

HONEYWELL UOP PERFORMANCE+ SERVICES

Scaling Proactive Maintenance — How Honeywell UOP Performance+ Services Supports Reliability.

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EXECUTIVE SUMMARY

Oil and gas operators today are balancing legacy infrastructure with rising expectations for uptime, safety and cost performance. To navigate this shifting landscape, proactive maintenance — supported by emerging technology and established methodologies like Honeywell UOP Performance+ Services - becomes crucial. This approach helps minimize costly downtime and optimize asset performance, enabling teams to move from reactive "firefighting" to proactive, data-driven decisions.

In this eBook, we explore:

- How the oil and gas industry arrived at a tipping point
- What's fueling a shift to proactive maintenance, and its business value
- The challenges standing in the way of adoption
- How Honeywell UOP Performance+ Services supports proactive maintenance
- Case studies of successful implementations

INTRODUCTION

A Tipping Point for Oil & Gas Operations

The oil and gas industry is facing increasing pressure to improve operational efficiency and to reduce the financial impact of unplanned downtime. These external forces are compounded by internal challenges, including legacy infrastructure, fragmented systems, competing operational priorities and a widening skills gap. The deep-rooted, process-driven nature of the industry poses significant obstacles to rapid and effective change. Many equipment failures are a result of process conditions. Combining insights from both equipment and process will lead to reduced unplanned downtime.

The rise of digitalization and combining process and equipment expertise enables a solution — a shift from reactive to proactive maintenance. This strategic, data-driven approach utilizes the industrial internet of things (IIoT), artificial intelligence (AI), machine learning (ML) and advanced analytics to predict and prevent abnormal process conditions leading to shutdowns and asset failures before they occur. Honeywell UOP Performance+ Services takes this transformational opportunity one step further by pairing technology with direct analysis and guidance from expert engineers leveraging Honeywell UOP industry experience spanning more than a century. By embracing this forward-looking partnership, companies can use proactive maintenance to address root causes, building a more resilient and efficient future.

ENERGY DEMAND ON THE RISE

- Global energy demand grew by 2.2% in 2024, a notably faster rate than the annual average of 1.3% seen between 2013 and 2023.[1]

AVOIDING DOWNTIME

- Unexpected downtime for US refineries may cost more than $50 billion annually.[2]

GEOPOLITICAL DYNAMICS

- Geopolitical uncertainty is fueling crude price swings - $69/bbl in 2025 to $103/bbl avg. in March 2026, U.S.[3] - forcing refiners to cut costs while protecting spreads and reliability.



What's Fueling the Shift to Proactive Maintenance

For years, the oil and gas industry has endured the high costs and risks associated with reactive maintenance. As companies seek to boost profitability and achieve long-term sustainability, they must strategically prevent failures and minimize costly unplanned downtime. Here is what's fueling the shift to proactive maintenance:

Meeting Rising Demand

Growing global energy demand is accelerating the move toward proactive maintenance. Operators must deliver reliable, uninterrupted supply from existing assets while navigating aging equipment, increasing process complexity, and constrained resources. Proactive maintenance plays a critical role in maintaining equipment availability, reducing operational disruptions, and supporting dependable production.

Operational Optimization

In volatile markets, operational efficiency is more critical than ever. With tighter margins and fluctuating prices due to geopolitical dynamics — exemplified by crude reaching $96 per barrel in March 2026, a 50% increase since the start of the year[3] — refiners are compelled to minimize costs while improving spreads and maintaining safe, reliable operations. Aging infrastructure adds complexity, driving up maintenance costs and safety risks. Digital tools offer a strategic advantage by providing near-real-time data, predictive analytics, and enhanced asset visibility. These capabilities help uncover hidden inefficiencies, streamline workflows and guide smarter, data-driven decisions to improve asset performance and reduce operating expenses.

Minimizing Unplanned Downtime

Unplanned downtime remains one of the costliest risks in oil and gas operations, with losses reaching up to $50 billion annually[2]. Proactive maintenance strategies — powered by predictive analytics and condition monitoring — help identify and resolve equipment issues before they escalate. This not only protects revenue but also ensures consistent production, safer operations and greater reliability across the asset lifecycle.

DETAILING THE VALUE OF PROACTIVE MAINTENANCE

Implementing proactive maintenance offers several key business advantages:

REDUCE UNPLANNED DOWNTIME

- Identify potential failures before they happen, allowing for controlled interventions
- Near-real-time condition monitoring reduces mean time to recovery (MTTR)
- Identify anomalies before they escalate into failures

EXTEND ASSET LIFE

- Avoid damage and degradation by intervening at the right time

IMPROVE THROUGHPUT AND YIELD

- Keep equipment and processes running at peak performance between turnarounds
- Use analytics to benchmark performance vs. expected design output
- Adjust in near-real-time to changing feedstocks and external conditions

BOOST SAFETY AND COMPLIANCE

- Reduce the likelihood of catastrophic failures, emissions and regulatory penalties
- Ensure compliance with government standards

FREE UP RESOURCES

- Allow teams to focus on high-value optimization tasks rather than routine inspections or firefighting
- Intelligent systems allow fewer personnel to manage more complex assets



CHALLENGES TO ADOPTION

While the value of a proactive maintenance strategy is clear, the following challenges — ranging from technological hurdles to organizational and workforce issues — threaten to impede widespread adoption.

