

## Success Story

## Low-Hour Engine Save

**Mobile Equipment Monitor Enables Maintenance Intervention****Challenge**

While monitoring a fleet of haul trucks and shovels at a large Arizona copper mine, a Fleet Monitor received a high exhaust temperature alarm from one of their Caterpillar 240 ton haulers. The Fleet Monitor had to quickly and reliably investigate the alarm to diagnose its root cause, determine its significance and take appropriate action.

**Solution**

- Early notification of problem
- Faster, more reliable diagnosis of root cause
- Ability to intervene before engine failed

**Advantage**

Using Mobile Equipment Monitor's real-time alarm management and data trending capabilities, the Fleet Monitor discovered a large differential between the left and right exhaust temperatures. He contacted the driver and advised him to immediately take the truck to a safe location and shut down.

After remotely diagnosing the most likely cause of the alarm, the Fleet Monitor then contacted Maintenance to further investigate the temperature differential. Maintenance replaced the cylinder injector head and bridge assembly, preventing catastrophic failure of a low-hour engine.

Mobile Equipment Monitor is Powered by Matrikon, which represents vendor neutrality. This product works with third-party control systems and applications.

**Investigating Time Alarms in Real**

When a Fleet Monitor at a large Arizona copper mine saw a high exhaust temperature alarm in his Mobile Equipment Monitor alarm viewer, he used Mobile Equipment Monitor's data visualization capabilities to immediately investigate the operating conditions of the truck.

He viewed a trend based on data from a number of health indicators, including exhaust temperatures. When he discovered a large differential between the left and right exhaust temperatures, he was able to take immediate action. He contacted the driver, advising him to take the truck to a safe location as soon as possible. He also contacted Maintenance

and reported his findings about the exhaust temperature differential. The investigation by Maintenance revealed that the bolts were backed off the rocker arm. This can cause the pushrods to come out of their sockets and eject the plungers. The plungers get lodged beside the cam and blow out the side of the block, requiring the engine to be replaced.

Instead, Maintenance replaced the #11 cylinder injector head and bridge assembly, and the truck was soon back at work. After the maintenance work was completed, the Fleet Monitor used Mobile Equipment Monitor to confirm that the problem was resolved.

**Opportunity to Intervene**

The continuous flow of operational data and alarms gave the Fleet Monitor the opportunity to intervene before a serious problem occurred. Before Mobile Equipment Monitor, the same set of circumstances would have resulted in catastrophic engine failure. OEM alarms, like the high exhaust temperature alarm, would be seen only by the operator in the cab of the haul truck. Without knowledge of the alarm's significance and because of the demands of driving the haul truck, the alarm would most likely be ignored. At best, the operator would report the alarm to the dispatchers, who would also not be in a position to act on the alarm. The situation would continue unchecked until the operator realized that something was wrong, by which time it would be too late to save the engine.

**Results with Mobile Equipment Monitor**

	Projected Without Mobile Equipment Monitor	Actual With Mobile Equipment Monitor
<b>Maintenance Labor</b>	\$30,000	12 hours – ~\$1,200
<b>Approximate Engine and Parts Cost</b>	\$400,000	\$10,000
<b>Estimated Cost in Lost Production (\$260,000/24 hours)</b>	3 days – \$720,000	1 shift – \$130,000
<b>Lost Production Time due to Downtime</b>	Downtime > 3 days	Downtime < 12 hours
<b>Total Direct Cost</b>	\$430,000	\$11,200

*Based on \$2.50/lb copper, 0.3% recovery rate from ore.*

**Quickly Getting to the Root Cause**

With Mobile Equipment Monitor’s real-time alarm management capabilities, the Fleet Monitor was alerted to the problem immediately—as soon as the alarm threshold was crossed and the high exhaust temperature alarm appeared in the alarm viewer. Because Mobile Equipment Monitor provides unlimited access to a broad range of operational data, the Fleet Monitor was able to begin an immediate investigation into the alarm and identify the temperature differential. He took the truck off the road before any serious damage occurred and shared information with Maintenance to help them quickly get to the root of the problem, which could have been anything from a faulty sensor to potential engine failure, as it was in this case.

After the truck was repaired, the Fleet Monitor was able to watch the alarms and operational data to confirm that the problem had been resolved. By saving a low-hour engine from failure, Mobile Equipment Monitor saved the copper mine significant money and downtime. Equally important is the opportunity created to change the mine’s approach to maintenance. In the past, maintenance involved fixing equipment after it was broken. With Mobile Equipment Monitor’s unlimited access to real-time data, the mine is now able to focus on keeping equipment running and intervening before catastrophic failure.



‘Powered by Matrikon’ symbolizes that this product/solution is system and application independent.

**For more information:**

For more information about Mobile Equipment Monitor, visit our website [www.honeywell.com/ps](http://www.honeywell.com/ps) or contact your Honeywell account manager. [www.matrikon.com](http://www.matrikon.com) [mem@matrikon.com](mailto:mem@matrikon.com)

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