FRENCH EQUIPMENT INDUSTRY

Fighting costs

About a quarter of total French aerospace sales, which totalled just over $10,000 million in 1985, is accounted for by the equipment and systems companies. Workforce numbers are proportional: about a quarter of the French aerospace industry's 128,000 employees work in the equipment sector. According to trade association Gifas' president Jacques Larpent: “Aircraft used to be designed around the engine. They are now designed around the equipment.”

Although the French equippers have increased their business sixfold in the last decade, and are now exporting directly as well as via French aircraft involved in civil systems.

The company acknowledges that mechanical gyros are still achieving better velocity outputs but, says a company official, “the laser gyro really applies only to a strapdown inertial system, and if you compare it with a strapdown mechanical gyro you get the same sort of accuracy. We would rather spend the intellectual energy on improving computer speed, the complex algorithms, gyro quality, and our understanding of temperature models”.

Sfena intends to compete with Honeywell for the A320’s air data/inertial reference systems. The American company is already selected, so who will pay for certification of a competing system? This and other simplifications will reduce the number of A320 flight-control system units to ten from 48 in the A310 and over 30 in the A300 and A300-600. System cost will decrease from around $300,000 in the bigger Airbuses to about $190,000 for the A320.

At its Asnières factory near Paris, Thomas-Lucas company Bronzavia Air Equipement is completing tests of the A320’s pitch control system, the first in a commercial transport to be electrically rather than electromechanically signalled—a feature also of the ailerons, rudder, and spoilers.

Test have confirmed that, in the remote event of a total failure of the A320’s FBW tailplane actuation for whatever reason, the control surface self-centres and the pilot can use his trimwheel. This safety provision, plus roll induced by rudder (which has a standby mechanical link) in the equally remote event of total aileron and spoiler failures, achieves the required integrity following any triple-computer or other multiple fault.

The move from three to two actuators per surface simplifies synchronisation and the problem of comparing three independent forces without compromising their independence: when one of two actuators fails it can be rapidly identified and deactivated.

Hispano-Suiza has delivered the world’s first target-door reverser for a big turbofan, the A320’s CFM56 Blocker door (one of four) Inner skin Carbon/Nomex honeycomb Outer skin Carbon/Nomex honeycomb Outer barrel Carbon/Nomex honeycomb Inner barrel Aluminium/aluminium honeycomb