Legacy Infrastructure and Fragmented Systems

Legacy infrastructure and fragmented systems represent a significant challenge to adoption across the oil and gas industry. The logistical and financial challenges of upgrading many US refineries — most are more than 40 years old[2] — highlight this widespread problem, as outdated operational systems are difficult to integrate with modern platforms. This can significantly hinder the deployment of new technologies like the IIoT. In addition, fragmented data stored in silos and inconsistent formats can obstruct the use of AI, ML and predictive analytics, undermining valuable insights.

Competing Operational Priorities

Competing operational priorities often push proactive maintenance aside in favor of reactive measures. Consequently, teams get stuck in a cycle of reacting to problems as they arise, spending valuable time on fixes instead of anticipating issues and optimizing performance. This prevents organizations from ever truly getting ahead.

Skills Gap vs. Technology Adoption

The oil and gas industry also faces a widening skills gap, driven by the fact that nearly 50% of its workforce is over the age of 45 and nearing retirement.[4] At the same time, attracting early career professionals has become more challenging as the industry competes for talent in an evolving energy and digital landscape. This lack of new talent, coupled with the exodus of experienced personnel, creates a void of in-house expertise, making crucial functions like troubleshooting, training and complex maintenance increasingly difficult. As a result, technology adoption can become uneven and slower, as organizations struggle to balance legacy operational knowledge with advanced solutions required to improve efficiency and accelerate the path to autonomy.

