Maintain Asset Integrity in Oil and Gas
Ensure Asset Integrity and Efficiency

To maximize production without compromising safety, oil and gas companies must ensure the long-term integrity of their assets. An integrated approach to asset management drives efficiency and reliability – for significant competitive gain.

Oil and gas is one of the most asset-intensive industries in the world. Companies are operating in an increasingly complex and globally competitive environment – where asset integrity is critical to the overall business as well as the health and safety of the environment, public, and employees.

To mitigate operational and maintenance risks, processes that support early identification and resolution of integrity issues are needed. This enhances global standing and pays dividends in operational performance, safety, and profitability.

To stay competitive, companies also need to find new ways to make the most of their assets – ensuring uptime and safety, mitigating risks, and reducing costs. Excessive downtime and service costs often stem from ineffective maintenance procedures and inefficiencies in retrieving information when dealing with contractors and sourcing parts.

Only the right mix of people, processes, and technology – when managed efficiently – can safeguard asset integrity and maximize profitability.

SAP provides a series of steps and strategies that help oil and gas companies develop and implement an efficient and sustainable asset management program – while driving long-term asset integrity.
An asset management improvement program can help increase the value of assets. But first, sound practices must be established. And a good place to start is with ISO 55000 standards. This family of international standards describes a framework for establishing, implementing, maintaining, and continuously improving asset management.

SAP solutions enable companies to achieve operational excellence by providing visibility and transparency of asset-relevant business information throughout the entire organization.

Embedded analytics and key performance indicators (KPIs) can help enhance visibility into asset performance, resources, and work management. With greater insight, operators can improve data quality, work order efficiency, and predictive maintenance. As a result, maintenance operations are more streamlined and coordinated.

Through automation of service procurement and spare parts processes, service delivery cycle times can be reduced while maximizing asset uptime.

Mobile solutions can keep the field closely connected to the office. Mobile access to 3D visual work instructions and spare parts selection increases the speed and reliability of repairs.

Improve Asset Performance

With the growing cost and complexity of energy production, companies need assets that perform at maximum capacity – for maximum value. With streamlined and integrated processes and optimized maintenance strategies, decision makers can gain the visibility they need to enhance performance and maintenance efficiency.
Successfully Balance Cost and Risk

Asset management is a tricky balancing act between cost, performance, and risk. Best-run oil and gas companies take a consolidated approach to maximizing return on assets, optimizing equipment, and managing cost and risk.

Enterprise asset management software from SAP helps organizations build a robust system framework for maintenance and management of asset integrity – at high performance, low cost, and minimal risk.

- Increase asset availability, reliability, and safety
- Maximize return on assets, equipment usage, and labor productivity
- Reduce unplanned outages and maintenance
- Minimize downtime, production delays, and maintenance backlogs
- Decrease maintenance costs and spare parts spending
- Optimize preventive maintenance

79%

Decrease in accident frequency rates, when strong safety measures for people and assets are established and monitored

Source: SAP Performance Benchmarking
SAP Innovations

Breakthrough technology and asset-related data lead to unprecedented opportunity. Best-run oil and gas companies leverage new technology to accelerate decision making, increase efficiency, improve asset visibility, and create flexible asset management networks.

**Asset analytics** enable real-time tracking, analysis, and optimization of asset performance and equipment effectiveness. This information can be integrated with shop-floor systems.

**Mobile** solutions can increase productivity, asset uptime, and safety. Technicians can handle work orders remotely and access real-time data to carry out tasks such as inspections, maintenance requests, and inventory tracking.

With **visualization** applications, 3D work instructions and spare parts selection can be generated.

**Cloud** solutions can be deployed quickly and at low risk to create flexible asset management networks for service procurement and spare parts management.

**Database and technology** solutions improve safety and asset utilization by enabling organizations to schedule maintenance plans up to 1,000 times faster.
Operate Safely and Efficiently With Optimized Asset Usage

Solution Overview

Analytics

Asset and Operational Analytics
Measure asset performance and identify possible improvements. Close the gap between operational and information technology with advanced real-time analytics.

Maintenance Management

Maintenance Management
Establish a culture of preventive and predictive maintenance. Execute work orders and permits efficiently to minimize breakdowns and improve safety.

Service Procurement

Service Procurement
Standardize and automate the complete service procurement process for all plant maintenance services.

Spare Parts Management

Spare Parts Management
Automate tracking and analysis of data from parts inventory monitoring, replenishment, and forecasting.

