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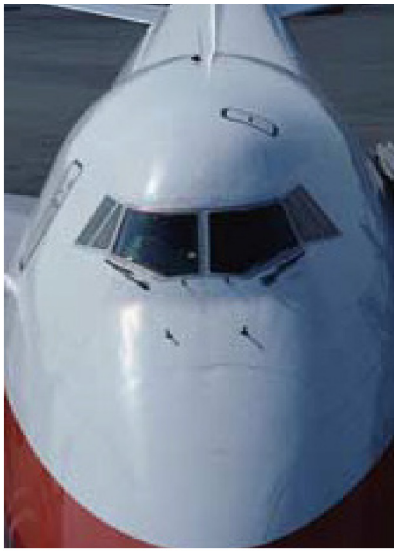
# Keeping the Fuel Flowing at Major UK Airport

**The airport required an upgrade and extensions to its aircraft fuel distribution system to keep pace with developments in existing terminals and with an additional terminal development. Actemium Automation won the rigorous and competitive £200k contract to provide the substantial control systems upgrade for all of the airports fuel hydrants for the airport tank farms. The successful first stage has led to the placing of multiple and on-going similar system extensions to the other Terminals, including the tank farm that will serve the new terminal. Actemium Automation utilised Wonderware's InTouch SCADA and real-time database InSQL supplied by Pantek Ltd.**



Aviation fuel is delivered to the tank farms by pipeline. The task of the control system is to sequence the tanks, record fuel quality control data, to control twenty large pumps to maintain constant pressure and to prove that the fuel hydrants have no leaks. The upgrade was required to improve the reliability and management of the system by replacing out-of-date hardware and rewriting the software. The existing hardware was passed its operable life and the software was not sufficiently structured for effective support.

## Airport Realities

Airports are large places, and this one in particular is one of the largest. This produced particular instrumentation connectivity problems that had to be overcome. In the system a high volume of input data has to be collected from many remote outstations, the distance has to be overcome and data reliability is crucial.

To ensure that the data is always available, each outstation communicates with dual-redundant modems. This was such a critical feature that Actemium Automation simulated outstation plan and instrumentation behaviour in their laboratory prior to taking the solution to site.

## Keep it Running

The airport had to keep working whilst the upgrade was in process; this was a test of Actemium Automation's project management skills. The PLC backplanes were installed on site using temporary stands, each night the old configuration was disconnected and the new one installed, the system was then tested using the actual IO and then had to be restored prior to the first flight arriving early each morning. There was simply no question of having the system down.

## Real-Time Architecture

The original architecture of the airport project consisted of three InTouch 7.0 SCADA nodes communicating via Modbus to Modicon 984 PLCs. The scope of the original contract awarded to Actemium Automation included a requirement to upgrade these SCADA nodes to InTouch and modify the system to communicate with Schneider Quantum PLCs.

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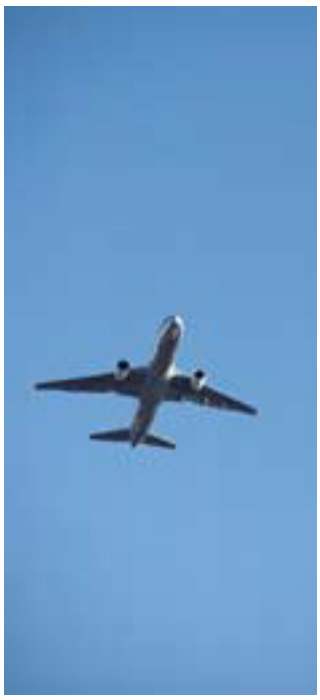

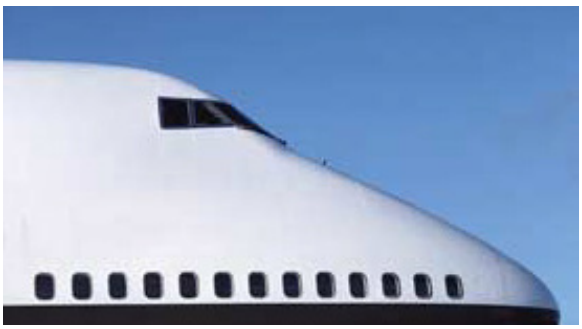

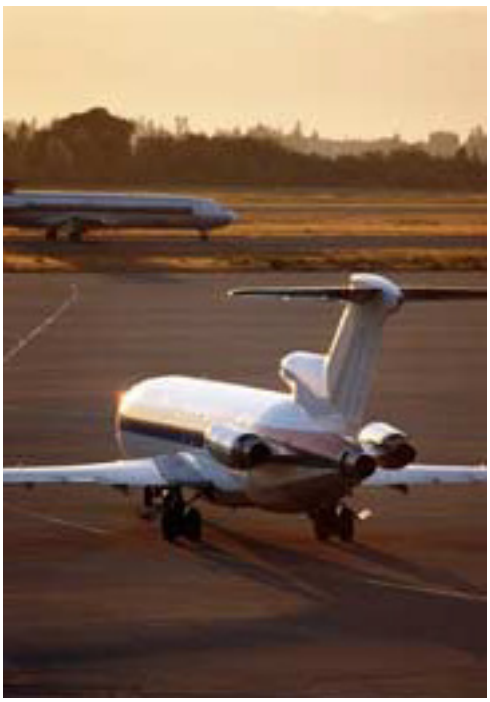

Another requirement of the project was to improve the reliability of communications, for this reason the Wonderware OPC link application was utilised to allow InTouch to communicate with Schneider's OPC Factory Server which provided an interface to the Quantum PLCs. In addition, Actemium Automation configured two I/O servers to operate in a Master/Standby mode thereby providing a backup communications path.

The system has seven 'view only' nodes. All SCADA's run the same application, and are automatically updated each time a change is made to the Master (SCADA1).

The improved InTouch alarm system was also implemented and the Wonderware InSQL real-time database server was added to efficiently log data for system analysis, audit and reporting processes.

The project was a substantial and critical upgrade and extension to the existing scheme, the facility had to be fully functional throughout the installation and commissioning stage with a limited overnight window for access to the system.

## Endorsement

The Clients General Manager said on completion of the project "Actemium Automation adopted a genuine partnership approach to our project and was an important element in the overall success of the scheme".

Following successful installation Actemium Automation was awarded a further contract to triple the size of the system to control two new pipeline receipt facilities and a large tank farm that will supply the existing fuel hydrant for the original terminals and the new hydrant for the new additional terminal.

## Conclusion

The upgrade to the fuel system at the airport was completed under difficult project conditions. Operations had to continue and on-site work was limited to a short period each night. The use of Wonderware's legendary ease-of-use FactorySuite greatly assisted Actemium Automation whilst operating in this environment.