An Airbus H160 helicopter.

Business Helicopters: The Future Has Arrived

By Mark Huber

THE NEXT-GENERATION BUSINESS HELICOPTERS are futuristically styled and loaded with smarter, safer technology. They're also quieter, smoother, and more fuel-efficient. Expect fewer maintenance headaches in choppers that capture the élan of the latest corporate-jet cabins.

Leonardo Helicopters' **AgustaWestland AW169** medium twin-engine model won Federal Aviation Administration certification in February; executive aircraft should be arriving in the U.S. by summer. Customers have ordered more than 160, a healthy number. It's the first new cabin-class executive twin to hit the market since the Sikorsky S-76 arrived in 1979.

The AW169 incorporates new technologies in its rotor system, engines, avionics, transmission, and electric-power generation and distribution systems. The advanced Rockwell Collins glass-panel touchscreen avionics include, for example, a four-axis digital autopilot and a dual flight-management system. Use of composites, including a thermoplastic tailplane, means the AW169 is lighter than the S-76D, despite the longer and wider cabin. Its baggage compartment is also 30% larger. The 222-cubic-foot cabin can accommodate six to 10 passengers.

High-end VIP interiors feature noise reduction; advanced cabin electronics; enormous captains' chairs; LED lighting; and rich decor materials. Dampeners inserted between the main rotor blades mitigate vibration on occupants and equipment—and deliver a jet-smooth ride.

Want to run air-conditioning and electrical systems while on the ground? Power can be drawn by running one of the two engines without engaging the rotors. With a maximum ferry range (pilots, no passengers) of 531 nautical miles, the AW169 has a fast cruise speed of 155 knots. Fully loaded it comes in at 4,791 kilograms. A basic AW169 costs around $8.5 million, but the made-to-order executive interior can add $1 million to $2 million more. It's available with an optional full-icing protection system and is certified for single-pilot operations in instrument-flying conditions. The company has huge maintenance support operations in Philadelphia.

Aircraft condition and maintenance data from the onboard health usage and monitoring system can be fed 24/7 into Leonardo's logistics center, working continuously to keep helicopters flying. The AW169's styling may be a bit boxy, but that translates into a more comfortable cabin, and the price point is hard to beat for a new helicopter in this category.

The Bell 525 Relentless is a big technological leap for helicopters. It's also the largest civil

The interior of a Bell 525 Relentless helicopter.

This page, Airbus (top); Bell. Following page, Leonardo

The cockpit of a Leonardo AgustaWestland AW169.

helicopter that Bell has ever built, with a five-blade main rotor system and a 54.5-ft. disc. Unveiled in 2012, the 20,500-pound twin features utility-class seating for 16 to 20 passengers; its VIP and corporate layouts seat eight to 12 passengers.

Entry to the 525's 4.5-ft.-tall cabin is through hinged doors located between the cockpit and the cabin. The capacious 88-square-ft. cabin also has a 128-cu.-ft. baggage hold. Only the largest corporate jets can store more. It has a maximum range of 560 nautical miles; expected top speed is 160 knots. Aerodynamically slick, the strategic use of composites cuts weight. The lift-assisted tail boom and canted tail rotor need less engine power to provide antitorque against the main rotor, saving fuel. Quarter-turn fasteners speed field maintenance.

It has computerized fly-by-wire flight controls—the first in a civil helicopter—and touchscreen Garmin G5000H avionics. The cockpit has a futuristic jet-fighter-style sidestick control; the pilots' seats swivel into position. There's a low-slung digital instrument panel, and a Plexiglas field delivers superb visibility over the nose and down to the ground.

Its ARC Horizon (awareness reactive control) thinks faster than a human and automatically does things to keep pilots and their passengers out of harm's way. I was impressed by the responsiveness and built-in safety features. You can land even when you can't see the ground.

The 525 took to the air on July 1, 2015; a year later came the fatal crash of a prototype aircraft. Bell plans to start test-flying again soon, once the accident investigation is completed, but a senior Bell executive told me last year that they understood what caused the accident and remain confident in the 525's basic design. New 525s could find their way to customers by 2019. Prices aren't yet public; we expect a $20 million to $25 million range for a 525 with an executive interior.

The 525 technologically resets the bar for conventional helicopters, stylishly creating a new niche between supermedium and large twin-engine helicopters.

Airbus Helicopters plans to certify its H160 medium twin by 2019. The $1.12 billion program already has two test aircraft flying, with another coming this summer. The H160 incorporates 68 new patents and features an all-composite carbon-fiber airframe with futuristic styling, unlike anything the industry has seen before, including a flat-floor cabin, oversize windows, and a big baggage compartment.

The cabin measures 9.35 ft. long and 7.2 ft. wide. There's utility seating for 12, executive passenger seating for eight, or VIP seating for four. To cut costs, Airbus skipped a fly-by-wire flight control system and made rotor-blade de-icing an option. Still, there is Blue Edge active-tracking of the main rotor blades; its system significantly reduces noise and improves ride smoothness. The Blue Edge blades feature tips with a bend that resemble the bended end of a hockey stick, reducing the helicopter's noise by as much as three decibels.

New Safran Arrano engines improve fuel consumption by 10% to 15%, while the Helionix avionics system delivers data via four large touchscreens. The H160 also features electrically activated landing gear and brakes, trimming weight and improving reliability. Its health usage and monitoring system keeps track of maintenance parameters, considerably improving safety. Maximum cruise speed is 160 knots. No price yet, but we expect around $14 million, fully equipped.

The styling alone makes the H160 a head-turner. The quiet rotor system and fuel-sipping engines just make it that much more attractive. ■

MARK HUBER reviews aircraft for Business Jet Traveler.