

EDITORIAL

Scope of predictive maintenance technologies in Chile and Latin America: from promise to reality

For most of the industries, including mining, improving productivity and reducing costs have become key objectives for the “business” to remain profitable. This is even more important, in periods where the near future of development and economic stability, does not seem to be promising. In this context, it is relevant to the industry to be able to count on increasingly efficient and reliable production systems. Thus, the implementation of appropriate maintenance and asset management strategies, becomes a key consideration, in order to improve availability and reliability of equipment, and consequently decreasing production downtime, both planned and non-planned, which tend to increase production costs.

Over the past two decades, the development of predictive technologies and condition monitoring systems has grown tremendously. In the case of Chile and other Latin American countries, the use of these technologies has significantly increased, especially, in large industries such as mining, oil and gas operations, pulp and paper, and energy power plants. Nevertheless, for the case of small and medium-sized enterprises, which outnumber large companies, the incorporation of new maintenance technologies and modern management systems has not necessarily been a priority; thus the potential benefits of its use still remains to be seen.

The implementation and use of predictive technologies and adequate monitoring systems to support maintenance programs help to improve fault detection, diagnosis and prognosis. If an equipment malfunction is detected in advance, avoiding a functional failure, it could be corrected in a planned way, using the minimum possible resources. On the other hand, through diagnosis is feasible to predict the type of failure, being able not only to plan but also to optimize corrective maintenance operations. Moreover, combining knowledge and expertise to analyze symptomatic data (e.g., vibration, temperature, etc.) and operational parameters of equipment, it will be possible to carry out prognosis tasks, aiming to identify root cause of failures and to estimate how much longer a machine can safely operate.

Nowadays, the market offers a great variety of models of modern equipment for measurement and analysis of data from operational and symptomatic variables of machines, as well as specialized maintenance management software, sensors and instrumentation of high level performance, computer monitoring systems for detection and prediction of faults, among others. Within most used and well known predictive technologies in Latin-American industry, we could mention: measurement and analysis of mechanical vibrations, infrared thermography, detection and analysis of ultrasound, high frequency detection techniques, monitoring and analysis of electrical current, oil analysis and industrial radiography.

In general, these technologies are very promising for the economical purposes of the organizations, though, in several cases, the expected results have not been obtained, due to different reasons. What are then the impediments for which those enterprises, that have adopted predictive technologies, can achieve the expected benefits, moving from being more than a promise a reality? What happens to small and medium-sized enterprises, which still seem to be distant to implementing these technologies?

On one hand, the technology in this field and its use have grown at such a fast rate, that in many cases, technicians and maintenance engineers, do not know what to do with all of the data and information

being generated. In other cases, maintenance staff may not have sufficient knowledge and expertise using these technologies, or they just do not count with enough time for the data analysis. For example, this may happen to those companies that have invested in expensive Computer Maintenance Management Systems (CMMS), or specialized software for Enterprise Asset Management (EAM); but unfortunately in several cases, stored data is not accessed or used to support decision-making. This implies, of course, not achieving the “promised” benefits by such advanced systems.

On the other hand, a common situation in small and medium-sized enterprises is to consider the “immediate” profit as the main function of the organization, minimizing the investments in equipment and the cost of training its staff, which effects are usually evident in the medium and long term. Additionally, today there is an acceptable number of international standards that help to support detection, prediction and diagnosis, and prognosis, within the field of maintenance, reliability and asset management, however, most of them are not used as guide or reference, either because they are unknown, due to the lack of incentives, or simply lack of interest or vision of the organization.

Regarding the need for specialized human resource with knowledge and expertise in new technologies for maintenance, it is necessary that technical and professional training programs, related to the field of maintenance, must be adapted to the current technological developments, under the guidelines given by international standards, and considering the context of the regional and national industry. Furthermore, the research studies associated to the maintenance field, which are carried out in laboratories of universities and research centers, should be more focused on solving actual needs demanded by the technological development of each country and its industry.

In summary, one can say that those companies in Chile and other Latin American countries that consider within their maintenance strategies the use of predictive technologies; that include in their teams technicians and maintenance engineers trained and certified; that also adopt guidelines given by international standards and certification programs, will be more competitive nationally and internationally, even in difficult times. Thus, the long-awaited benefits of predictive technologies will move from being a promise to become reality. They are welcome then!

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