



Getting control of preventive, predictive maintenance tasks

Many organizations have preventive maintenance (PM) and predictive maintenance (PdM) programs that are not getting it done. They're paying too much for what they put into their PM and PdM programs.

New plants or new systems always have deliverables in the specifications for the contractor to provide maintenance tasks. Original equipment manufacturers (OEM) almost always have a "one size fits all" maintenance program that covers the asset whether it is installed in Peru or above the Arctic Circle, regardless of redundancy or duty cycles. OEMs almost never include PdM tasks (vibration analysis, infrared imaging, oil analysis, etc.) even when the asset could greatly benefit from these proven technologies.

As anyone who ever read an automobile owner's manual can attest, an OEM maintenance plan often provides for protecting the asset through the warranty period. It also seems like they recommend overly intrusive maintenance so the asset owner has to pay for more parts and servicing over the life of the asset.

Plants that have been in operation for a considerable period of time often have an additional problem. Over a number of years there have been upsets resulting in the operations manager or plant manager mandating more PM has to be done "to ensure this never happens again!" The problem is the new PM task probably hasn't been developed through an appropriate process. In this case, the non-engineered PM task was likely done in haste, and also likely resulted in additional costs for labor, materials and production availability that over time dwarf the original event's impact to the bottom line. This results in low-value or no-value tasks that suck resources away from higher value activities.

There are a number of choices such as classical reliability centered maintenance (RCM), various forms of streamlined RCM and a slew of other branded derivations of RCM. But if I had limited funding, in an organization that had little or no appetite for new software purchases, my pick would be failure modes, effects and criticality analysis (FMECA), coupled with planned

maintenance optimization (PMO).

The first reason is that FMECA and PMO can be accomplished for plant assets using spreadsheets. Second, a good facilitator can be very efficient at leading a cross-functional team through a lot of assets in a reasonably short period of time. Third, nothing against RCM variants, but FMECA is the heart of any RCM methodology. I'm a big fan of learning to walk before you run, so I gravitate toward simple and effective. Fourth, PMO provides an opportunity to evaluate the cost-benefit of the PM or PdM tasks — thus weeding out the low-value or no-value tasks. Finally, FMECA and PMO provide an engineered approach on which future changes to maintenance tasks can be evaluated or improved upon.

A good FMECA and PMO program will be an intuitive process that is easily taught to operators, craftsmen, supervisors, managers and engineers. It should allow rapid assignment of criticality based on weighted factors for safety, regulatory compliance, operational availability and corrective action costs. Use of a table of values for

each criterion speeds the process.

Probability is assigned to each failure effect, based on historical data or experience from operators and craftsmen who are closest to the assets.

When we have assigned criticality and probability these values can be combined into a risk prioritization number (RPN). Calculating the RPN allows sorting/prioritizing to ensure the most important maintenance tasks are assigned the limited organizational resources, maximizing value.

PMO provides a vehicle to evaluate the annualized labor, materials and contractor costs versus current tasks, or the "no task" expected outcomes. Again, there needs to be a net benefit for doing the task, or it must be required for safety or regulatory compliance; if not the task is not approved.

Keep the process simple, eliminate low-value tasks and prioritize by safety, regulatory compliance, operational availability and maintenance costs.

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NEWS UPDATE

IEA report shows how smart grid technologies can be expanded

PARIS — A new report from the International Energy Agency (IEA) said the widespread deployment of "smart grids" — networks that monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end users — is crucial to achieving a more secure and sustainable energy future.

With current trends in the supply and use of energy becoming increasingly untenable — economically, environmentally and socially — IEA believes smart grids can play a significant role in enabling nearly all clean energy technologies, including renewables, electric vehicles and energy efficiency.

The report, "Smart Grids Technology Roadmap," provides a consensus view from more than 200 government, industry, academia and consumer representatives on the current status of smart grid technologies, and charts a course for expanding their use from today to 2050.

This report is the latest in the IEA's series of technology roadmaps to guide governments and industry on the actions and

milestones needed to achieve the potential for the full set of clean energy technologies.

A key enabling technology

As well as addressing current concerns with existing electricity systems, such as ageing infrastructure and increasing peak demand, smart grids are an important element for expanding the use of a number of low-carbon technologies, such as electric vehicles. But governments need to multiply their efforts.

"We need to see a much more aggressive investment in large-scale regional pilots in order to deploy smart grids at the scale they are needed," said IEA Executive Director Nobuo Tanaka, speaking at the report's launch.

"In addition to funding regional pilots, governments need to establish clear and consistent policies, regulations and plans for electricity systems that will allow innovative investment in smart grids. It will also be vital to gain greater public engagement. This can be done by educating all relevant stakeholders, but especially customers and consumers about the need for smart grids and the benefits they can offer."

Deploying in developing countries

The report recommends smart grids play a critical role in the deployment of new electricity infrastructure in developing countries and emerging economies. As well as enabling more efficient operations, grids can also help to keep downward pressure on the cost of electricity. The report also outlines the potential for smart grids in rural areas of developing countries further down the line.

"Small remote systems — not connected to a centralized electricity infrastructure and initially employed as a cost-effected approach to rural electrification — could later be connected easily to a national or regional infrastructure," said David Elzinga, the report's author and an Energy Technology Policy analyst at IEA.

The report adds smart grids could be used to get electricity to sparsely populated areas by enabling a transition from simple, one-off approaches to electrification (e.g. battery-based household electrification) to community grids that can then connect to national and regional grids.

Collaboration is vital

While many countries have plans to develop smart grids, the report argues there is a need for increased coordination to enable countries to share lessons they have learned on a global basis. The report recommends greater international collaboration in sharing experiences of pilot programs and in leveraging national investments in the development of required technology.

It also stresses a need to develop common standards between countries that will help optimize and accelerate both the development and deployment of necessary technology while at the same time, reduce costs for all stakeholders, namely governments, industry and the public.

"Major international collaboration is needed to expand research, development, demonstration and deployment investment in all areas of smart grids, but especially in the development of standards, policies, regulations and business models," said Elzinga.

For more information, visit www.iea.org or call (+33) 1 40 57 65 50. ●