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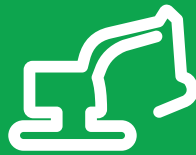
Fuel Management System For Mining





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Fuel consumption represents one of the largest operating costs in the mining industry. Yet, although it is a major expense, it is rarely monitored or controlled effectively.

Now, get control of your fuel expenses with FMx Fuel Management System for Mining...





A solution that meets your challenges

With haulage and transportation in constant growth, if you don't have a comprehensive system for managing your fuel consumption, now is the time to take action. From the need for reliable, accurate documentation of fuel costs and usage, to the desire for real-time monitoring for better analysis, Total Power, Inc. recognizes these growing industry needs.

The result? The FMx Fuel Management System for Mining. Developed by applications experts at Total Power and Schneider Electric, this flexible and modular new system helps mining operations measure, track, identify, and allocate fuel usage for better accountability by vehicle type, fuel type, and cost center, providing a comprehensive picture of fuel usage across the entire operation.

A combination of hardware and customized software leverages state-of-the-art technologies to monitor and track fuel inventories, purchases and usage to help your management team make better-informed decisions that will increase mobile asset performance, reduce losses, and improve overall profitability.

In addition, the system's open platform allows miners to integrate data from the fuel management solution into other enterprise software and systems in order to optimize the entire production chain.

Look to the experts to help you increase operational efficiency and reduce your fuel costs

- › Completely customized solution designed for your operation's unique needs
- › Easy to implement and utilize
- › Flexible application—the same system can be used for delivery or receipt
- › Wireless-based solution
- › Rugged and suitable for use in extreme environments
- › Open integration with other mining systems



Courtesy of Schneider Electric

SEAMLESSLY MONITOR HIGH-VALUE ASSETS AND CONSUMABLES

WIRELESS INVENTORY CONTROLS

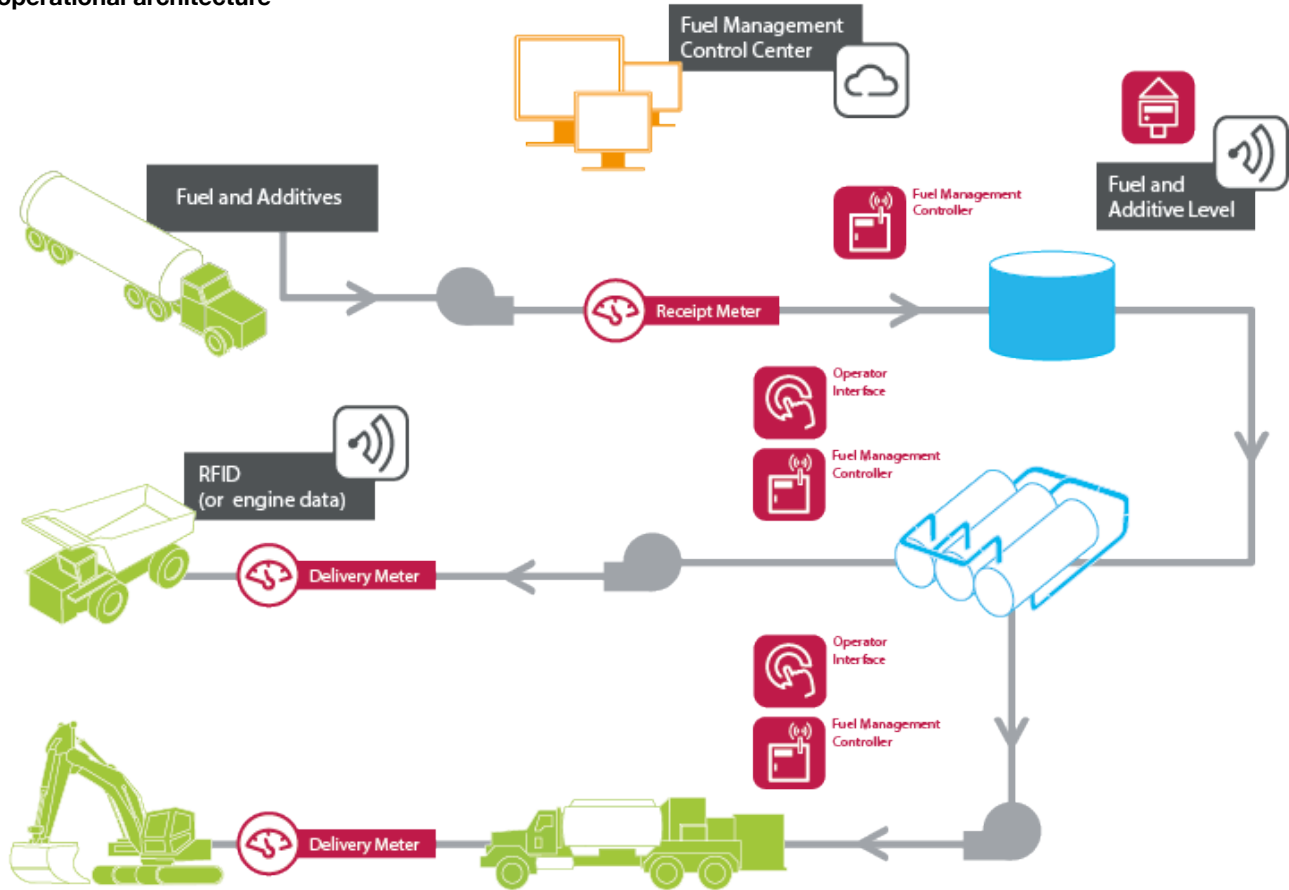
- › FMx provides wireless monitoring of fuel, lubricant, and additive use and storage.
- › Level, flow, and ISO quality sensors, designed for hazardous environments, capture real-time usage data with high accuracy.
- › Long-Range RFID identification of system users allows for a tight control of pre-authorized users and prevents unauthorized use.
- › Paperless data capture removes human error and simplifies reporting, purchasing, and monitoring of critical assets.
- › Companies with multiple locations can easily compile data, create customized reports, and monitor all transactions.
- › Capable of monitoring fixed and mobile assets.

