

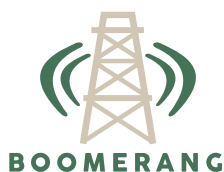
Boomerang

# Connecting the Oilfield of the Future



# Case Study

*Powered by Moxa's robust hardware, Boomerang is providing upstream oil and gas operators with reliable visibility and live connectivity to their artificial lift assets, increasing equipment uptime and hydrocarbon production while reducing the need for manual intervention.*



## Boomerang

Founded in | 2012  
Headquarters | Houston, Texas  
Industry | Oil and Gas  
Website | [www.boomscada.com](http://www.boomscada.com)

The upstream oil and gas sector, characterized by harsh remote environments and reliance on aging infrastructure, often lags other industries in embracing the transformative power of digitalization. This hesitancy to retrofit stems from a complex interplay of factors, including a persistent tried-and-true run-to-failure mentality, the cyclical nature of oil prices—which impact funding for capital improvement projects—and the perceived complexity of integrating new technologies with legacy systems.

However, with the rise of the industrial internet of things (IIoT) and these factors in mind, the industry is at a crossroads. Mounting pressures to optimize production, reduce operational costs, minimize environmental impact, and enhance worker safety are forcing upstream operators to rethink traditional maintenance and control approaches, and to explore implementing the oilfield of the future.

Among the emerging innovators, Boomerang is leading the way with cutting-edge monitoring, control, and data acquisition solutions tailored to the upstream oil sector. By providing the tailored software for accessing high-availability sensor data and deploying it on hardware supplied by Moxa, a global leader in industrial communication and networking technologies, this platform is providing operators with insights to optimize oil field operations.

### Equipping wells with modern SCADA capabilities

For decades, the upstream oil and gas industry operated in a data-scarce manner, where manual data collection, on-site inspections, and reactive maintenance strategies were standard. This approach resulted in inefficiencies, unexpected downtime, increased costs, and compromised safety in the worst cases because sites are often distributed over large areas.

There is a large installed base of legacy equipment still in use today. With an estimated one million overland oil and gas wells in the US, a staggering 60% of them still lack any form of automated and real-time telemetry, and this delay in manually gathering critical operational data can postpone decision-making, increase risk, and compromise optimization opportunities.

Small producers are often more open to introducing new technologies, while largescale rig operators have more rigorous procedures for adopting upgrades. However, teams of all sizes are being tasked to do more with less. Like many industrial sectors, upstream oil and gas is struggling with an ongoing shortage of skilled personnel, which is increasing the need for automated solutions to reduce manual workloads, inspections, and equipment adjustments.

As a result, industry is striving for autonomous oilfields. For these geographically distributed operations, IIoT-based supervisory control and data acquisition (SCADA) platforms are helping achieve this vision by connecting previously isolated assets to digital networks, enabling real-time data collection, analysis, and action based on vast amounts of operational information. This in turn is empowering rig operators to make informed decisions, optimize production, reduce downtime, and improve safety.

### Purpose-built, yet industry-agnostic

Capitalizing on the vast potential of IIoT for upstream oil and gas, Boomerang is an out-of-the-box control, data acquisition, and analytics solution that drives efficient field operations, and helps users access their valuable data and put it to work. Boomerang also provides holistic complex closed-loop control capabilities for automated well management, including anomaly identification and correction.

The platform is tailored to address the specific challenges of this sector, yet it is versatile enough for deployment in other industries. The primary goals of Boomerang are to quickly consolidate real-time data from remote units across an enterprise, and to provide a centrally connected hub with intuitive dashboards for monitoring and control of all forms of artificial lift. These include gas lift, electric submersible pump, jet pump, plunger lift, and sucker rod pump.



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Many remote well sites lack access to traditional wired network infrastructure, so the cellular capabilities of these gateways provide a cybersecure and reliable wireless connectivity solution. These IIoT gateways include a cybersecure microservices cloud environment on which custom applications, such as Boomerang, are built. This enables remote monitoring and control from any authenticated device with a web browser, unlocking valuable data and enhancing control (Figure 3).

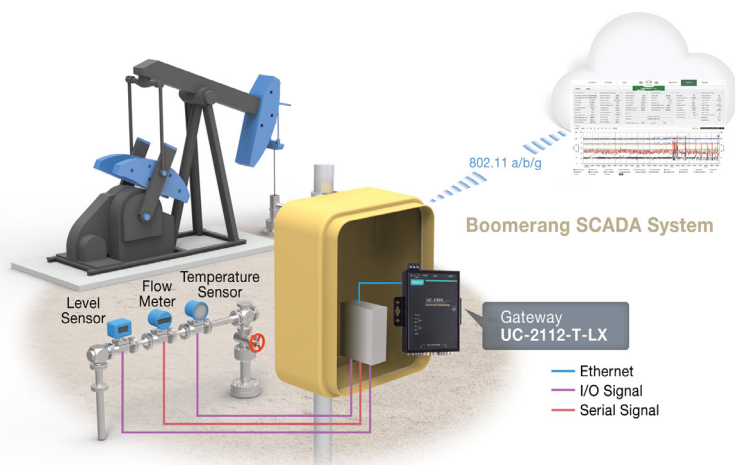


Figure 3: The Boomerang solution enables remote cybersecure connectivity to wellsite sensor data from any authenticated device with a web browser.

Each gateway has the capability to manage wells at the pad level, with complete scalability in mind. A typical Boomerang install base extends to about 3,000 IIoT gateway devices, brokering connectivity among 3,500 to 4,000 wells in total.

The collaboration between Boomerang and Moxa extends beyond the hardware and software. Boomerang developed a custom communications protocol based on industry-standard MQTT and optimized for the unique constraints of oilfield operations. This protocol prioritizes high-frequency, “on-change” data transmissions, enabling reliable communication even over bandwidth-constrained connections, which are common in remote oilfield locations.

## Efficiency, safety, and data-driven success

The combined expertise of Boomerang and Moxa is accelerating upstream oil and gas digital transformation. End-users who have installed the joint solution report significant improvements across various key performance indicators, demonstrating the tangible benefits of this strategic partnership.

Boomerang has converted every one of its pilot projects to permanent deployments, a testament to the platform’s effectiveness and user appeal. Commissioning is overwhelmingly simple, exemplified by one end-user who deployed more than 20 devices per day, connecting multiple lift types and wells on each device.

The most noticeable end-user benefits are increased production efficiency, decreased downtime, and lowered operational costs. These efficiency gains are a result of platform-provided real-time insights into well performance, which enable proactive maintenance through automated alerts. Increased uptime translates directly to higher production rates and increased revenue, and the reduced need for manual intervention results in improved safety.

## Preparing the oil & gas sector for the future

The upstream oil and gas industry is undergoing a period of profound change. The old ways of operating are not viable in the new labor market, and the need to optimize production, enhance worker safety, and improve overall efficiency is driving a rapid shift towards digitalization. By automating tasks, enabling remote monitoring, and optimizing well management strategies, the Boomerang software solution built on Moxa’s reliable hardware is streamlining workflows and operational efficiencies for upstream operators.

Boomerang is committed to constant innovation, a continued focus on developing advanced closed-loop control schemes, expansion into international markets, and delivering exceptional end-user value. In an industry where operating costs are constantly under scrutiny, the ability to improve efficiency and minimize expenses is critical.

Complex challenges often require cooperative solutions, and partnerships like the Moxa-Boomerang collaboration are critical for successful IIoT industrial implementations. The Boomerang solution demonstrates the power of leveraging the complementary strengths of different entities to accelerate innovation and deliver digital transformation.