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Press

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# FLYING HIGH:
# INNOVATIVE SIEMENS CONTROL SYSTEM HELPS MAINTAIN WORLD'S MOST ADVANCED COMBAT AIRCRAFT

A 'one stop shop' control system solution from Siemens UK & Ireland, including an innovative and unique machine tool collision avoidance software programme, is delivering operational, safety and cost benefits for the Eurofighter Typhoon aircraft and its UK manufacturer, BAE Systems.

Eurofighter Typhoon - considered the world's most advanced swing role combat aircraft - is capable of achieving supersonic speed in under 30 seconds and can travel the distance between London and Birmingham in just six minutes. Its use varies from air policing and peace support through to high intensity conflict deployment.

Chris Dowson, Product Specialist-Machine Tool Modernisation at Siemens UK & Ireland, explains the background to the new innovative and comprehensive control system solution:
"Following a long-standing service relationship with the maintenance team at BAE Systems, we assisted in the appraisal process of the legacy control system used in the spray booth for the Eurofighter Typhoon. We concluded that it was becoming increasingly obsolete which could, in the future, potentially present issues around safety, operational efficiencies and resourcing.

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"In particular, we focussed upon the 'man movers' – a set of moving platforms controlled by a CNC controller which are used to support the skilled personnel hand spraying the aircraft's exterior. BAE Systems wished to identify if there was a solution to minimise any potential for the platforms to inadvertently strike the aircraft during the spraying process. The sprayers are encased in full breathing equipment which impairs visibility and reduces their ability to successfully intervene if the platforms move too close to the aircraft. Any interruption part way through a spray, for example if the platform came into contact with the aircraft's exterior, would mean the surface would have to be rubbed down again and re-prepared for spraying. In addition, through our discussions we were also able to develop and propose additional enhancements to both the diagnostic and overall process supervision aspects."

The Siemens team devised a new holistic control system to support BAE Systems. Overview ATEX Zone 1 pc-based HMI panels running Siemens TIA Portal WinCC SCADA were mounted onto the man mover spray platforms to generate maximum transparency and control over the system. They control 840D sls on each of the four operational man movers to govern overall trajectory, movement and control as the sprayers undertake their tasks. They are linked to a supervisor PC located in a nearby office to provide additional supervision on the process.

An evolutionary solution

However, the real evolution within the system involves the specification of the Siemens Sinumerik 840D sl Collision Avoidance software package, as Chris Dowson explains:

"The inclusion of the unique 840D sl Collision Avoidance software elevates the overall solution, eradicating the potential for preventable damage to the aircraft during the spraying process by ensuring a safe distance is maintained at all times between the man mover platforms and the aircraft surface.

"The company helpfully provided CAD drawings of the outer surfaces of the Eurofighter Typhoon and from these we were able to devise a software package that would prevent any collisions whether the platforms were in automatic or manual mode. Testing was a critical phase before installation could proceed and rather than risk anything going wrong with an operational aircraft, we were able to borrow a full-size model from an aircraft museum to prove the functionality worked before

engaging the solution on site. This satisfied the BAE Systems team that the Collision Avoidance software technology would provide an operationally reliable and safe answer."

As well as an enhancement to the spraying process via the anti-collision software, the improved diagnostics of the Siemens solution has driven tangible process availability and reliability advances for BAE Systems. The combined efficiencies generated by the overall control system in the spray booth upgrade means that BAE Systems expect to realise a return on its investment within 24 months.

Ian Hopkins, Facilities Engineering Manager - BAE Systems, summarises the benefits of the system: "The new system within the spraying facility provides us with increased capability, flexibility and reliability. One key benefit for us, especially the operators, is the addition of the anti-collision system, this allows the operator to get closer to the aircraft without being concerned they will bump it; they can therefore concentrate on the job in hand. Furthermore, the system can be easily reprogrammed for use with different aircraft which gives us flexible operational options going forward."

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