SCADA solution scalable from a single well to an integrated field. Easy to operate, implement, and maintain, OpenEnterprise is a flexible SCADA system suited for the complex telemetry requirements and intermittent communications from the field to the control room.



FIELD CONTROLLERS



CONTROLWAVE

Total flexibility to creatively design a complete integrated measurement and control solution. Optimizes delivery of real-time and historical data to critical business systems for making more-informed decisions.

OR



ROC800

Leveraging configurable applications, the ROC platform minimizes programming requirements for optimizing production. Flexible solutions to meet a broad range of application requirements.



NETWORK INTERFACE



IEC 62591 (WIRELESSHART®) INTERFACE

Make wireless device integration simple and easy without special wireless communication know-how. Startup and commissioning becomes quick and easy utilizing the auto-sense capabilities which automatically find and commission wireless devices into the RTU, making data and diagnostics ready to use.

OR



SMART WIRELESS GATEWAY

Connects IEC 62591 (WirelessHART®) self-organizing networks with host systems and data applications.

DEVICES



FISHER VALVE

Straight-pattern (globe), angle-pattern, and three-way valves offer a broad range of types, sizes, and materials for demanding high-pressure steam and hydrocarbon service.



ROSEMOUNT WIRELESS DP PRESSURE TRANSMITTER

Achieve reliable, accurate and fast flow measurements for the life of the well. Get process readings at the device with an easy-to-read local display. Long and extended range options, and a wide selection of connection and preconfiguration options, help ensure timely installation at a variety of sites.



ROSEMOUNT WIRELESS PRESSURE TRANSMITTER

Detect fluctuations or changes in pressure to provide good visibility into wellhead performance with flow line, annulus and other important pressure measurements. Easy to read local display. Long and extended range options, pre-configurations and wide selection of connection options available for faster installation.



ROSEMOUNT WIRELESS DISCRETE TRANSMITTER

Reliably detect a wellhead plunger arrival notification without needing to run the wires out to the wellhead from the RTU. The discrete transmitter also enables making wired non-powered switch types wireless such as pressure, flow and level switches. Capable of taking two inputs. Easy to read local display. Long and extended range options.



ROSEMOUNT WIRELESS VIBRATING FORK LIQUID LEVEL SWITCH

Indicates high level to help prevent tank overflows. Provides detection of low fluid levels, indicating possible seal failure and normal fluid service required.



ROSEMOUNT GUIDED WAVE RADAR WITH WIRELESS THUM ADAPTER

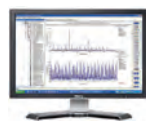
Guided Wave Radar technology combined with advanced signal processing and sensitivity delivers both level and interface measurement data from the same transmitter.



ROSEMOUNT WIRELESS TEMPERATURE TRANSMITTER

Measure your temperature information from the field reliably to help you achieve optimal efficiency and compensate in your flow calculations. Easy-to-read local display. Long and extended range options, pre-configuration and wide sensor options for both integrated mounting and non-invasive temperature sensor options available.

ADDITIONAL OPTION



AMS SUITE FOR MAINTENANCE

Allows Maintenance to diagnose equipment problems using predictive diagnostics. Real-time information provides early warning of device issues before they can cause problems. Plant personnel can respond quickly and make informed decisions on troubleshooting each situation.

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