

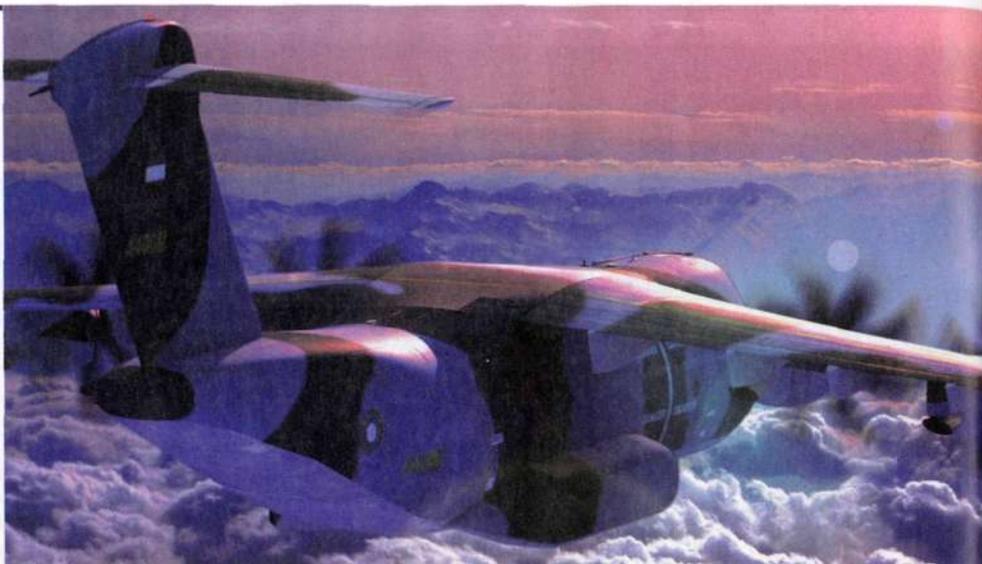
## A400M: systems

civil sibling. "There was a thought at the beginning to follow the A380 to save weight, but the justification was not really there because of the smaller overall size of the A400M," says Llamazares, who adds: "We are about to select the hydraulic system pump supplier."

### 'Iron bird' tests

The system itself is divided into blue and yellow circuits, with power provided by four engine-driven pumps – two for blue and two for yellow. Electrical pumps and accumulators can also provide back-up hydraulic power, while a hand pump can be used to power the cargo door and rear cargo ramp. The hydraulic system is due to be installed in an "iron bird" test rig in the first quarter of 2006.

The landing gear is powered by the yellow system, as is the nose gear steering. The undercarriage is modelled on the Transall C160 and forms one of the most critical aspects of the A400M design. Built for rugged performance, short-field take-offs and landings and soft field capability, the 14-wheel undercarriage consists of a two-wheel nose gear and a pair of tandem multi-wheel main landing gears housed in large spools. Each main gear is made up of three independent lever-type struts with



twin wheel, brake and tyre assemblies. Messier-Dowty and Messier-Bugatti are developing the main gear units, with the brake and wheel supplier still to be decided.

"We have specific requirements for landing in soft ground at tactical weight, which this is designed to meet," says Llamazares, who adds: "We also have to fulfil the requirements for operating from uneven surfaces, which is really tough. The design

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is therefore baselined on the C160, though with much more weight capability." The gear units retract aft into the spools and are electronically controlled and hydraulically powered.

As the main gear is made up of three sets of independent single-stage shock absorbers per side, loads are efficiently transferred into the fuselage structure while at the same time allowing for a relatively low-profile

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