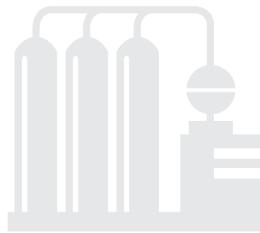


CONNECTED PRODUCTION™

UPSTREAM SOLUTIONS



OPTIMIZE THE DIGITAL OIL FIELD



 Allen-Bradley • Rockwell Software

**Rockwell
Automation**

OPTIMIZE THE DIGITAL OIL FIELD



Visualize and control production from the wellhead to the point of custody transfer, either on site or from miles away, with our **ConnectedProduction™** solution. Fully integrated, scalable control that puts the power of information at your fingertips, it helps maximize the recovery of existing reserves, optimizing production and reducing downtime.

Transform your operation starting from simple data gathering to advanced analytics and workflows that enable real-time decision making. Anytime. Anywhere.

To create the digital oil field, follow a step-by-step implementation approach:

- **Assessment** of existing technology gaps
- **Implementation** of state-of-the-art engineering solutions to close the identified gaps
- **Data Collection & Aggregation** throughout the organization
- **Analytics & Reasoning** that turn data into real-time intelligence
- **Optimization** that leads to real-time decisions in a collaborative environment

Read on as we walk through this process step-by-step including the enabling technologies that make the ConnectedProduction™ solution work for your operations.

Assessment

Real-time performance knowledge enables proactive response to issues and results in better system availability. Many Oil & Gas producers face a lack of visibility due to outdated or manual monitoring systems.

Producers need flexible, agile solutions that anticipate shutdown situations and automatically improve production performance. It is necessary to close critical gaps that affect safety, manpower and recovery rates and share that information across the supply chain.

Our ConnectedProduction™ solution starts with an assessment of the existing oil & gas production systems, including:

- **Production control and monitoring systems**
- **Production planning and reporting systems**
- **Production data historians**
- **Network communication systems and infrastructure**
- **Network security**
- **Safety instrumented systems**
- **Power control systems**

The assessment phase gives a solid understanding of the current state of production at the well head or across the entire field operations. The thorough analysis of critical assets provides the knowledge necessary to make data-driven decisions regarding support and obsolescence management of your production systems. It also facilitates prioritizing next steps to make the biggest impact.



Implementation

Skilled staff shortages are the norm across the industry today and that's not going to change in the foreseeable future. This doesn't bode well for implementing the upgrades that you need to modernize your oil field assets.

Our global team of Oil & Gas experts provide turnkey solutions, from concept to commissioning and long-term support. Front End Engineering and Design (FEED) studies ensure your project stays in scope and on budget, while functional safety, engineering, and installation experts can manage your project from start to finish.

And once your system is up and running, we can also provide easy additions of new assets. Our plug-in architecture allows intelligent assets to be added to the system at any time, accepting third-party content even after the system is configured.

But getting you operational is just the beginning. Our ConnectedProduction solution uses industry standard technologies and communications, which makes it easier for you to maintain performance as your needs change. And additional support, training and other expertise is always just a phone call or email away.

How it Works

The OptiLift™ artificial lift control solutions provide intelligent algorithms that enable operators to maximize production and provide a wealth of well information. No matter where your well stands in its lifecycle, Rockwell Automation has a solution to optimize production and drilling strategies, from natural lift to electric submersible pumps.



Analytics & Reasoning



Leveraging and managing the knowledge that is interpreted from the data and converting it into contextualized, actionable information is the next challenge. How can personnel take real-time production trends, well performance and operations KPIs and apply that to tools that support decision making.

Our ConnectedProduction™ solution gives you the ability to interface with any industry leading analytics tool available. Our open source architecture easily ties in with other software packages, giving you quick access to the information you need in the format you prefer. For example, these tools can help determine:

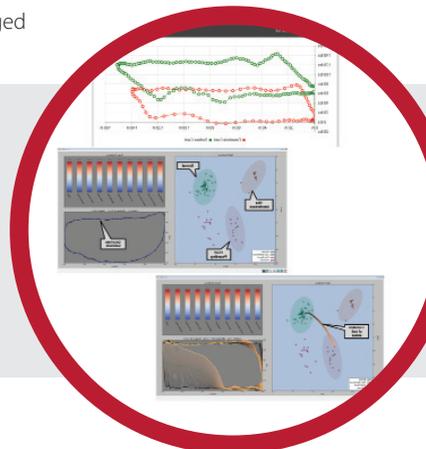
- Well and reservoir conditions
- Predictive maintenance
- Test or operate by exception
- Optimal oil, water and gas rates

The solution communicates the operating status via an intuitive interface. It monitors well performance, diagnostics and predictions of future well, rod pump and impending failure mode status and the state of equipment. Virtual flow metering is another benefit that comes with optimization.

- Real-time well production estimates allow better understanding of changes to well performance.
- Daily production reconciliation is done faster and requires less effort.
- Pressure analysis can more accurately estimate inflow performance because the well rates are known prior to shut-in.
- Engineers can rest assured, knowing their operation is within equipment limits.
- Well testing can focus on wells where performance has changed to reduce both risk and production deferral.