Mobile Asset Management

Mobile Asset Management
Access relevant information anytime and anywhere – online and off – to improve safety and productivity.
Asset Integrity

Solution Overview

Analytics

Maintenance Management

Service Procurement

Spare Parts Management

Mobile Asset Management

Why SAP?
Asset and Operational Analytics

Be operationally ready at all times to deliver high-quality products or services. SAP software can help ensure this level of availability and performance through real-time monitoring.

SAP Asset Analytics software and SAP BusinessObjects business intelligence (BI) solutions provide actionable insights into key data that drives high asset reliability and low operational risk. Operation managers can measure asset performance and monitor asset health in real time. As a result, they have the transparency needed to identify potential issues and eliminate bottlenecks.

SAP Predictive Analysis software enables companies to forecast future performance of their asset. By analyzing historical performance data, decision makers can create optimal strategies to proactively manage assets use.

11%

Increase in asset productivity reported by organizations with maturity in asset visibility and performance measurement

Source: SAP Performance Benchmarking
The SAP HANA Asset Analytics rapid-deployment solution offers a list of standardized and preconfigured KPIs and corresponding reports. These indicators, based on cross-industry best practices, help benchmark and improve the performance of assets across their lifecycles.

The SAP Manufacturing Integration and Intelligence application monitors machine health in real time. Machine-generated data and manually collected inspection records enable organizations to proactively determine maintenance needs based on actual condition of assets.

When combined, this information provides sample content to store condition data in the SAP HANA platform and visualize it with SAP 3D Visual Enterprise applications to support quick decision making on corrective measures.

BI software is integrated with the rapid-deployment solution and condition-based maintenance solutions to deliver high visibility of current and projected asset performance. These flexible solutions help optimize maintenance strategies for assets, reduce downtime, and increase reliability.

29%

Reduction in maintenance costs as a percentage of revenue, when production assets track KPIs to measure comparable performance

Source: SAP Performance Benchmarking
Real-Time Visibility Drives Effective Asset Management

Predefined dashboards and reports provide comprehensive insight into asset performance – in real time. With better decision making, utilization, maintenance, and management of assets are improved.

SAP software for asset management provides greater visibility into asset performance. Fast and intelligent data analysis helps companies manage assets more efficiently and reduce costs – paving the way for operational excellence.

Oil and gas assets generate huge volumes of data on current operating conditions. Related maintenance activities create additional data sets for use in asset management systems.

Consistent analysis of this data, alongside historical trends, arms companies with the information they need to manage and continuously optimize their assets. Data analysis also helps ensure assets are maintained only when needed, without increasing operational risks.

Real-time monitoring of asset health helps drive condition-based maintenance strategies. This enables companies to improve asset reliability, reducing unplanned downtime and repairs.
Innovations for Asset and Operational Analytics

SAP innovations provide fast and intelligent insight into asset performance and condition, driving proactive asset management.

**Analytics**
- Capabilities
- Benefits
- Technology Innovations

**52%**
Decrease in unplanned downtime reported by organizations with greater maturity in reporting and analytics

Source: SAP Performance Benchmarking

**Big Data**
Integration with machine systems generates huge volumes of data on asset health. Companies can leverage predictive algorithms for condition-based maintenance to analyze data in real time – and optimize maintenance activities.

**Mobile**
Comprehensive mobile solutions monitor the condition of assets and help ensure accurate data and decision making. Mobile devices generate analytics reports on asset health to enable rapid corrective action.

**Analytics**
Advanced analytics for asset management leverage the SAP HANA platform or the SAP Business Warehouse application. Fast, actionable insights into performance, safety, and sustainability help maximize asset usage.
Maintenance Management

Cultivate a culture of preventive and predictive maintenance to optimize maintenance management. Execute work orders and permits efficiently to minimize breakdowns and maximize safety.

SAP software for maintenance management helps companies get a handle on unplanned and preventive tasks. Efficient definition of maintenance plans, tasks, and inspections supports a culture change from reactive to preventive and predictive maintenance.

Companies can develop clear procedures and leverage high visibility into resource availability. Fast access to information at every step of execution drives up efficiency and drives down costs.

Maintenance organizations can measure job planning effectiveness by comparing planned hours with booked hours. A clear view of asset status empowers employees to mitigate breakdowns.

6%

Lower planned-versus-actual cost variance, when using predictive and preventive maintenance to maximize equipment effectiveness and minimize downtime

Source: SAP Performance Benchmarking
Optimize Maintenance Strategies

SAP software for maintenance management enables companies to create proactive maintenance strategies – from breakdown to corrective, preventive, and predictive maintenance.

The software manages critical master data such as equipment records, functional locations, task lists, bills of material, and measurement points. Organizations can create maintenance plans, perform planning and scheduling, and execute maintenance work orders – quickly and efficiently.