Software features

- › **Simple navigation**
 - › Overview map of the entire mining operation
- › **Real-time, comprehensive fuel status**
 - › Individual tanks/status/levels
 - › Personnel ID
 - › Asset ID
 - › Total site information
 - › Data is linked directly to cost centers
 - › Major events trigger an email or SMS notification
- › **Customizable reports**
 - › Select and customize your reports
- › **Trends**
 - › User-defined trends (crossing different variables)
- › **Local Interface**
 - › Manual entry (personnel, truck ID)
 - › Basic alarms
 - › Totals/flow rate

The FMx solution: The Next Gen in Fuel Operations

Typical operational architecture



Courtesy of Schneider Electric

SUPERIOR RFID IDENTIFICATION AND PREVENTION OF UNAUTHORIZED USE

Long-range RFID identification of system users permits detailed accounting of all fuel and lube transactions by wirelessly tying the system user to the transaction. Unauthorized use prevention and safe mounting locations are just a few benefits of long-range RFID.

LEAK DETECTION SOLUTION: THE NEXT GEN IN FUELING OPERATIONS

Exact monitoring of fuel levels and flow conditions in tanks prevents overfilling accidents or critically low tank levels. Instant detection and alerts of tank leakage improves environmental stewardship and safety.

DAILY, MONTHLY, OR CUSTOMIZED REPORTS FOR OPTIMIZED OPERATIONS

Daily receipt of a complete fuel, lubricant, and additive report in the inbox each morning. Customized reports are at the click

of a button. Instantaneous reporting will strengthen condition-based decision making to empower purchasing departments to restructure their supply contracts and allow maintenance supervisors to fine tune equipment maintenance based on needs rather than time.

FMx is FULLY INTEGRATED with enterprise software.

DATA SECURITY AND FAULT RESISTANCE

FMx is designed with a high level of data security and redundancy. As data is collected at each site, it is stored by each sensor then transferred to the local panel. The panel logs data and uploads to a server until mirrored copies are verified.

Data back-fill technology means your data is never lost. If connectivity is disrupted at any time or for any reason, each site acts autonomously in order to keep capturing data until communications are re-established. At which point all historical data can be uploaded.



FMx / Components

- › **Engineered solution**
- › **Received / dispensed fuel and tank levels**
 - › M340 or SCADAPack 334 RTU (interface with other field instruments)
 - › Accutech Wireless Sensors (level)
- › **Asset monitoring and tracking (fuel consumption by RFID)**
 - › Long-Range RFID
- › **Fuel visibility, alarms, trends, reports, fueler ID, assets ID**
 - › CLEARScada Software (central control and local HMI)



ACCURATE METERING

FMx includes meters with 99.5% accuracy and repeatability. Level sensors continuously monitor and verify the accuracy of the flow signals for additional precision.