How it Works

A patent-pending clustering algorithm defines various operation modes for the well and the pump and is able to illustrate poor data quality under various operating conditions. With a small runtime footprint, and robust analytics for real time streaming data, it enables a proactive response to issues, to cut back on downtime and preventing future equipment failures.



Optimization

The final stage of the ConnectedProduction™ solution offers model-driven, configurable workflows that are used to execute production optimization and reservoir management. The workflows are triggered based on the comparison results between current and predicted operational data. For example:

- Adjust the process through an automatic or manual setpoint changes
- Change production scheduling to meet newly recorded demand
- Schedule maintenance intervention on critical field equipment to avoid downtime

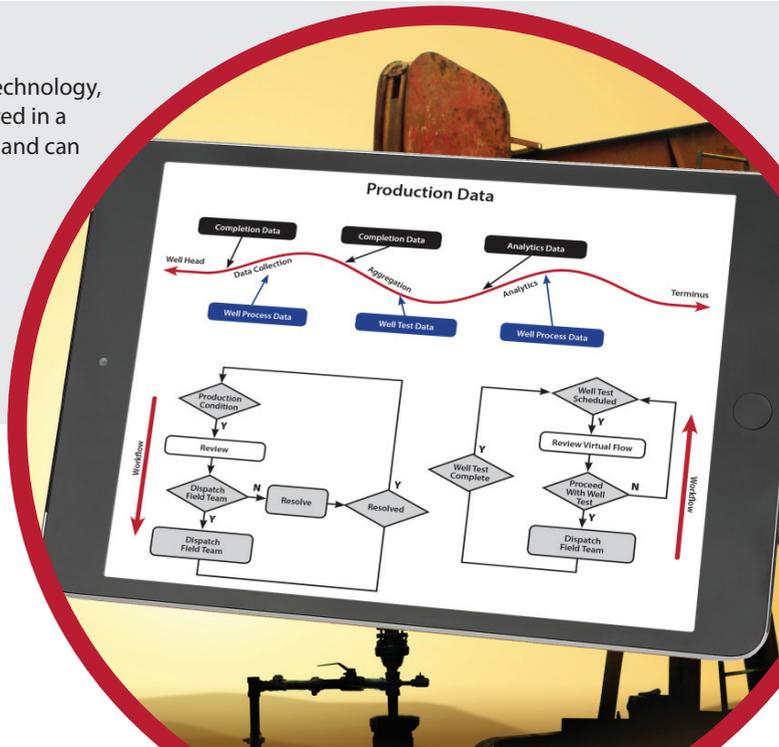
Optimized recovery rates and proper asset utilization put you in control of your production, from individual wells, to the entire well pad or oil field. And with real-time information you can respond promptly and proactively to field events and conditions.

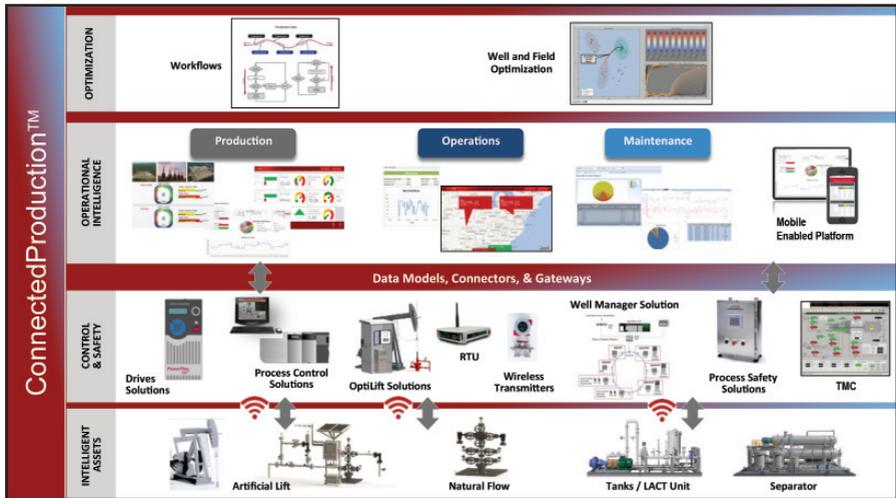
This fully optimized approach results in lower costs that come with learning just one system. The distributed, scalable architecture also offers flexibility and improves collaboration across platforms. By optimizing assets, operations can run at peak performance, minimize downtime, reduce overall maintenance and operation costs, and deliver reliable equipment with improved longevity.

How it Works

Built on off-the-shelf technology, workflows are configured in a standard environment and can be initiated by:

- An ERP system (SAP)
- User (SOP)
- Field event (process condition)





The ConnectedProduction™ solution gives you an open, integrated architecture that can address your organization's individual needs. It can help you achieve faster time to oil, lower operational costs and improve efficiency. By providing actionable information, personnel are able to make better decisions and facilitate communication from the wellhead all the way through the enterprise level.

As a market leader in industrial automation, information and safety solutions, Rockwell Automation has helped Oil & Gas companies reduce costs, improve efficiency and run at optimal levels. It can all be yours with the ConnectedProduction™ solution – only from Rockwell Automation®.

www.rockwellautomation.com

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