The SAP Multiresource Scheduling application helps operation managers make the most of their assets and maintenance resources, maximizing wrench time. The software provides clear safety procedures for all repair activities based on predefined safety plans outlined on a job card. And if technicians need special permits to enter an asset environment, these plans are integrated into the process and tracked by the system.

18%
Decrease in unplanned outages for organizations deploying preventive and predictive maintenance strategies
Source: SAP Performance Benchmarking
Optimized Maintenance Management Maximizes Uptime

Optimized maintenance strategies drive 24x7 asset availability. Planned resource hours and material requirements match actual usage. And clear maintenance processes reduce repair times and backlogs.

SAP software for maintenance management helps oil and gas organizations drive maximum value from their assets. Maintenance planning processes, clear procedure development, transparent resource availability, and always-on access to information help ensure assets are available around the clock – and deployed to their maximum potential.

Synchronizing labor, materials, equipment, and schedules reduces service and maintenance costs. Streamlined processes help ensure compliance with environmental, health, and safety regulations – integrating documentation on job execution and safety. Companies gain greater control of the compliance process by increasing efficiency and reducing penalties.

Optimized maintenance processes enhance equipment efficiency to minimize unplanned downtime, outages, and breakdowns. Companies can improve equipment reliability and optimize usage processes to decrease mean time to repair (MTTR).

62%

Reduction in unplanned outages with reliability-based maintenance procedures and tools

Source: SAP Performance Benchmarking
Innovations for Maintenance Management

Visualization technology from SAP accelerates asset maintenance and repair with step-by-step visual work instructions.

Visualization
Through integration with SAP 3D Visual Enterprise applications, oil and gas companies can access 3D models of their assets and view step-by-step visual instructions for repair procedures. Technicians are empowered to deliver repairs on time, on point, and within budget – increasing productivity and minimizing downtime. Companies also save on the cost of authoring and publishing documentation.

Visual work instructions serve as a rich and efficient training resource, sharing the expertise of experienced technicians with current and future workforces.

50%
Reduction in learning time and increased retention, understanding, and engagement for companies using animation and graphics for learning

Source: Harvard University
Service Procurement

Streamlined procurement processes, service entry sheets, and order collaboration help companies reduce cycle times for service delivery. Collaborative sourcing tools drive down acquisition costs.

SAP software for service procurement supports integrated procurement capabilities and streamlined bidding for asset-related services. An online system for supplier collaboration supports specification of service requests, quoting, order confirmation, and status updates—all automated and standardized to help ensure service levels.

65%

Reduced procurement costs, when order collaboration through a supplier portal is used for order acknowledgments and advance shipment notices

Source: SAP Performance Benchmarking

Oil and gas companies can enforce compliance across all contractors, leveraging fully integrated plant maintenance service requests, spot bidding, and procurement processes. Supplier self-services for hierarchical service structures enable bidding collaboration.
Reduce Service Order Cycle Times

SAP software for service procurement standardizes and automates the complete procure-to-pay process for plant maintenance services – from service requests and spot sourcing to the order-and-pay cycle.

Requests made in the SAP ERP application are integrated with sourcing and contracts, purchase order processing, supplier collaboration, and settlement. Integration with materials management enables automated service requests.

Companies can also leverage supplier self-services and a bidding engine through integration with the SAP Supplier Relationship Management application. This drives efficient Web-based bidding, collaboration, and service fulfillment.

The ability to handle contracts as supply sources helps companies cut costs. From purchase requisition to invoice, each transaction is electronically recorded and validated. Purchasers, suppliers, and maintenance users can access detailed reports – minimizing errors across the entire service procure-to-pay process.

30% Reduction in procurement costs, when using online item catalogs for self-service requisitions

Source: SAP Performance Benchmarking
Optimize Service Delivery and Minimize Costs

Maximize savings through efficient collaboration and contract utilization. Faster supplier selection, spot bidding, and purchasing shorten cycle times for service delivery and reduce costs.

SAP software for service procurement helps oil and gas companies increase service levels and reduce costs. Standardization, automation, and collaboration bring greater speed and efficiency to the entire procure-to-pay process.

Authorized purchasers, suppliers, and maintenance users can access detailed reporting – increasing transparency and minimizing errors. Efficiency gains in supplier bidding and selection and purchase order processing decrease overall maintenance costs.

Order collaboration capabilities and an intuitive service entry sheet help companies accelerate order cycle times.

Oil and gas companies can leverage integrated service requests for plant maintenance, spot bidding, and procurement processes to drive down repair costs and maximize equipment usage. Integrated self-services support hierarchical service structures and supplier collaboration for service structure definition and order collaboration.

