



Mobility Matters: Reduce downtime and better manage inventory in the petrochemical industry





Issues in Petrochemical

Regular fluctuations in crude oil constantly apply pressure to profitability in the petrochemical industry. At the same time, environmental regulations in this sector are rapidly moving towards the level of stringency found in highly regulated industries such as pharmaceutical, translating into additional data collection requirements — and costs. And while the large machinery and pipelines used to produce and refine the crude oil are critical to the health of the business, they are very costly to manage and maintain. In order to remain competitive, petrochemical companies are constantly examining processes for a means to increase efficiency and reduce costs. Enterprise mobility solutions cannot affect the cost of the crude oil, but they can eliminate the inefficiencies associated with the many double manual processes (collection of information via paper and pen that is then entered into the computer) typically utilized in inventory management, asset maintenance and environmental compliance, with a positive impact on profitability.

Inventory Management

Enterprise mobility solutions can help completely overhaul inventory management for petrochemical companies, which often have hundreds of

warehouses all over the world. Bar code scanning and RFID technology can be implemented to automate the many manual processes in warehouses and the production line, providing real-time processing — and real-time inventory visibility. One company leveraged this information to reduce inventory from \$100 million to \$50 million, dramatically reducing the costs associated with financing and managing inventory, and dramatically increasing working capital. In addition, with the automation of cycle counting, warehouse managers were freed to focus on more strategic tasks.

Environmental Compliance

Enterprise mobility solutions can help petrochemical corporations achieve cost-effective compliance with the environmental and health and safety regulations of today — and tomorrow. When enterprise mobility solutions are deployed throughout the petrochemical company, the information required to prove compliance is already in your business system — from the real-time capture of machine temperature and flow gauge readings to confirmation of each step of the many machine maintenance functions. Automated mining of your data can produce all the information needed — without additional processes, or costs.

Asset Maintenance

Enterprise mobility solutions can dramatically reduce the costs associated with both day-to-day asset maintenance as well as the annual or semi-annual maintenance that requires plant operations to be shut down. In many companies, these tasks are often performed by collecting information initially via pen and paper, and then entering the information into a computer at a later time. The two-time manual processing of data often results in many errors. In addition, there is a significant time lag between when data is originally collected, available to analytical business systems and issues finally spotted and diagnosed. And yet more time between when the repair is scheduled and executed. This long diagnosis-repair cycle time can result in unscheduled, expensive downtime — as much as a million dollars a day. With enterprise mobility solutions, machine readings are automatically captured in real time and instantly available. Pen and paper-based processes and data entry are eliminated; staff productivity is increased; errors are reduced; and the ability to quickly identify, diagnose and resolve potential equipment problems eliminates costly refinery downtime.

For annual scheduled maintenance, the refinery is shut down and many technicians are sent to perform routine maintenance on all equipment. To perform these tasks, the equipment must be turned on and off periodically (for example, flow meters), which can only be executed by engineers in the control room with access to the SCADA data. As a result, maintenance is very time consuming, as constant back and forth communication is required between the technician at the machine and the engineer in the control room. Enterprise mobility can ‘mobilize’ the SCADA data, providing technicians with the information to completely control the machine, right at the point of testing, often reducing the number of days required to perform annual or semi-annual maintenance by as much as 25 percent.

The Unique Challenges of Mobility in the Petrochemical Environment

There are unique challenges associated with deploying enterprise mobility solutions in the petrochemical industry. First, the environment demands devices that can be used safely around flammable fumes. Today, there are explosion protected mobile devices that can be used in these hazardous environments.

In addition, petrochemical companies are often geographically dispersed — from pipelines in the field to large campus environments. But second-generation wireless LAN technology provides an affordable platform for the dramatic productivity increases and cost reductions of enterprise mobility, delivering cost-effective WLAN/WWAN connectivity for the workforce through cost-efficient deployment and management, and the ability to easily upgrade and scale.

What follows is a case study that illustrates the power of enterprise mobility in the Petrochemical industry:

CASE STUDY

SOLUTION CATEGORY:	Enterprise Asset Management
APPLICATION:	Mobile Asset Management/ Pipeline Maintenance
INDUSTRY:	Petrochemical
COMPANY:	Global leading oil and natural gas manufacturer

Business Issue:

Eliminate inefficiencies in the maintenance function for heavy equipment and pipelines



This major petrochemical manufacturer needed to increase the efficiency and productivity of the gas pipeline maintenance process and specialized heavy machinery leased out to other companies (for example, for heavy drilling or carving out mine shafts). More accurate data was required to ensure the timely scheduling of maintenance routines to protect against pipeline and equipment failure, as well as provide verification that maintenance was performed properly and on time. Improved general management of this function would:

- Reduce the possibility of an event that would require the pipeline to be shut down (and the associated disastrous financial implications).
- Protect against the failure of leased equipment, which would damage the company’s reputation as well as further erode productivity due to the time required to locate an immediate replacement for the customer.

