The right maintenance at the right time and for the right cost
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Our experience suggests that few operators have a complete view of the total cost of maintenance, and fewer still understand how the maintenance they are paying for contributes to overall asset health, system reliability and uptime. Value based maintenance emphasizes focusing on the "right" maintenance for reliability, and steering effort away from non-critical systems.

Are you creating value?
All infrastructure operators face budget and cost pressures. Ultimately, this requires them to push their existing assets further, for longer and at higher levels of efficiency. With so much now resting on the performance of assets, one would assume that most infrastructure operators are now fairly adept at making the right maintenance decisions at the right time and for the right cost.

Our experience, however, suggests otherwise. We’ve worked with a wide range of asset-intensive businesses – from mass transit systems and nuclear generation fleets through to national defense forces and armies – and the reality is that few organizations have clear insight into how much they are spending on asset readiness and maintenance. And that means that they don’t really know if their maintenance investments and efforts are creating value.

Part of the problem is cultural – infrastructure operators (and particularly their technical staff) are very uncomfortable with failure of any kind. The general policy is to prevent failure of critical components at any cost instead of using a balanced economic approach that takes into consideration factors such as safety, reliability, failure modes, cost, and redundancy. Indicators that this type of problem exists are when jobs that are ‘truly’ critical get mixed in with routine ones. Costs of maintenance are unknown or go unchallenged. Assets get over maintained or not maintained at all. And operational efficiency measures go unreported.

More generally, little regard (if any) is given to the value of the maintenance effort; nor the criticality of the maintenance job. For example, technical staff at large scale power generating plants struggle with massive unrealizable maintenance programs. Maintainers at mass transit operations spend months fixing busses that are about to be retired rather than minutes fixing newer or more valuable assets and huge maintenance effort is spent fixing outdated equipment without proper consideration of replacement costs as operations and maintenance funding is not adequately linked to capital investment.
Doing the right thing

Over the past few years, we have started to see a shift towards ‘value-based maintenance’ approaches. Rather than doing maintenance at any cost, some operators are starting to focus on doing the right maintenance, at the right cost and – importantly – at the right time. And that is not only leading to cost savings, but also to greater asset uptime, improved maintenance efficiency and enhanced alignment between asset utilization and strategic priorities.

Value-based maintenance approaches are slowly gaining traction. Organizations that use value-based maintenance have confidence that their maintenance programs are truly adequate, and that costs are optimized for the jobs that are performed over the life of the assets to keep them in-service. These organizations understand where maintenance value is being created or lost and can make strategic trade-offs with full knowledge of the implications.

At the same time, many operators are struggling with significant resource and time constraints. Indeed, the vast majority of maintainers are so focused on ‘fighting fires’ that they have little time to think more strategically about their longer-term maintenance strategy. Efforts to shift towards more value-based models have sputtered and failed. Nobody has the time to change the model when assets need repairing and maintaining.
What will it take to create a value-based approach?

Our experience working with asset and maintenance intensive operators around the world suggests that there are three keys to creating and sustaining a value-based maintenance model.

**Improve understanding and reporting.** This is all about making sure that decision-makers – at all levels of the organization – have the information they need in order to make value-based and data-driven decisions. This starts with collecting and reporting the right data at the right frequency to influence decision-making. Once robust Key Performance Indicators are overlaid, the challenge is then to conduct sufficient data-driven performance measurement to properly map how maintenance investments are creating value for the customer and the organization. To be clear, this is not about filling more spreadsheets but rather about improving access to key data in a timely and efficient manner.

**Create alignment.** Let’s face it: engineers don’t spend much time talking to finance, customer service or marketing. And few executives spend much time walking the halls with the maintenance professionals. But this gap must be overcome if operators hope to improve operational performance and asset value. Leadership must be clear about the organization’s objectives and work across silos to ensure that maintenance and repair resources are being allocated to the areas of greatest value. For their part, maintenance leaders and professionals need to put significant effort towards understanding and responding to the needs of the business rather than time-stamped work orders.

**Dedicate resources.** Big changes are never achieved off the corner of someone’s desk. It takes dedicated resources, a clear project plan and smart change management acumen. And that means ensuring that the project is staffed with dedicated resources who are empowered with the authority to make real and substantial change across the organization. The reality is that this is not simply a ‘maintenance problem’. In fact, it’s largely a strategic problem. And, as such, it requires a cross-functional approach that brings together not only engineering and maintenance, but also finance, operations, sales and IT.
Unexpected value awaits

Recently, the Nuclear Energy Institute published a number of bulletins on the need for greater adoption of value-based maintenance, suggesting that operators in certain industries could achieve cost savings of up to 25 percent of overall maintenance costs.

We believe that this does not yet include the massive competitive and performance advantages that could be achieved through the introduction of value-based maintenance approaches.

Indeed, when you consider the future opportunity potential that could be achieved through greater organizational alignment and asset readiness, it becomes increasingly clear that value-based maintenance could deliver long-term dividends for infrastructure operators, their customers and their stakeholders.

Key steps to a value-based maintenance system

- **Identify the attributes of the assets for each asset class**
  - current asset condition
  - probability of failure
  - consequence of failure

- **Review maintenance policies**
  - constraints (budget and capacity)
  - financial modeling of intervention policies, cost and impact of failure on the asset

- **Minimize overall operating cost**
  - optimize intervention policies and priorities
  - optimal investment and maintenance plans

For more information

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