ERICSSON

The future of asset management:

Prevent downtime and maximize performance through private networks

Optimizing operations and managing risks in extreme conditions

In the energy and natural resources sector, disruptions and productivity losses can severely impact capital investments, workforce efficiency, and equipment lifespan. Hazardous environments—whether in oil and gas, mining, or wind energy—expose equipment to constant risks of malfunction and damage, threatening operational continuity.

With digital transformation, asset management is evolving. Technologies in data analytics, automation, virtualization and smart sensors empower the industry to adopt predictive and proactive maintenance strategies. These advancements enhance both machinery reliability and worker safety, shifting the industry towards smarter, data-driven risk management.

Why digital transformation matters in the energy sector

In today's rapidly evolving digital landscape, remote operations are reshaping the energy sector. Emerging technologies, such as autonomous vehicles, robotics and drones, allow for unprecedented levels of monitoring, control and automation. The energy and natural resources industry—including mining, oil and gas and renewable energy—stands at the forefront of this transformation by adopting innovative use cases in their industrial digitalization journey.

Technologies like the Internet of Things (IoT), big data analytics, augmented reality (VR) and digital twins are revolutionizing productivity, uptime and safety. However, these advancements require robust 5G infrastructure to reach their full potential.

Moving beyond traditional maintenance practices

Traditional asset management practices—manual, periodic and reactive—limit opportunities to efficiency, safety and extended lifespan of equipment. These shortcomings become even more pronounced in harsh environments, where extreme conditions, aging infrastructure, and operational complexities add to the challenges. To achieve operational resilience, enhance safety and optimize cost-effective performance in these demanding environments, organizations must address critical challenges such as:

Workplace safety risks

Manual inspections of turbines, pipelines and heavy machinery often expose workers to hazardous conditions, such as extreme weather and remote locations.

Limited real-time visibility

Maintenance that relies on historical failure patterns rather than real-time data leaves operations vulnerable to unexpected breakdowns.

High costs of inspections

Remote asset inspections, such as for mining equipment or offshore rigs, require costly logistics like helicopters or boats, impacting operational budgets.

Scalability challenges

Managing vast networks of connected sensors, machines and components is complex without scalable systems, leading to inefficiencies in monitoring.[1]

Data management overload

Connected devices generate massive real-time data streams that require advanced analytics tools to convert into actionable maintenance insights.

Resource inefficiencies and compliance

Excess inventory, energy waste in unused areas and manual documentation increase costs, while strict regulations demand precise, continuous monitoring.

[1] https://infraon.io/blog/challenges-and-trends-of-asset-management-in-energy-sector/

The power of data in optimizing asset management

Maximizing the value and performance of physical assets requires a shift toward data-driven decision-making throughout their lifecycles—from investment and operation to maintenance and divestment. The rise of the Industrial Internet of Things (IIoT) is transforming this process, introducing a range of smart technologies such as sensors, HD cameras and wearable devices. These tools provide operators with vast amounts of real-time data, enabling them to monitor asset health, predict failures, and streamline operations.

By leveraging connected solutions, organizations can move beyond traditional approaches, embracing predictive and proactive maintenance strategies that improve efficiency and safety. With access to actionable insights, companies can minimize downtime, extend asset lifespans, and optimize resource allocation, ensuring their operations are prepared for the challenges of today's demanding environments.

Key benefits

Remote inspection
Advanced sensors enable remote inspections, reducing the need for on-site travel and disassembly, saving time, and costs and minimizing risks.

Predictive maintenance
Digital twins and analytics predict wear and failures, reducing downtime, optimizing maintenance and extending equipment lifespan.

Operational flexibility
Private networks support seamless communication across devices, enabling reliable use of mobile and autonomous equipment at multiple sites.

Smart monitoring
Real-time sensors and cameras detect issues like leaks or stress early, preventing failures and enhancing safety, such as with smart rock bolts in mining.

