

Managing obsolescence in Industrial Control Systems



With the right approach to obsolescence management, companies can control costs without sacrificing reliability or availability.

Industrial assets can have operating lives that span many decades. Key infrastructure, such as power generation or water treatment equipment, may be designed for an operating life of 25 years or more. However, planned life-extension can mean that assets eventually run for twice that time.

The need for safe, reliable operation over such extended periods creates particular challenges. Ageing equipment is subject to wear and degradation, increasing the frequency of outages and unplanned downtime. That's expensive: unplanned downtime due to faulty equipment is estimated to reduce the productivity of UK manufacturing by 3 percent, for example .

Then there's the issue of obsolescence, a particular problem for the control systems used in these assets. Control equipment manufacturers are continually revising and upgrading their product portfolios, as technologies evolve and market expectations change. Eventually it can become economically or technically impossible for them to continue to manufacture and support aged equipment.

Running an asset using obsolete equipment is fine until something goes wrong. If replacement parts are no longer available, even a simple equipment failure can lead to extended and costly downtime. That's why asset owners need a structured obsolescence management approach.



Beyond the hardware

Software, which plays a critical role in all industrial control applications, adds further complexity to the obsolescence management challenge. Control systems may contain multiple layers of software, each developed and supported by different parties: networking and communications stacks, operating systems, control environments for specific hardware and end-user or application-specific programs.

Each of these software layers may be subject to obsolescence. Operating system producers may stop providing bug-fixes and security upgrades to older versions. Equipment manufacturers may transition to new platforms and the expertise necessary to support, develop and maintain in-house applications may disappear as staff retire or move on to other roles.





The role of equipment manufacturers

The major equipment makers understand their customers' need for longevity, and all of them offer programmes to help users manage hardware and software obsolescence. Typically, these programmes include the publication of clear timelines for equipment scheduled to go out of production, ongoing availability of spares, support and replacement parts for a defined period, and technical assistance to help owners identify and integrate alternative solutions.

Those manufacturer-led offerings can be an important element of an organisation's overall obsolescence management strategy but relying on them alone can expose owners to excessive costs and hidden risks.

For example, while original equipment manufacturers (OEMs) value on-going relationships with their customers, they also have strong commercial incentives to sell more new equipment. That means a supplier is likely to recommend its customer upgrades to the latest high-specification replacement item wherever possible. Moreover, replacing a proven solution with an alternative technology can implicate significant costs beyond the price of the hardware involved. The new solution will need to be configured, tested and certified for the application, something that can be particularly expensive and time-consuming in highly regulated, safety-critical applications.

Upgrade and replacement strategies also need to take into account the overall operating plan for the asset. If the asset is due to be retired in the next five years, for example, as is the case with coal-fired power plants in many areas, a significant

control system upgrade may be a very expensive option. Similarly, if a wider systems upgrade is already planned for the future, owners may want a more cost-effective interim solution to keep the existing system operating until its scheduled replacement.

A holistic approach

At Capula, we work with customers to develop more holistic and comprehensive obsolescence management strategies. Our approach looks beyond the hardware to consider equipment criticality, operational risks and requirements, historical reliability and spares inventories. And because we are independent of any single hardware provider, our recommendations aren't driven by the desire to sell upgrades or substitute products.





Our approach helps us find solutions for customers that offer the optimum balance between capital expenditure, overall asset availability and the risk of unplanned downtime. Analysis of the real-world reliability or control equipment, for example, helps us make recommendations about the right inventory levels for replacement parts. In some cases, the risk of downtime due to unavailability of an obsolete part may be reduced to acceptable levels by a relatively small all-time buy. We can also help companies develop appropriate spare parts testing strategies that ensure critical equipment is in good condition when required.

In other applications, we have been able to identify simpler or lower cost solutions that allow customers to access the functionality provided by obsolete equipment without the need to purchase the manufacturer's recommended full replacement items.

Our expertise in control software development means we can help companies navigate the challenges for software obsolescence, whether that's identifying the optimal firmware release for a given item of hardware and overall system configuration, implementing new solutions, such as virtualisation technologies to keep older software running on modern platforms, or as a repository of skills for proprietary and legacy control solutions.

With the emergence of Industry 4.0 and the Industrial Internet of Things, the evolution of control system technologies continues to accelerate. While these advances present tremendous opportunities for asset owners, they will also create new obsolescence management challenges, requiring companies to integrate new technologies with old, and to plan for a faster rate of system evolution. If you haven't done so yet, it's time to get your obsolescence issues under control.

How Capula can help

With more than 40 years of experience in the design, operation and support of industrial automation systems, Capula is the right partner to support your organisation on its Industry 4.0 journey.

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