95%

Fewer full-time employees needed, when a procurement system is used to automate processes and electronic purchase orders submissions

Source: SAP Performance Benchmarking
Innovations for Service Procurement

Cloud-based solutions from Ariba, an SAP company, connect companies more closely with suppliers across the entire procure-to-pay process.

Integration with cloud-based procurement solutions from Ariba enables more efficient collaboration with suppliers, improved compliance, and reduced costs.

The Ariba Network supports comprehensive business process collaboration that can help automate and streamline service procurement.

52%

Reduction in purchase order error rates, when companies use online item catalogs for self-service requisitions

Source: SAP Performance Benchmarking

Releasing a maintenance order triggers the Ariba software to create service requests through SAP Supplier Relationship Management or SAP ERP.

Companies can also leverage supplier catalog integration, purchase order processing, and invoice management capabilities.
Spare Parts Management

SAP software for spare parts management helps ensure service parts are in the right place at the right time – without holding excessive stock. Companies can avoid stock-outs, reduce costs, and increase service levels.

Streamlined processes help companies provision spare parts at lower cost and greater efficiency. This includes data tracking and analysis for planning, monitoring, replenishing, and forecasting the service parts inventory.

Companies can automatically generate requisitions with consumption-based material requirements planning. The material master record stores reorder points and quantities.

When inventory levels falls below the reorder point threshold, the system generates a purchase requisition.

Companies can also automate purchase orders with parts suppliers or use supplier self-services for spare parts management.

29%
Companies that have cross-plant visibility into spare parts inventory and can conduct regular inventory analysis to minimize costs
Source: SAP Performance Benchmarking
Optimize Spare Parts Supply

The SAP Enterprise Asset Management solution helps oil and gas companies manage spare parts more efficiently and drive down maintenance costs.

Cleansing master data and removing obsolete or duplicate parts can help organizations realize these savings. Automating processes also plays a role by reducing maintenance cycle times and improving parts availability.

Automated forecasting reduces labor, storage, and maintenance costs. Companies can enable automatic selection of suitable forecast models to calculate reorder points and quantities at the push of a button. The solution assigns bills of materials to equipment and functional locations, eliminating the need for manual planning work.

Flexible order settlement against various cost receivers, such as fixed assets, can also yield savings.
Streamlined Processes For Efficient Spare Parts Management

SAP software for spare parts management helps oil and gas companies get the most out of their assets – minimizing the costs of outages, unplanned downtime, services, and maintenance.

Organizations can take advantage of automated tracking of spare parts usage and enable automatic replenishment in line with inventory planning. This maintains inventory at an appropriate level and helps ensure the availability of spare parts for asset maintenance and repair.

Companies can leverage software for consumption-based material requirements planning, alongside tools for reorder point and reorder quantity calculation. This saves time and money – while eliminating delays and errors associated with manual purchasing processes.

A reduction in inventory holding and carrying costs frees up vital capital. Companies can identify obsolete or redundant spare parts to reduce inventory levels based on forecast requirements. Spare parts are available on time – and within budget – for fast and efficient asset maintenance.

10% Decrease in inventory carrying costs, when safety stock violations trigger workflow messages and an automated escalation process

Source: SAP Performance Benchmarking
Innovations for Spare Parts Management

Three-dimensional visualization software from SAP helps companies maximize equipment effectiveness and asset productivity.

Visualization
Integration of SAP software for spare parts management with SAP 3D Visual Enterprise applications gives oil and gas companies a clear view of their assets – from every possible angle.
Field technicians can use 3D animated asset models to correctly identify parts, sub-assemblies, and kits for upgrades and service repairs – reducing unplanned downtime and minimizing lost revenue.
This expedites the repair process, maximizes asset availability, and enhances technician productivity. It can also result in a reduction in document authoring and publishing costs.
Mobile Asset Management

Mobile solutions from SAP for enterprise asset management empower maintenance technicians to install new equipment and maintain existing assets—safely, efficiently, and independently.

Mobile apps provide instant access to work orders and equipment data, anytime and anywhere. Real-time information and automated processes drive up productivity and safety—and expedite maintenance and repair.

Field technicians have the information they need to install, inspect, maintain, and repair assets efficiently. They can record data on location, time, and behavior for alerts and reports.

Stockroom employees can use mobile apps to gain real-time visibility into inventory. Workers can flag any environmental, health, and safety concerns as well as fire or compliance issues—reducing the risk of accidents and regulatory fines.

