Yak-42M

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0 2 4 6 8 10m
0 5 10 15 20 25 30ft

The Yak-42M wing, responsible for much of the improvement in fuel efficiency over the Yak-42, is completely new. It has a supercriti-cal aerofoil section developed at the Central Aerohydrodynamics Institute in Zhukovsky near Moscow, an organisation which works closely with all the Soviet design bureaux on applied research. As with other recent wing designs around the world, it has winglets. With increased sweep, aspect-ratio and span, respectively 25°, 10.5 and 36.25m, the supercritical-section wing gives a cruise lift/ drag ratio of 18 at Mach 0.75 and 36,000ft

(11,000m), says Yakoviev's Dmitriev. Re-laxed static stability in pitch contributes to the improved aerodynamic efficiency by re-ducing trim drag. The longitudinal static margin is 2-5%.
A two-person flightdeck crew is standard on the new Yakovlev aircraft, which will also have a five-tube electronic flight instrumen-tation display.
The Yak-42M's fly-by-wire controls are quadruplex-redundant, but there is mechani-cal backup on the pitch channel. The Yakov-lev design will be the fourth Soviet fly-by-

wire airliner, after the Ilyushin 11-96-300, Tupolev Tu-204 and Tu-334.

THRUST REVERSERS

Double-slotted flaps give the new wing a maximum lift coefficient of three. This and thrust-reversers on the three Lotarev D-436M turbofans, derived from the Yak-42's reverse-less D-36 turbofans, give a much-improved short-field performance. Approach speed is less than 135kt (250km/h), says Dmitriev. Take-off distance is 2,200m at 730mbar pressure and 30°C.

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