

Case Study: Cobham Mission Equipment

Cobham Mission Equipment

Cobham Mission Equipment, part of the Cobham Mission Systems Division, is the market leader for air-to-air refuelling, providing innovative 'nose to tail' solutions to customers worldwide; 99% of NATO forces operate with Cobham designed probe and drogue systems.

To date, Cobham Mission Equipment has delivered more than 1000 air-to-air refuelling Systems for buddy-buddy refuelling and for tactical and strategic tanking for fixed and rotary wing aircraft in response to customers unique operational requirements.

Aviation pioneer Sir Alan Cobham founded the Company in 1934 as an air-to-air refuelling specialist and Cobham is still the world leader in this field. The Cobham Group currently has four divisions employing more than 11,000 people with annual revenue of circa £1.9bn

Cobham Mission Equipment's customers include Airbus, Boeing, EADS, Lockheed Martin and the World's Military Forces.



World-leading wing & fuselage mounted in-flight refuelling systems

The challenge

In 1987 Cobham Mission Equipment (formerly Flight Refuelling Limited) commenced a major re-development of its air refuelling system for the USAF-KC10A tanker aircraft.

In order to improve the flexibility of the system, and allow it to be easily tailored to meet the needs of other air forces and aircraft, Cobham Mission Equipment decided to implement the world's first microprocessor-controlled air refuelling system.

Cobham Mission Equipment itself lacked the necessary experience to develop safety-critical software, which would be subject to FAA approval, and so selected IPL as a software development partner.

The solution

The refuelling system consists of two main elements: a Refuelling Pod Controller and a Control Panel; both based around 8031 microcontrollers. The Refuelling Pod Controller handles the trailing and rewinding of the hose and regulates fuel flow and pressure during refuelling operations. The control panel allows the operator to control the pod and provides feedback on refuelling progress and pod operation.

IPL took full responsibility for all software development and quality assurance aspects of the software, complying with the specified standards for each end customer. These include DO-178B Levels A and B and DOD-STD-2167A. Rigorous verification and testing techniques have ensured that potential problems are discovered early and fixed long before each system reaches the flight trial stage. This has ensured that

during flight trials risk is minimised, and valuable (not to mention expensive) flight time is not wasted.

Since the initial development IPL has continued to act as Cobham Mission Equipment's software development partner for its air refuelling systems. This included major development work on substantially updated refuelling systems in 1999, 2003 and 2008 as well as adapting and enhancing the existing systems to suit a number of different tanker aircraft. IPL's own Software Code of Practice maps to DO-178B (SIL 4 equivalent).

In 2008, AirTanker was awarded the Future Strategic Tanker Aircraft (FSTA) contract by the UK Ministry of Defence to provide the Royal Air Force with a safe, reliable and efficient air transport and air-to-air refuelling service. Cobham Mission Equipment was selected to develop the Fuselage Refuelling Unit; IPL's 20 year involvement in air-to-air refuelling software development resulted in them being brought in by Cobham to speed up the programme.

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The highlights

The use of IPL's expertise and software development skill has enabled Cobham Mission Equipment to maintain its position as world leaders in the air refuelling arena. The systems IPL has worked on are recognised as the most technologically advanced air refuelling equipment in the world.

IPL software plays a major part in ensuring that Cobham Mission Equipment's air refuelling systems can easily be adapted to suit the multi-role capabilities required by today's air forces. The latest systems can handle the refuelling needs of the full range of receiver aircraft, from helicopters to supersonic fighters, on the same mission with no need for manual reconfiguration.

Cobham Mission Equipment's long-term partnership with IPL has allowed them to maintain a flexible development team that can be sized to suit its on-going development requirements.

Following the success of the initial development, Cobham Mission Equipment adopted IPL's Quality Management System (QMS) to help improve the standard of its own software developments in other product areas.

The quality procedures used on the project, based on IPL's QMS, have been recognised as satisfying all the relevant standards for flight critical systems.



About IPL

Founded in 1979, IPL has a long history of successfully delivering excellent value consultancy and end-to-end solutions to both the public and private sectors.

IPL's consultancy is renowned for its quality and value. Our consultants are talented and independent-minded individuals with extensive industry experience. We consistently exceed our clients' expectations through a combination of imaginative thinking, managerial and technical expertise and many years of systems engineering experience.

IPL's track record in end-to-end solutions development is exceptional. Our proven development methodology allows us to cut through technical complexity, manage risk and completely focus on delivery. We consistently deliver reliable, efficient and accurate systems to a precise schedule.

IPL is an ISO 9001:2008/TickIT and ISO 27001:2005 accredited company, having a permanent workforce of 280, revenues of ca. £28M p.a. and 40,000 sq ft of secure office space in central Bath.



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