The before scenario:

Over 300 technicians were responsible for performing regular inspection and repair of gas pipelines over a 300-500 mile area every two weeks. Another 100 technicians were responsible for maintenance of the large pool of equipment available for lease. Maintenance processes were all manual: schedules were printed out and handed to technicians daily, and data collection was also manual — technicians recorded information on work performed with paper and pen, and then entered the data into the computer when returning to the desk at day's end.

Solution:**A mobile application that automates scheduling and provides all needed information right at the point of activity****The after scenario:**

All technicians now carry a mobile computer; pipeline workers carry a version that is certified as safe for hazardous environments. Manual processes are now replaced with an automated system that delivers the day's schedule of work orders and maintenance tasks directly to the technician's mobile computer.

Maintenance records and equipment manuals are available at the press of a button; inventory is automatically checked for any required parts to ensure availability; and any needed tools are prescheduled and waiting for the technician. Instead of on paper, completed inspections and repairs are recorded in the mobile computer. Information is transmitted instantly via a wireless LAN when technicians return to the building.

Benefits:

This enterprise mobility solution provided a real-time maintenance function for the company's more important assets – the pipeline and large equipment. The streamlining of these critical business functions ensured:

- **100 percent scheduling accuracy.**

Automation and real-time data ensured that maintenance was always scheduled — and performed — on time. The system now alerts supervisors of any exceptions, allowing the workload to be redistributed as needed in real time to protect the asset against equipment malfunction.

- **Improved technician productivity.**

The elimination of manual processes saved an average of an hour and a half per technician/ day due to an 80 percent reduction in paperwork and the elimination of the need to return from the field early to complete data entry at day's end. As a result, technicians have more time to inspect and repair equipment, and can handle more work orders per day.

- **Decrease in errors.**

The automation of data capture and elimination of the redundant process (capturing information on a form via pen and then later entered into the computer) dramatically decreased the number of data errors, improving the integrity of the overall maintenance function.

- **Improved information access.**

Real-time visibility of the wide variety of data in the maintenance function ensured that equipment was scheduled properly; the right tools and parts were available; any additional information required on a specific piece of machinery was instantly available; and maintenance and repairs are performed on time — and correctly.

Summary

Enterprise mobility is the missing link between your real-time operations and your business information systems. It allows you to effectively drive the costs of people, assets and materials down — and profitability up. In addition, with enterprise mobility solutions, the real-time capture and integration of data combines with the instant availability of information to critical business information systems, providing a level of visibility that is not possible with stand-alone applications. It is this real-time information that provides the rationale for strategic business decisions that boost productivity and slash costs across the board, increasing overall profitability. Enterprise mobility can help you make the most of your IT investment dollars. This profile shows how a large petrochemical manufacturer realized incremental benefits by implementing an enterprise mobility platform to extend mobile applications in six key business areas: materials management, production, asset maintenance, quality, CRM and mobile management. The company achieved the projected increase in productivity and savings from the planned implementation of the stand-alone “silo” applications — as well as a dramatic incremental savings on an annual basis, resulting from the integration of the applications, and the ability to capture and move the data to the point of most impact in real time.

Incremental Benefits of Enterprise Mobility

When real-time data is integrated with the company’s business intelligence system (such as the warehouse management system/WMS and the manufacturing execution system/MES), the data is immediately available, delivering:

- Real-time inventory visibility, enabling a reduction in stocking inventory requirements — and associated costs.
- An increase in asset utilization — which reduced line downtime and associated costs.
- An increase in yields and a reduction in scrap (enabled by Real-time Key Performance Indicators (KPIs)) — ultimately increasing profitability.

PROFILE

The Power of Enterprise Mobility in Petrochemical

Company Profile

Company Revenue	\$30 billion
Number of Employees	90,000
Annual Profit	\$3.5 billion

New Enterprise Mobility Solutions

Material management	Production
Asset maintenance	Quality
Industrial CRM	Mobile manager

The Silo Effect on Profitability

The numbers below demonstrate the benefits of enterprise mobility solutions as “silo” applications:

Bottom line increase	\$483 million
% bottom line increase	14.47%
ROI in years	.68

The Enterprise Mobility Effect on Profitability

The numbers below demonstrate the benefits of the enterprise mobility systems approach:

Bottom line increase	\$696 million
% bottom line increase	20.60%
ROI in years	.47

Enterprise Mobility: Incremental Financial Benefits

Additional profitability	\$213 million
Decrease in ROI time	31%

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For more information on how Motorola can help your enterprise benefit from enterprise mobility, please contact us at 1-866-416-8593 or +1.631.738.2400, or visit us on the web at: www.symbol.com/manufacturing

Enterprise mobility solutions are the sum of technology, applications, and processes that allow a business to reap all the rewards of converged data and business systems, by integrating them with a highly mobile work force. Enterprise mobility extends access to the information that mobile workers need – when and where they need it, delivering productivity improvements across the organization from the warehouse to the shop floor and on through the delivery process to the customer.



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