

GRID



Rolls-Royce



Rolls-Royce

GRiDCASE 1590

Project Background

Leading aerospace engine manufacturer Rolls-Royce sought a laptop to be used by aircraft technicians to set up and test the Full Authority Digital Engine Control (FADEC) system for the Adour turboprop aircraft engine. The selected rugged laptop would be required to connect to the engine's Electronic Engine Controller (EEC) whose primary function is to ensure the safe operation of the engine throughout flight. GRiD was successfully selected by Rolls-Royce to provide the GRiDCASE 1590 15" laptop for this requirement.

Project Requirements

The Adour is a twin spool turbofan engine that delivers between 5,000 and 8,000lb of thrust. First introduced in the 1960s, the engine is collaboratively designed by Rolls-Royce and Safran, and is used on both ground attack and training aircraft including the BAE Systems Hawk Trainer on which the RAF's Red Arrows fleet is based. Continuous evolution of the engine has led to new technology being introduced over the years and the Adour Mk 951 now features the FADEC function that digitally commands all aspects of engine control.

The FADEC system provides engine capability that reduces the pilot's workload, improves fuel efficiency, and adds redundancy capability, ensuring safety and reliability. The FADEC test set, meanwhile, is used to set up and test the digitally-controlled Adour engine's control system.

The GRiDCASE 1590 is used as the interface between the aircraft maintainer and the engine EEC, meaning data can be taken directly from the Adour engine, viewed, analysed and modified. The laptop connects directly to the aircraft via a dual RS422 interface that allows data to be transferred, after which it is removed from the flightline so that engineers can analyse the data in a lab environment.

Why GRiD?

GRiD has partnered with Rolls-Royce for over 20 years. This includes work on the Royal Navy's Type 45 Destroyers, as well as multiple flightline applications including for the civil aircraft market.

Aircraft operations are safety critical, and the qualification of systems that interface with an aircraft is paramount to ensure that operations are as safe as they can be. Requalification of even the smallest of changes can be lengthy and costly, something that is best avoided where possible.

GRiD is able to continuously supply and support the same configuration for its products, so customers can be assured that they do not need to requalify the laptops regularly, something that is particularly important for aircraft. By re-purchasing the same specification of laptop, the customer saves considerable time and money but doesn't compromise on quality.

GRiD is also the OEM of its products, so has full control over the product development and lifecycle. GRiD is able to respond to detailed and specific build questions from customers using the detailed documentation retained on each unit produced, resulting in an informed service throughout.

The 15" 1590 provides optimum computing power in the most rugged design. It is ATEX (atmospheres explosible) qualified, which means it meets directives for controlling explosive atmospheres. It can therefore safely plug in and communicate with the aircraft directly, something that is typically difficult to do with electronic equipment on the flightline. This also means that the user does not have to use ancillary boxes or equipment to interface between the computer and aircraft, further reducing complexity and cost.

Conclusion

GRiD's rugged and highly capable designs matched with its project management expertise means that it is an optimum choice for partners wanting a long-lasting and highly-performing rugged computing capability.

GRiD works closely with customers to guarantee that the through-life service requirements are met by the solution proposed. Engineering and lifecycle management is a core focus for GRiD, which is apparent in the ongoing work that continues with Rolls-Royce.