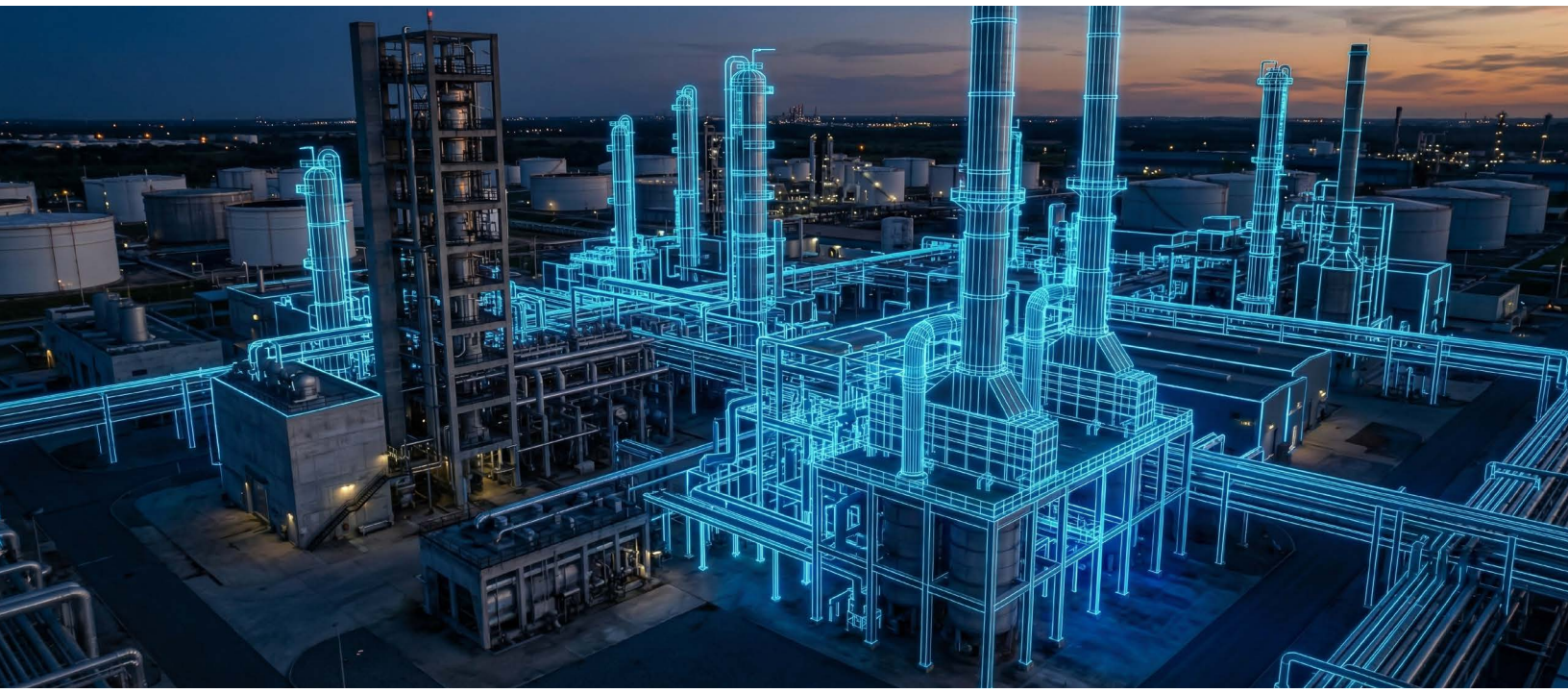


WHY HONEYWELL UOP PERFORMANCE+ SERVICES IS THE RIGHT SOLUTION

Companies are turning to advanced technologies and expert personnel of managed services to help overcome these challenges and scale proactive maintenance. While an abundance of digital solutions exists in the market, **Honeywell offers the only solution that pairs oil and gas operators directly with more than a century of UOP engineering expertise.**

Honeywell UOP Performance+ Services is a proactive, digitally enabled service that connects a client's operating data with industry-leading digital tools, analyzed directly by our expert engineers to provide actionable advice on how to optimize operations. For organizations seeking elevated reliability, optimized processes, faster technical onboarding and workforce development, this service delivers tangible benefits, often exceeding $10 million per site annually.

- Combined with advanced process control, Honeywell UOP Performance+ Services, can help a typical 300,000 bpd refinery **increase throughput by up to 2.5%**, driving an **estimated $34 million in additional annual profit.[5]**
- By optimizing operations and using predictive maintenance, Honeywell UOP Performance+ Services can increase the profit of a 5 MMTPA modular LNG pretreatment plant by **approximately $15 million annually.** This is achieved by **boosting plant availability by 2 days and throughput by 2%.[5]**
- Our operating model of more than 800 connected assets, equipment and systems enables:
  - Improved production, yields and throughput
  - Enhanced product quality
  - Increased equipment reliability and faster turnarounds
  - Reduced Scope 1 emissions and utility consumption
  - Extended catalyst life



CASE STUDIES

Honeywell continues to help oil and gas operators proactively turn potential into performance:

Proactive Catalyst Imaging Analytics Increases Production

Challenge: Honeywell UOP experts and the customer's engineers used the CCR Platforming catalyst imaging analytic to proactively monitor early indicators of catalyst health. During routine monitoring, the customer observed a gradual decline in catalyst platinum dispersion. Left undetected, this can lead to reduced catalyst performance and lower yield.

Solution: Honeywell UOP worked closely with the customer to proactively monitor catalyst health trends using the catalyst imaging analytic, reviewing data multiple times per week. The analytics enabled early detection of the developing issue, allowing Honeywell UOP and the customer to collaborate on corrective actions. These included timely cleaning of the regenerator screen and optimization of catalyst regeneration practices, restoring catalyst health before performance deterioration occurred. The engagement was supported by regular SME consultations and proactive knowledge sharing.

Results: Through proactive insights and expert partnership, the collaboration delivered a value of approximately $1M6 per year in additional gasoline production for an average size unit.

Collaboration Improves Product Yields

Challenge: An aromatics complex operating multiple downstream units faced challenges sustaining optimal yields while managing feedstock variability and unit constraints.

Solution: Honeywell UOP Performance+ Services experts and the customer operations team utilized digital tools such as Process Monitor and Process Technology Analytics to identify constraints, optimize feed strategies, and continuously fine-tune targets.

Results: The collaboration delivered $3.9 million in increased production value within one year, including $2.4 million from higher xylene yields and $1.5 million from additional throughput enabled by feed and constraint optimization.

The Future of Maintenance is Proactive

Oil and gas operators face a new era defined by rising demand and the need for greater efficiency. Overcoming this challenge means moving past aging systems, traditional methods and a growing talent shortage. The future of refinery maintenance lies in proactive strategies that build agility and maximize performance across all processes, people and assets.

Honeywell UOP Performance+ Services exemplifies this future by combining deep technical expertise with advanced digital tools. This powerful integration facilitates continuous improvement through expert monitoring, actionable insights via analytics and alerts, and customized consulting for optimization and compliance. Our services support the entire operational journey, ultimately driving profitability through improved reliability and optimization.

REFERENCES

[1]Global Energy Review 2025, International Energy Association, Global Trends

[2]Control Engineering, *"Most refineries, more than 40 years old: How to improve"*

[3]U.S. Energy Information Administration, "Short Term Energy Outlook"

[4]Energy, Oil & Gas Magazine, *"Industry Leaders Call for Renewed Focus on Young Talent in Energy Sector,"*

[5]Based on modeled scenarios and simulation analyses. Actual outcomes may vary depending on operational conditions, asset configuration, and implementation context.

[6]$1 million in total production value for an average sized unit; derived from proactive detection and correction of declining platinum dispersion, and optimization of catalyst regeneration.



For more information
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