Challenging today. Reinventing tomorrow.

ASSET MANAGEMENT SOLUTIONS

WHERE PREMIER KNOWLEDGE MEETS TAILORED, WORLD CLASS EXECUTION



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Smart asset managers and facility planners focus on the total cost of ownership Total Cost of Ownership (TCO) of their facilities and infrastructure. For new capital projects, designers often seek to lower TCO through innovative use of new technologies or sustainable building approaches. However, even in those cases, approximately 75% of TCO is locked in the operations and maintenance of the facility infrastructure and systems after commissioning. That number is even higher for organizations that desire to extend the service life of their infrastructure, balancing the risk of reduced reliability for the payoff of more productivity out of their fixed and aging infrastructure.

Whether considering new infrastructure or trying to extend the life of existing infrastructure, reducing TCO requires an innovative asset management solution that leverages new technologies and big data analytics to optimize and enable proactive maintenance approaches. Our solutions are proven to reduce TCO by up to 40%.





ASSET MANAGEMENT SOLUTIONS BENEFITS

Traditional facility operations and maintenance approaches focus on accomplishing prescriptive maintenance activities at periodic intervals based upon designer or manufacturer recommendations. These approaches are usually reactive as technicians respond to failed systems to restore functionality. Over time, daily facility availability becomes unpredictable. To avoid such reactive maintenance, Jacobs AM solutions focus on predictive analytics and real-time system/subsystem condition assessments to optimize your preventive maintenance program in a proactive manner.

A Lower operating costs (up to 40%)

B Improved infrastructure reliability and availability

Effectively balanced costs, risks,
service levels, efficiency, and quality
to address challenges of reduced or static budgets

 Agility to enable effective response to regulatory changes while focusing on improved accountability and affordability



Effects of Jacobs AMS on Total Cost of Ownership

ASSET MANAGEMENT SOLUTIONS DERIVED FROM ENGINEERING AND MAINTAINER PERSPECTIVES

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Most companies view asset management from one of two perspectives: **1)** from the perspective of the technician who turns wrenches or supervises those who turn wrenches, or **2)** from the perspective of the facility owner who needs to reduce TCO through engineering and analytics. The problem with these two perspectives in isolation is that solutions developed through the engineering/analytical perspective often don't get implemented correctly by the operators and maintainers. Similarly, there are times when engineered solutions aren't very practical. The solution is a holistic approach that combines engineering innovation with maintenance expertise.



INTERNET OF THINGS (IOT) SOLUTIONS FOR ASSET MANAGEMENT

Jacobs applied IoT solutions long before IoT became the catch phrase it is today. As far back as the 1990s, we were instrumenting HVAC systems, rotating turbomachinery, and other infrastructure with accelerometers, temperature sensors, strain gauges and other sensors to assess system performance. By analyzing the collected data, we've established algorithms and criteria that allow early detection of equipment anomalies that can be corrected long before that equipment fails and impacts facility availability.

Today, Jacobs employs the latest versions of wireless asset Predictive Maintenance (PdM) devices to auto-monitor the health of critical assets and perform self-analytical diagnostics in real-time. Remote monitoring allows us to make real-time, informed business decisions as to when asset components need replacing, repairing or recalling, and whether they are maintainable or approaching the end of their life cycle.



JACOBS DELIVERS AWARD-WINNING RCM & CBM SOLUTIONS

- Jacobs' RCM program was recognized in 2014 as best-in-class by Life Cycle Engineering, a leading asset management consulting firm chartered by the U.S. Air Force.
- Jacobs' CBM program was selected Predictive Test and Inspection (PT&I) Program of the Year for both 2008 and 2010 by Uptime Magazine.

Our IoT solutions enable effective **Reliability-Centered Maintenance (RCM)** and **Condition-Based Maintenance (CBM)** approaches. Incorporating the Society for Maintenance and Reliability Professionals' (SMRP) Five Pillars of Knowledge, ISO 55000 principles, and our maintenance best practices, our RCM and CBM approaches combine a deep understanding of the assets we maintain, their condition, and their mission criticality. By identifying and focusing on critical systems, performing analyses to identify bad actors and/or highest maintenance cost systems, and implementing analysis recommendations and follow-up monitoring, we ensure the desired improvements and benefits are realized.

Jacobs' innovative Condition Based Maintenance (CBM) approaches utilize manual and remote monitoring to determine real-time asset health. Examples of technologies leveraged through IoT solutions include: **(1)** hand-held fluorescent X-ray technologies for immediate and positive material determination during repair and pressure vessel certification actions; **(2)** portable hand-held ultra-sonic and thermal imaging devices allowing operators to document equipment condition during required walkthroughs; and **(3)** use of magnetic frictionless bearings to reduce wear and tear on rotating equipment and eliminate the need for maintenance intensive oil support systems.



Jacobs has developed our AM solutions using both perspectives, fusing the insights from each to yield more effective solutions. Not only do we perform both types of services, but we let our daily maintenance perspective inform our solution architects. While we have success stories when we are allowed to perform in only one of those domains, our most impactful success comes when we have an opportunity to integrate our engineering/analytical approaches with our daily maintenance expertise. Key elements of our approach include **(1)** Criticality Analysis, **(2)** Failure Mode Effects Analysis, **(3)** Workflow Process, **(4)** Planning and Scheduling, and **(5)** Integrated Work Management/CMMS. Our experience with our clients validated the benefits of our approach.



FOR MORE INFORMATION

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