



# Case Study

The Age of Coal is drawing to a close but the UK's remaining coal-fired power stations have to run effectively and efficiently right up to the end of their lives. Astec Solutions was called in to help a power plant ensure that the lights will not go out ahead of schedule.



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# Make It Last

## Background

The last coal-fired power station in the UK is scheduled to damp down its furnaces for the final time in 2025, according to a government announcement in 2015. However, their generating capacity will remain a vital part of the country's energy supply until then and it is therefore essential that they keep working reliably, right to the end. Astec Solutions has been called in to advise the management team at a major power station in the East Midlands area of the UK on the optimum solution to the simultaneous demands to continue running while running down.

"The projected life of the power station means that its supervisory control system will require one last major upgrade to ensure it is fit for the future," said Chris Barlow, Astec's Technical Director. "They need to be fully confident that this will ensure dependable power operation right through to closure."

Astec was approached because the client needed to engage a company with experience with every aspect of large-scale control and monitoring systems, from hardware through to software and interfaces. The appropriate competencies and development resources were also vital, in order that risks would be correctly and fully identified. Total familiarity with the underlying GE software portfolio was essential as well; Astec is the leading Premier Solution Partner for GE in the UK.

The current generation of coal-fired power stations have been around for the last 50 years or so and their core technology has changed very little in that time. However, changes in legislation particularly around emissions has seen a greater emphasis on modern technology and therefore, it was paramount that the existing software systems would continue to operate effectively under the very last day of the stations operating life. In parallel, the station management were looking to significantly reduce their OPEX budgets for incremental upgrades and support contracts particularly as the station did have a finite lifetime which of course was not appealing to the software vendors and could potentially reduce their appetite for support.

## Analysis

Astec first undertook a thorough audit – effectively, a detailed SWOT analysis which considered the technical landscape over the next seven to ten years. This looked at high-level software requirements and longevity (such as whether Windows 7, 8 or 10 would be supported through the remaining lifetime of the station) and the specific control system software requirements and the potential risks and opportunities that would be presented by freezing the station on a specific version for the next 10 years. Additionally, Astec had to consider the likelihood of the existing system infrastructure (servers, workstations, switches, etc.) continuing to be fit for purpose over the same timeframe.

"This would have been very difficult to do in the domestic and retail software sphere but industrial systems are not subject to 'change for change's sake'," said Chris. Industrial systems have firewalls and are usually not connected to the Internet, so they are, generally, less vulnerable to external threats. "As long as the hardware could be kept running, there was no reason for the software to fail; what we had to do was to ensure that they had enough spares to cope for the foreseeable future."



## Recommendations

Astec inspected the servers on site and concluded that they should be replaced with a virtualised infrastructure; a small number of up to date servers from a reputable global supplier, configured in a virtual environment could easily replace the existing portfolio of more than 20 physical servers. As well as mitigating against risk from operating system obsolescence and providing rapid recovery from failure cover, such an architecture would significantly reduce the energy consumption and simplify the maintenance and support of the platform.



Astec produced a RAG (red, amber, green) survey that listed requirements and prioritised them, along with a feasibility study. It laid out the sequence of events required to perform the upgrade while avoiding downtime. It defined the process by which the supervisory control system would be migrated from the old system to the upgraded one, and provided recommendations that would reduce the risk of downtime due to compatibility issues.

"Our recommendations would make the system more compliant with the hardware," said Chris. "We mapped out the means to reduce the number of components and streamline the network and system architecture, which would make the system much more simple to maintain."

## Outcomes

The power station management team has a comprehensive analysis and report detailing recommendations that will enable it to determine the appropriate course of action to cover the next 10 years, all the way to closure.

Opportunities to improve performance have been identified, through cutting the number of components and streamlining the network and system architecture and the upgraded system will be supportable even if external vendors vacate the market.







## Background

Astec Solutions uses best in class industrial software to deliver Smart Manufacturing Solutions into manufacturing and other industrial sectors.

The core capabilities of the business include provision of Industrial IoT, MES/MOM, SCADA, Batch Execution, Workflow and reporting solutions, supplemented by a dedicated support desk and field service team. Astec works seamlessly with clients' Engineering and IT departments to ensure all monitoring, control, visualisation and analytical systems make best use of existing infrastructure investments – while providing simple, effective and highly available solutions which can be used for many years.

## Further Information

For further information relating to this case study please contact:-

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