Gulfstream flies with propfan

Lockheed's Gulfstream II propfan test assessment (PTA) aircraft flew for the first time on March 28 with the eight-blade, 9ft-diameter single-rotation Hamilton Standard propfan installed and running at up to 75 per cent torque. This flight began a 150hr Nasa-sponsored test programme to evaluate blade structural integrity, and noise both inside and outside the aircraft.

The Mk.105 is the first step towards an RB.199B producing 33 per cent more thrust than the Mk.103 "in certain parts of the flight envelope", says Turbo-Union. The Mk.105 incorporates a new fan, one of several engine improvement packages (EIPs) under development by Turbo-Union partners Fiat, MTU, and Rolls-Royce. The 62B fan increases engine pressure ratio and airflow and is a one-for-one replacement for the existing fan, introducing no low-pressure turbine changes, says Turbo-Union. Other EIPs include single-crystal blades in the high-pressure, intermediate-pressure, and low-pressure turbines; brush seals throughout the engine; and an "upflowed" high-pressure compressor.

An engine incorporating all of the improvement packages would be designated the RB.199B-120, and would offer a 33 per cent performance improvement. Customers can "mix and match" EIPs, however. As a result, a B-standard engine can be produced with only an 8 per cent performance increase but "very significant" improvements in reliability, life, and operating costs, says Turbo-Union.

All of the EIPs are funded and in various stages of development. The RB.199B could be available in 1989. With firm orders exceeding 2,400 engines and 1,725 delivered by the end of April, RB.199 production will run until 1991. Turbo-Union expects further orders shortly to extend production "considerably beyond" 1991.

The RB.199B is one of three engine standards offered by Turbo-Union to power initial prototypes of the European fighter aircraft (EFA), starting in 1990. Offer are a standard extended-reheat Mk.104, as powers the air-defence Tornado, a Mk.104 adapted to resemble physically the EFA's definitive EJ.200 engine, and the RB.199B.

The reconfigured Mk.104 is Turbo-Union's preferred solution, because RB.199-powered prototypes could be easily retrofitted with EJ.200s when they become available in 1991. The company is offering Eurofighter a "power by the hour" leasing arrangement avoiding the need to buy interim engines to power the initial two to four EFA prototypes "for a very few engine hours".

General Electric is also competing for the EFA interim engine contract with two versions of its F404.