

Transforming oil and gas with remote maintenance and operations



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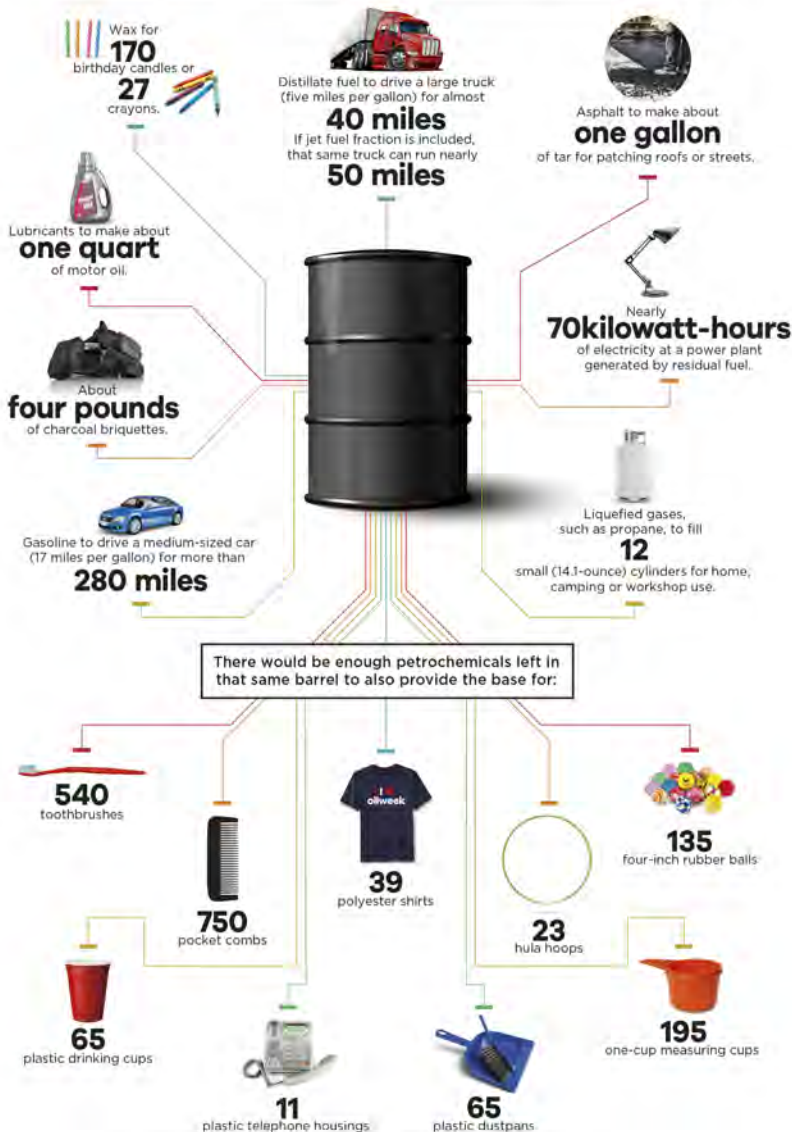
Introduction

The oil and gas industry has long served as a cornerstone of global energy production, powering our world and supporting countless industries. Despite facing frequent criticism, its role is crucial. At Quest Global, we recognize this importance and are dedicated to driving sustainable practices to drive efficiencies and produce more with less. Together with our clients, we emphasize collaboration and shared commitment. Our joint efforts in innovation and efficiency are reshaping the industry's future, proving that responsible energy production and environmental stewardship can coexist.

The energy transition is complex and requires careful management and realistic timelines. Calls for an immediate halt to oil production often overlook the intricate web of dependencies within the global economy. Beyond energy, the oil and gas sector supports numerous industries reliant on petroleum derivatives.

What can you make from one barrel of oil?

Researchers broke down a typical barrel of domestic crude oil into what could be produced from it. The average domestic crude oil has a gravity of **32 degrees** and weighs **7.21 pounds per gallon**. Here's what just one barrel of crude oil can produce:



The lighter materials in a barrel are used mainly for paint thinners and dry-cleaning solvents, and they can make nearly a quart of one of these products. The miscellaneous fraction of what is left still contains enough byproducts to be used in medicinal oils, still gas, road oil and plant condensates.

It's a real industrial horn of plenty.

As the image illustrates, a single barrel of crude oil contributes to an astonishing variety of products essential to modern life:

- 1. Transportation fuels:** Provides gasoline to drive a car for over 280 miles and distillates fuel for large trucks to travel 40-50 miles
- 2. Industrial materials:** Produces asphalt for road construction and lubrication for machinery
- 3. Energy generation:** Generates 70 kilowatt-hours of electricity from residual fuel
- 4. Consumer goods:** Creates material for 540 toothbrushes, 750 combs, 39 polyester shirts, and various plastic products like cups and measuring cups
- 5. Recreational items:** Used to make rubber balls, hula hoops, and even crayons
- 6. Home essentials:** Provides the materials for plastic dustpans, telephone housings, and propane for cooking and heating

This interconnectedness underscores the necessity for a measured, strategic approach to energy transition rather than abrupt changes. The oil industry's influence extends far beyond fuel, permeating nearly every aspect of our daily lives through these diverse products. Any transition must carefully consider energy alternatives and viable replacements for these critical petroleum-based materials that our society heavily relies upon.



The complex business realities and challenges of the oil and gas industry

Oil and gas production is a core activity in the energy sector, critical to an energy organization's overall performance. With an increased level of complexity, be it in the area of safety and environment or crunched margin, it is essential to monitor production volume and track various other contributing factors like sustenance and continuous improvement.