50% Reduction in maintenance rework time, when technology is used to improve or automate collection of asset performance data

Source: SAP Performance Benchmarking
Improve Maintenance Productivity

Work order management helps companies manage maintenance orders and notifications. This functionality leverages relevant information on equipment, functional location, repair history, operation level, parts, and materials. Technicians can manage and execute work orders on a wide selection of mobile devices – both online and off.

Time and attendance functionality allows technicians to record time entries for orders and nonorders on their mobile devices.

Condition monitoring and meter readings facilitate mobile capture of measurement points. Technicians can record observations and create notifications for out-of-specification conditions.

Inventory management empowers warehouse staff and technicians to perform physical inventories and cycle counts, check material availability, and preselect parts. Using their mobile devices, employees can monitor distribution of incoming materials and help ensure reconciliation with purchase orders.

Solution Overview

Mobile Asset Management

Capabilities

Benefits

Technology Innovations

53%
Reduction in data entry time and improved compliance with U.S. Department of Transportation

Source: NiSource Gas Transmission & Storage
Improving Productivity With Mobile Asset Management

SAP software for mobile asset management helps companies protect and prolong the life cycles of their assets. Improved reliability and performance drive up productivity and reduce maintenance costs.

Keeping assets in peak condition for the longest time possible demands utmost levels of safety and productivity. Best practices for asset management help organizations install, maintain, and repair mission-critical assets – to optimize production and drive uninterrupted service.

Using SAP mobile apps for asset management, technicians can service increasingly complex assets, execute work orders, and manage parts inventory – both in and off the field. With relevant real-time information, they can conduct inspection and maintenance rounds more quickly and efficiently.

Mobile apps can also help extend and enhance the lifetime of an asset – driving increased reliability, performance, safety, and productivity. Companies can expect fewer accidents and outages and a reduction in unplanned downtime, maintenance backlogs, and inventory carrying costs.

For technicians, this means increased capacity and productivity, less idle time and rework, and a complete elimination of paperwork.

40% Increase in employee productivity, when organizations provide mobile access to employees

Source: SAP Performance Benchmarking
Innovations for Mobile Asset Management

Empower maintenance technicians to manage work from their mobile devices anytime and anywhere – online and off.

52%

Increase in employees who are mobile, when relevant business processes are redesigned to leverage mobile access to supporting applications

Source: SAP Performance Benchmarking

Mobile Work Order Management
Manage work orders and notifications anytime and anywhere on a wide variety of mobile devices. Increased efficiency and productivity reduce downtime and maintenance backlogs, as well as extend and improve asset life and reliability.

Mobile Rounds
Conduct inspections and take measurement readings. Create maintenance notifications on the spot to prevent stoppages and delays.

Mobile Platform
Support mobile devices through a proven, scalable platform that includes built-in support for enterprise-class security. Companies can deploy, support, and manage multiple mobile devices and apps – future-proofing their mobile strategy.
Why SAP?

SAP software for enterprise asset management drives real-time visibility into asset performance and empower oil and gas companies to efficiently manage the asset lifecycle. Powerful analytics help optimize asset usage and cut costs.

Tightly Integrated Solutions Supporting End-to-End Business Processes
SAP offers the most comprehensive portfolio of software for enterprise asset management to support the entire lifecycle of physical assets in terms of performance, risk, and expenditures.

Leveraging Key Breakthrough Innovations
Based on an innovative technology foundation that combines solutions for database and technology, enterprise mobility, analytics, and cloud-based deployment options, the SAP software portfolio enables efficient and sustainable management of physical assets.

Proven Time to Value in Large-Scale Implementations
Some of the world’s leading companies across all industries continue to rely on SAP software and services to help them maximize return on assets, improve equipment effectiveness, and manage risk.

8.9%
Increase in the effectiveness of operating equipment for best-run assets
Source: SAP Benchmarking in Manufacturing Industries 2011
Find Out More About How Your Organization Can Become Best-Run

Benchmark Your Performance
Position your organization for dominance in this new economy with the business performance benchmarking program from SAP – available free to SAP customers and select prospects. The SAP benchmarking program has helped more than 3,000 organizations assess their strengths, uncover areas for improvement, and identify best practices and IT strategies that generate clear, tangible value – not someday, but today.

Go Live in Weeks
Here’s the fastest way to run your business better: our rapid-deployment solutions. In one package, you get everything you need to be up and running quickly – including preconfigured software and implementation services – in just weeks. With a defined scope and predictable costs, there are no surprises.

Join Your Community of Practices
Every day, SAP Community Network changes the way that thousands of SAP users work. It lets members help one another solve problems, learn, and invent new ways to get things done – faster. Find out how to connect with people, content, and resources.

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