

CONDITION MONITORING INTEGRATION

(Process Strategy beyond 21st Century)
(Conclusion)



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Remote condition monitoring is emerging as one of the potential cornerstones for reducing maintenance costs and increasing mine production through improved reliability. Successful implementation of remote condition monitoring technology will require a strong proactive maintenance *culture*, a development and training program to support troubleshooting and diagnostic skills, and identification of safe operating limits.

TREND ANALYSIS

Trend analysis is the technique of looking at data at an extended period of time to determine interactions and data trends. Applying trend analysis to condition monitoring data directly supports a proactive approach to conducting a maintenance process. Potential problems can be identified in their infancy and an appropriate resolution action can be planned in advance. This will minimize the occurrence of maintenance related production losses, increasing the capacity of the equipment.

CONCLUSION

The 20th century has established maintenance must be an integral part of the production strategy. The 21st century must build on this, and beyond. Equipment in the 21st century will be more reliable and more complex. New strategies and thinking will be required to realize potential reliability and convert it into profitability.

With maintenance costs representing a significant portion of total mining costs, mining operations are becoming increasingly interested in optimizing their maintenance programs. Integrating condition monitoring to plant and equipment, as well as mobile equipment fleet has the potential to detect equipment degradation in the early stages allowing repairs to be completed planned manner prior to any catastrophic failure thereby reducing costs. The strength of this technology is demonstrated when it is integrated with the maintenance process on a *real-time* basis. Further integration of operational data captured by a reliable management operating system will have positive results. Such integration of key mine data will enable a systematic approach to be taken in continuous optimization of mine capacity. Optimization of mine capacity will translate directly into lower cost per ton.

Equipment condition monitoring as a maintenance strategy coupled with onboard technological monitoring tool will facilitate a proactive approach to the management of maintenance processes. These tools will help mine's maintenance department gather, analyze and store vast quantities of condition monitoring data. This integrated approach enable the data gathered from condition

monitoring systems to be made readily available in a format usable in the day-to-day maintenance activities. A shift in the utilization of condition monitoring systems from diagnostic to vital prognostic tools will support the shift in the entire maintenance process from reactive to proactive.

Where can this technology go from here? Certainly, it will not stand still for long. The future will yield further advances in condition monitoring technology with more intelligent, interactive vital signs monitoring systems. As the technology evolves, so must its role in the maintenance process. Seamless integration through communication standardization will be a key factor in the shaping of future mine wide monitoring systems. The main objective of this technology, which is to improve equipment reliability and overall equipment capacity, will not change. This also means, profitable operations will be for those that have used an equipment management strategy to evoke new thinking to apply modern management techniques, technology and information.