The oil and gas industry stands at a critical juncture, facing unique challenges as it navigates the path to sustainability while maintaining operational excellence. As a capital-intensive sector with long-term investment horizons, it must balance maximizing returns on existing assets and making substantial investments in cleaner technologies and practices to ensure future viability. This balancing act is further complicated by a volatile business environment characterized by fluctuating oil prices, macroeconomic uncertainties, and geopolitical tensions that can rapidly shift market dynamics. The industry must remain agile, adapting to sudden changes in supply and demand while also planning for long-term energy transitions.

The oil and gas industry also grapples with a growing talent crisis. As experienced professionals retire, taking with them decades of invaluable knowledge, the industry faces difficulties in attracting young engineers and technical thinking force. This brain drain and skills shortage comes at a critical time when technological modernization and digital transformation are essential for maintaining competitiveness and meeting environmental goals. However, these crucial long-term initiatives often take a backseat to more immediate operational and financial concerns.

Regulatory pressures add another layer of complexity, with increasingly stringent environmental regulations and carbon reduction targets requiring significant operational changes and investments. Industry must navigate these regulatory landscapes while maintaining profitability and meeting global energy demands. It has been facing intense public scrutiny and pressure to address climate change concerns, necessitating a careful balance between meeting current energy needs and investing in renewable alternatives. This shift requires technological innovation and fundamentally reimagining business models and corporate strategies.

It's in this complex and challenging landscape that partners like Quest Global provide invaluable support. Their cutting-edge engineering services, deep domain expertise, and innovative solutions help bridge the gap between current operations and future aspirations. These collaborations allow oil and gas companies to optimize existing assets and establish sustainable practices, all while maneuvering through the industry's complex economic, technological, and environmental landscape.



Remote operations and maintenance

In response to these multifaceted challenges, remote operations and maintenance have emerged as a game-changing strategy for the oil and gas industry. This approach leverages advanced technologies to monitor, control, and maintain facilities from a distance, reducing the need for on-site personnel and enabling more efficient resource allocation.

Remote operations encompass a broad spectrum of activities, from real-time monitoring of rotating equipment and complex process parameters and flow rates to controlling valves and pumps across extensive distances. Advanced sensors and Internet of Things (IoT) devices continuously collect data, which is then analyzed using sophisticated algorithms to optimize performance and predict potential issues before they occur. Maintenance activities have also been revolutionized by remote capabilities. Predictive maintenance models utilize machine learning to analyze equipment performance data, identifying early signs of wear or potential failures. This proactive approach allows maintenance teams to address issues without the need for physical site visits. When on-site work is necessary, augmented reality tools can guide technicians through complex procedures, effectively bringing expert knowledge to any location.





Benefits of remote maintenance and operations for oil and gas

The adoption of remote maintenance and operations offers numerous advantages to the oil and gas industry:

- 1. Enhanced safety:** Remote operations significantly enhance worker safety by reducing the need for personnel in hazardous environments. This is particularly crucial for offshore platforms, where evacuations due to severe weather can be expensive and dangerous.
- 2. Cost efficiency:** Remote operations can lead to substantial cost savings. These savings stem from reduced travel expenses, optimized staffing, and improved equipment reliability. The industry has observed significant reductions in operating costs, particularly in upstream oil and gas operations.
- 3. Improved productivity:** Remote monitoring and predictive maintenance can drastically reduce downtime. An unexpected shutdown of an offshore platform can result in substantial revenue losses. Predicting and preventing such incidents through remote operations directly impacts the bottom line.
- 4. Global talent utilization:** Remote operations allow companies to leverage expertise from anywhere in the world. This approach not only addresses the skills gap but also enables 24/7 operations.

These benefits collectively demonstrate how remote maintenance and operations are transforming the oil and gas industry, making it safer, more efficient, and more environmentally responsible. The integration of these technologies is proving to be a crucial step in modernizing the sector and addressing its unique challenges.



Quest Global leading maintenance and operations for oil and gas leaders

Quest Global has been leading the development and implementation of remote operations and maintenance solutions for major oil and gas companies. Our approach combines cutting-edge technology with deep industry expertise to create bespoke solutions tailored to the unique challenges of each site and operation. Our engineering capabilities enable seamless integration of various technologies, including the use of drones for aerial inspections of pipelines and facilities, robotics for performing tasks in hazardous environments, and advanced data analytics platforms for processing the vast amounts of data generated.

Recognizing that each plant, site, and oil well is unique, we leverage our extensive domain expertise to tailor our solutions. We at Quest Global support the remote monitoring of sites to ensure optimum performance both with regard to production quantity and quality by identifying limitations and providing timely solutions. We help our customers deliver next-generation value-creating products and energy-efficient plants by offering digital and engineering solutions in design, build, and operations that improve equipment performance and reduce downtime.

We also help our customers significantly improve the integrity and efficiency of their existing assets by leveraging our extensive domain knowledge and experience in equipment engineering, asset operations, and maintenance builds.

Our sustainable engineering services help our clients reform their carbon footprint by modeling processes that contribute to emissions, improving supply-chain quality, and optimizing CAPEX investments to meet their net zero goals.

As the oil and gas industry continues its journey toward sustainability and efficiency, remote operations and maintenance will play an increasingly crucial role. At Quest Global, we are committed to driving this transformation, helping our clients navigate the complex balance between maximizing current assets and investing in the technologies of tomorrow. In this era of transformation, Quest Global stands ready to partner with oil and gas companies, bringing our expertise, innovation, and commitment to excellence to bear on the challenges and opportunities that lie ahead.



For further information or queries, please reach out to us at info@quest-global.com