Private cellular networks: A platform for innovation

Private cellular networks deliver the reliability, mobility, and coverage essential for managing complex asset operations across large, remote and challenging environments. These secure networks are designed to handle the demands of real-time monitoring, predictive analytics and data-intensive applications, ensuring optimal performance of critical equipment.

With private cellular networks, companies can:

- Enhance safety through real-time condition monitoring and automated maintenance alerts.
- Improve asset performance and reliability by enabling predictive and proactive maintenance strategies.
- Streamline operations with centralized control and remote management of equipment.
- Reduce operational costs by minimizing the need for on-site personnel in hazardous locations.
- Ensure consistent, high-speed connectivity for seamless data exchange and actionable insights.

By enabling innovative technologies like the Industrial Internet of Things (IIoT) and digital twins, Ericsson's private cellular networks bridge the gap between human oversight and machine autonomy, driving safer, faster and more efficient operations.

Unlocking operational value through asset management

Real-time condition monitoring
Advanced real-time sensors enable continuous monitoring, reducing maintenance costs by up to 20 percent in mining operations, with compatibility for 80 percent of equipment.[2]

Extended equipment lifespan
Predictive analytics for pumps and compressors reduce maintenance requirements by 25 percent, decrease downtime by 32 percent, and extend operational lifespan by 25 percent.[3]

Predictive maintenance
Intelligent insights from condition monitoring minimize unscheduled maintenance by 25 percent, optimizing asset performance.[4]

Operational efficiency
Drones reduce inspection times by 90 percent and downtime from inspections by 65 percent, while minimizing health and safety risks for offshore operations.[5]

Lifecycle planning with digital twins
Digital twin technology enables strategic lifecycle management, reducing oil and gas decommissioning costs by 15 percent through optimized planning and asset utilization.[6]

Why choose Ericsson private cellular networks?

Ericsson's private 5G networks bring the benefits of Industry 4.0 to the energy and natural resources sector, unlocking innovation, productivity and safety. Built on robust 4G/5G technology, these networks support a broad range of applications, integrating seamlessly with operational processes, devices and applications in challenging environments.

Shaping the future of asset management

At Ericsson, we're committed to advancing the future of asset management by delivering seamless connectivity and innovative solutions in even the most challenging environments. Our partnership with Nutrien exemplifies this commitment, showcasing how Ericsson's technology is transforming operations in the potash mining industry. Through the deployment of a private 4G LTE network at Nutrien's Rocanville site in Saskatchewan, Canada, Ericsson has enabled real-time communication across extensive underground areas. This connectivity has significantly enhanced worker safety, reduced equipment downtime and optimized operational efficiency. By supporting Nutrien's mission to scale potash production, this solution demonstrates how connected asset management can drive both productivity and safety.

Explore the full case study here.

Learn more about how Ericsson's private cellular networks can transform your operations with unparalleled safety, productivity and flexibility.

ericsson.com/oil-and-gas
ericsson.com/mining

[2] https://www.ericsson.com/en/enterprise/forms/connected-mining
[3] https://www.ericsson.com/en/industries/offshore-and-processing#:~:text=By%20applying%20asset%20condition%20monitoring,life%20of%20equipment%20by%2025%25.
[4] https://www.modularmining.com/webinars/minecare-cloud-webinar-big-data-you-can-act-on-june-2017/
[5] https://www.ericsson.com/en/industries/offshore-and-processing
[6] https://www.ericsson.com/en/blog/2021/11/how-digital-twins-in-the-oil-and-gas-industry-can-modernize-your-business

About Ericsson

Ericsson enables communications service providers and enterprises to capture the full value of connectivity. The company's portfolio spans the following business areas: Networks, Cloud Software and Services, Enterprise Wireless Solutions, Global Communications Platform, and Technologies and New Businesses. It is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's innovation investments have delivered the benefits of mobility and mobile broadband to billions of people globally. Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

www.ericsson.com

www.ericsson.com

SE-126 25 Stockholm, Sweden
Telephone +46 10 719 00 00

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