OPERATIONAL IN HARSH ENVIRONMENTS FROM +70C TO -30C



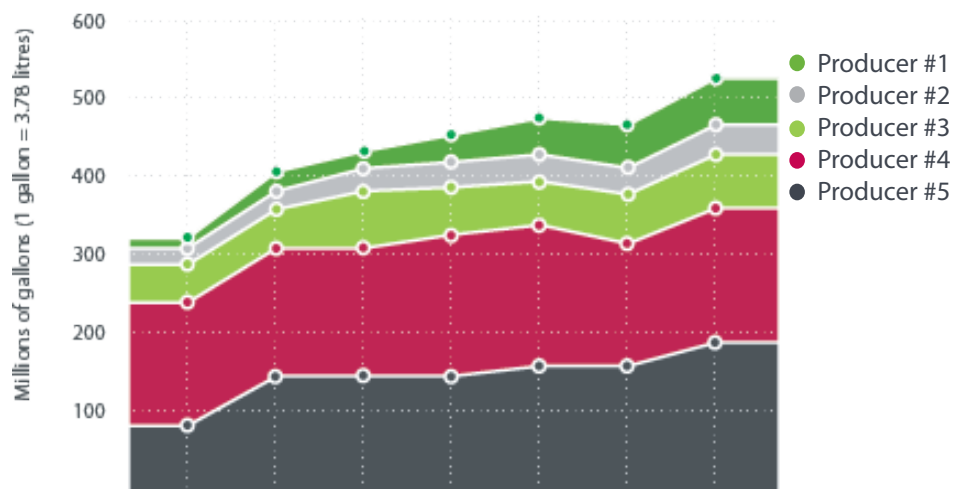


Mining Challenges: Fuel

- Ore movement (hauling) can account for 30% of mine energy consumption
- Fueling cost for the mining operation can be normally 3% to 10% of the total operating expenditures
- Most common fuel used is diesel
- Mine complexities are increasing the need for Healthy Diesel™

**You can't control what you can't measure:
FMx is the Next Generation in Fuel Management Control**

Diesel Consumption at the Top 5 Gold Producers



Courtesy of Schneider Electric

Trend = In any mine, the steady rise in fuel consumption plus the gradually increasing price per gallon/liter puts added pressure every year to control fuel costs, regardless of the commodity.

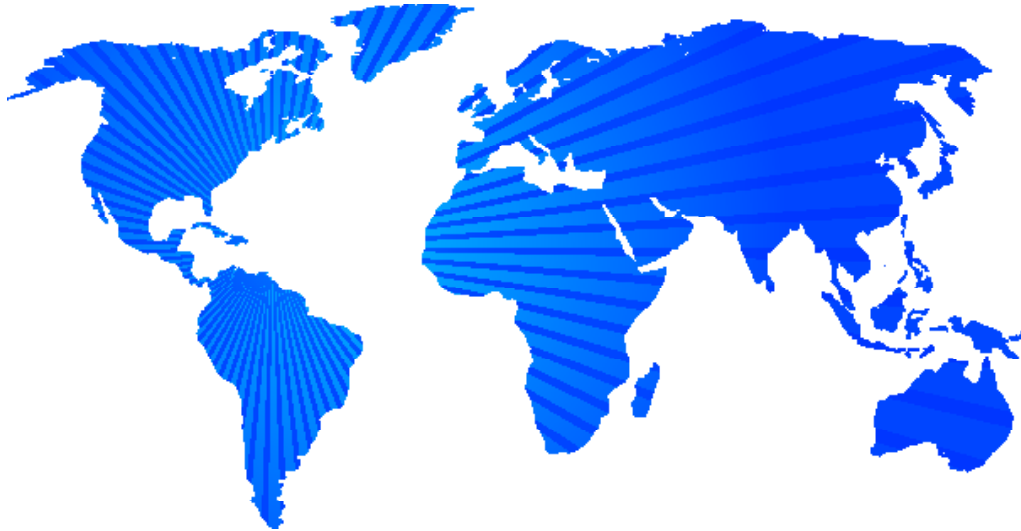
Sources: Independent researcher Steve St. Angelo and information taken from gold producers' annual reports.

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