Starship mockup steals the show

Once again the updated Starship I mockup was the centrepiece of Beechcraft's convention display. Significant recent improvements have been made to the passenger cabin, and the cockpit has been fitted with a highly realistic avionics layout. This, together with a display of the actual Starship avionics fits on the Collins stand, gave visitors a glimpse of the business pilot's office in years to come.

The cabin features redesigned "break-over" seats, the backs of which fold forward for easy access to the rear cabin and 35ft³ baggage area. The seats swing 20° for easy conversation and recline fully. The cabin, which is 9in higher and 13in wider than the Super King Air, seems light and spacious. Access to the baggage area may be awkward if the passenger insists on very large suitcases, but normal bags will not be a problem. Cabin tables, always a fragile item in the King Air, have been strengthened. The windows have pull-down shades, and cabin air is distributed via consoles mounted along the cabin walls. A VHF "flite fone" is fitted and an HF antenna is being developed.

The forward cabin is fitted with a 20ft³ baggage area opposite the passenger door, and beneath it is mounted a toilet unit that can be deployed into the forward aisle. Fore and aft folding partitions ensure privacy. The Starship cockpit allows pilots easy access and is comfortable. Pilot seat arm rests obstruct the exit and will be redesigned, says Beech.

Starship's wing and fuselage were mated in Wichita during the convention. All major components of the first certification aircraft have been fit-checked, and the primary structure will be completed by mid-October. The first flight is expected in January, and six prototypes are being built, three for flight-test and three for ground tests. The 85 per cent scale POC aircraft is now flying with the 1,000 s.h.p. PT6-67 engines and full-sized nacelles.

A decision has yet to be made regarding the eventual method of fuselage construction. At present two methods are being used, both for comparison and to determine the production problems of each method. The first prototype (NC-1) has a filament-wound fuselage, while the second and third flying prototypes (NC-2 and NC-3) are being built using traditional lay-up methods. NC-1's nose and tailcone have now been attached.

Starship tooling is almost complete, with more than 10,000 tools created for the new type. A new 25ft x 60ft autoclave, capable of operating at 600°F and 150lb/in², will begin operation this month, allowing simultaneous curing of a complete fuselage and wing.

Beech reports that two-thirds of the structural tests required for FAA certification have been completed, and that a new non-destructive C-Scan inspection system will be in operation by next year. The computer-controlled system includes a linear scan unit for the wings, a fuselage scanner, and a Roboscan for tapered areas of the aircraft.

A new-model six-place aircraft is on the drawing board in Wichita, according to Beech chairman Jim Walsh. The aircraft will be composite and similar "but not the same" as the Starship. Walsh says that it is too early to give specific details of the aircraft, which will be developed by Burt Rutan atScaled Composites at Mojave. The aircraft is a twin-engined canard pusher, and could offer the customer a choice of piston, turboprop, or fanjet power. A flying model of the aircraft could be airborne by the end of 1986, and a decision whether to begin production will be made in 1988.

Turning to sales of the corporate Beech 1900, two of which have now been sold with "four or five other serious customers", Walsh says that 1900 sales have been retarded by the company's withdrawal of financing to commuter customers of doubtful credit standing. Many commuter airlines do have credit problems. The 1900 will have a wet wing available in 1987, increasing its range by an estimated 60 per cent.

Walsh sees the King Air 200 and 300 as the best turboprop today, and has no plans for phasing out the type for the foreseeable future. He concedes, that, with Starship widely accepted, the King Air may eventually have to go, but there are no plans for that at present.

Avanti doubts composite benefit

Has Beech stretched composite structure technology too far in the Starship? At least one man believes so. Alessandro Mazzoni, chief engineer at Rinaldo Piaggio, argues that the "conservative" approach adopted by Piaggio in its mainly-metal Avanti will win out over the bolder move to composite by Beech.

"You can't define how much composite should be in an aircraft until the technology becomes clearer," says Mazzoni, who adds that even with current knowledge it was evident a fuselage should always be metal. Drawbacks with a composite fuselage are damage tolerance and fatigue, he declares.

Mazzoni readily admits to having adopted a "conservative" approach in designing the Avanti, a seven-passenger business turboprop now engaged in a race against the Starship to fly. Its structure is four-fifths metal and one-fifth composite—a move which is claimed to save 20% in manufacturing cost and using techniques "unique" to an aircraft of its size, according to Ronald Neal, the manager who heads Gates Learjet's involvement with the aircraft, currently limited to fuselage construction. It is there that the "unique" methods are used. Each stretch-formed piece of fuselage skin is laid inside a large former and held against its contours by vacuum. The fuselage's internal structure is then attached to the skins and the complete structure removed to display a smooth finish, according to Neal.

Wing construction is also unusual for a business aircraft. The entire upper skin, spar and rib caps are machined integrally out of one slab of metal.

"We have a 50kt advantage over the Starship on the same engines," says Mazzoni, who maintains the Beech aircraft is a "bigger risk for less performance
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