GM Integrates Predictive Maintenance with EAM to Reduce Costs and Improve Uptime

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Keywords

EAM, Predictive Maintenance, GM, IBM Maximo, Uptime

Summary

GM spends over $1 billion on maintenance annually and $7 billion on capital improvements. By moving to a single instance of IBM Maximo, the company can now share its best practices for maintenance across 140 production sites globally. The company is also adding IBM Maximo Asset Health Insights to support broad adoption of predictive maintenance. Together, these applications will reduce both maintenance costs and unplanned downtime.

> EAM and PdM applications significantly reduce both maintenance costs and capital expenditures, while also lowering dreaded unplanned downtime. This GM case story explains how this large company executes these applications across 140 sites using IBM Maximo and IBM Maximo Asset Health Insights.

Tony Howell, Global Enterprise Asset Process & Policy Manager, Global Manufacturing Engineering Integration at General Motors, delivered his presentation, "Manufacturing Asset Management," during a recent ARC Industry Forum. This case story comes from Mr. Howell's presentation and follow-up discussions.

Machinery and Equipment at GM

GM has over 140 sites involved in the manufacture and assembly of automobiles that contain 40 million assets. An example of the asset-intensive nature of the automotive industry is a single assembly line paint shop that costs $500 million, contains thousands of assets, requires upgrades every few years, and has an expected life of 35 years.

Enterprise Asset Management

Across the company, the total annual operating budget for maintenance is over $1 billion. Currently, most of this maintenance is time-based preven-

tive maintenance. The EAM application deployed at GM is IBM Maximo, and, previously, each plant had its own instance and standards. GM has been upgrading to a new version of Maximo and moving to a single instance for the company. In addition to reducing IT infrastructure-related costs, this change to one instance provides an opportunity to move everyone to the same standards and best practices, including asset taxonomy, location hierarchy, policies, and processes. Objectives include:

- Link information across the management lifecycle from design to decommissioning

- Standardize processes for criticality analysis, maintenance strategy, and maintenance execution

- Asset data management:
    - Common asset naming
    - Common asset identification (RFID tags)
    - Common location naming

- Link asset sustainment and asset maintenance

Asset Sustainment Workflow

During a major asset's operational life, retaining or improving its performance requires both maintenance and upgrade programs. This can continue for decades and involve considerable investment in dollars, time, and resources.

Basic Asset Sustainment Workflow
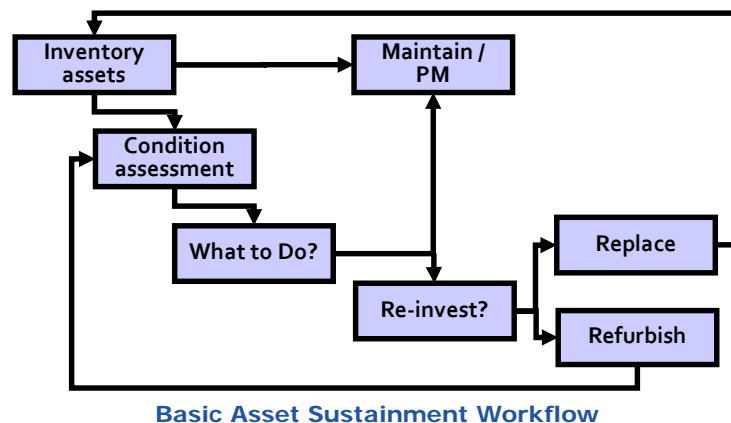
Asset sustainment goes beyond daily scheduling of repairs managed with work orders in the EAM system. It involves extending an asset's life from

the perspectives of capability, uptime, and maintenance costs. The scope of this evaluation includes balancing the asset's current condition with the organization's future needs for the asset. For example, with a poor current condition and a long-term future, re-investment is justified to restore the asset's capability and extend its life. Having the right information to make these decisions about repairs, refurbishments, and replacements can help extend the life of assets, such as getting 35 years from a paint shop instead of 25. For a company which spends over $7 billion a year in capital im-provements, this can represent substantial savings.

Currently, GM has three independent applications that contain information needed for an asset's sustainment program – SAP, Maximo, and an inter-nally developed application, with limited integration between them. This has constrained GM's asset sustainment program. The company has start-ed to migrate to IBM Maximo Asset Health Insights, which includes:

- Health score based on meter data, age, and maintenance costs
- Lifecycle costs
- Tools for optimizing preventive maintenance (PdM)
- Planning tools for condition assessment, re-investment or obsolescence

Pumps End-of-Life Report from Maximo Asset Health Insights

Readers can see a video of Tony Howell's presentation here:
https://www.youtube.com/watch?v=I951A-rkw0E&feature=youtu.be

About IBM Analytics and IoT

As ARC Advisory Group learned in a recent briefing, IBM Watson IoT offers a comprehensive, managed, cloud-hosted service with capabilities to harness devices and asset data via the Internet. It provides connectivity, control, device registration, rapid visualization and storage of data derived from IoT. When combined with IBM's Maximo Asset Management software and the IBM Cloud platform, IBM Watson IoT can provide a powerful application platform for devices and asset data. According to the company, it allows line of business users to rapidly compose applications, mobile apps, and visualization dashboards.   Customers can also implement packaged solutions such as IBM Watson IoT Asset Health Insights, which provides a platform to adopt condition-based maintenance and predictive maintenance. These elements can feed an enterprise's back end with IIoT data to generate new asset-related insights and enable new business models.

Conclusion

Tony Howell's presentation during a recent ARC Forum was enlightening for deploying technology to facilitate broad adoption of maintenance best practices and predictive maintenance. This case story shows how – even in a huge organization – EAM and PdM applications can significantly reduce both maintenance costs and capital expenditures, while also lowering dreaded unplanned downtime.

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