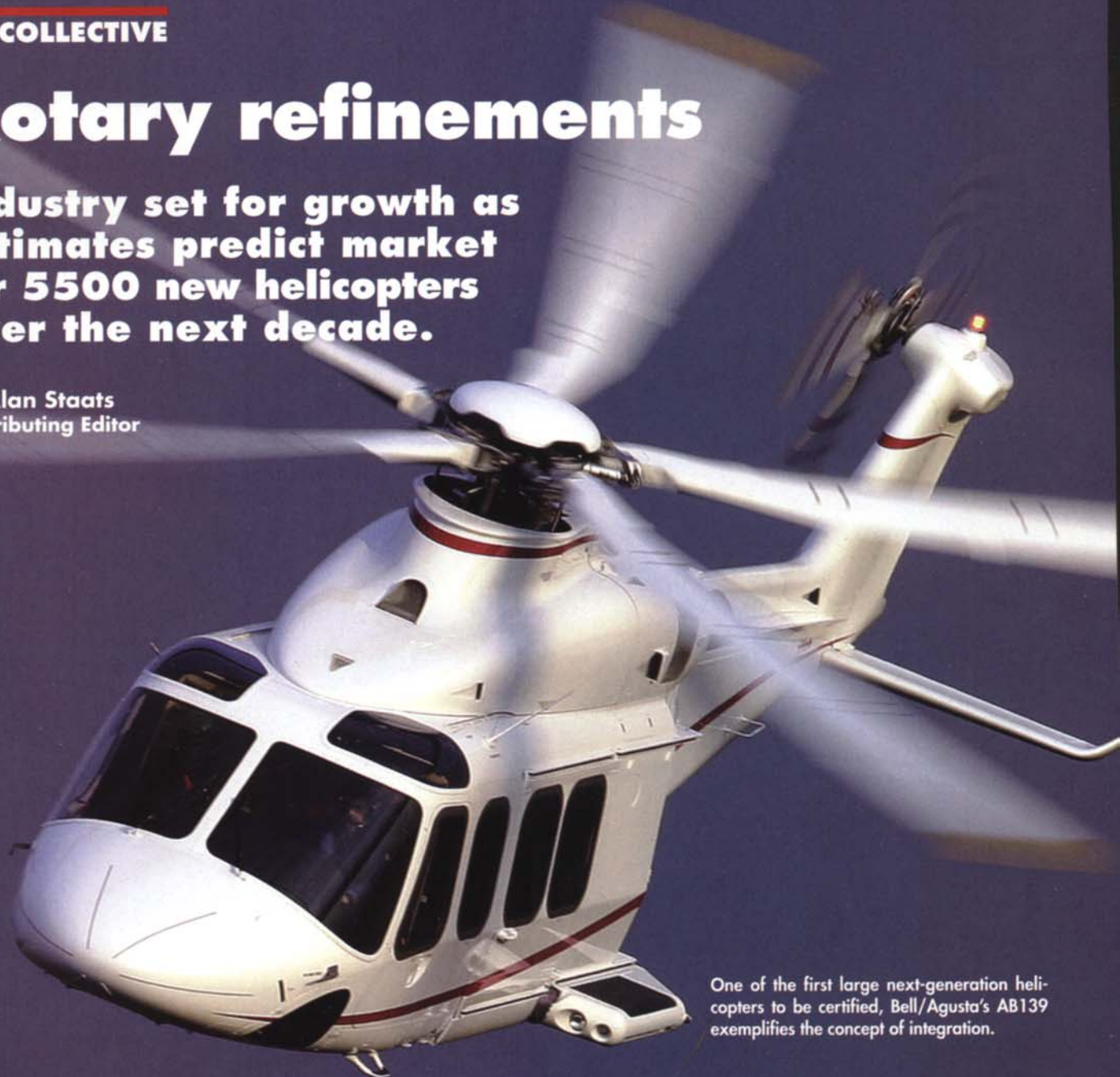


Rotary refinements

Industry set for growth as estimates predict market for 5500 new helicopters over the next decade.

By Alan Staats
Contributing Editor



One of the first large next-generation helicopters to be certified, Bell/Agusta's AB139 exemplifies the concept of integration.

There are a myriad reasons for optimism within the helicopter industry. Orders are up, deliveries are up, hours flown are up, and a host of new and proposed airframes and cockpit display options are on their way to customers.

Avionics and engine manufacturer Honeywell expects demand for light single and medium twin-engine helicopters to generate sales of more than 2400 airframes over the course of the next 5 years and as many as 5500 new units by 2015. Among the chief factors leading to these conclusions are an aging fleet, the desire for larger cabins and payload capacities, and new-technology cockpit displays.

To meet the expected demand, several manufacturers are proposing entirely new airframes and, in some cases, significant redesigns of existing aircraft.

Sikorsky's latest variant of the venerable S76—the D model—powered by twin 1000-shp P&WC PW210S engines, exemplifies the latter case. With single-crystal compressor blades, the FADEC-equipped PW210S is expected to provide significantly more power at lower fuel consumption rates than current offerings. Also featured in the S76D will be cockpit displays built on the Thales TopDeck integrated modular avionics suite. Included in the latter is an automatic flight control system, 4 flat

panel active matrix liquid crystal displays (AMLCDs), an MFD, FMS and FDR, and a synthetic vision system (SVS). Other updates include composite rotor blades and a "quiet tail rotor," as well as an anti-ice system.

Sikorsky also plans to build the X2 coaxial helicopter technology demonstrator. Not only does having 2 contrarotating rotor blades mounted on the same shaft eliminate the need for a tail rotor—the company feels confident in predicting a 250-kt cruising speed. If the aircraft is eventually brought to market, it will be the fastest rotary-wing aircraft (excluding, of course, tiltrotor aircraft), with hover capabilities comparable to today's offer-



Sikorsky has envisioned the next-generation helicopter with the design of the X2, which it will build at its Schweizer subsidiary. It is believed the single-shaft dual coaxial rotor design will overcome many of the airspeed limitations of traditional helicopter designs.

ings. Sikorsky president Stephen Finger estimates that the X2 prototype will be built and fly by the end of 2006.

EC175 enters development

Eurocopter, coming off its strongest sales year in recent history, with a total of 202 aircraft sold, has also announced a new airframe—the EC175. Designed to “fit” between their EC155 and EC225 airframes, the aircraft will be a 17-seat design with an max gross weight of 13,000 lb and a useful load projected at 6500 lb. Strongest market for this 150-kt aircraft is expected to be the offshore oil industry.

American Eurocopter Senior VP Market Strategy and Business Development Eric Walden tells *Pro Pilot* that the aircraft is “designed for the worldwide market, but here in the

US offshore oil is going further out and trying to take heavier loads [to the rigs] as fast as possible. This particular aircraft will be a perfect fit.”

Eurocopter expects to begin flight-testing the EC175 at some point in 2009 and certify it in 2010. Walden also relates that the aircraft will be built on assembly lines in the US as well as in China.

“There will be 2 assembly lines,” Walden explains, “with production shared on a 50/50 basis but with most of their production intended for internal consumption. [The Chinese] are predicting a market for approximately 800 aircraft of this class over the course of 20 years, beginning in 2011.”

The coproduction agreement with China involves other Eurocopter aircraft, as well, but Walden offers no specifics as to which aircraft are to be included in the agreement.



Bell has begun flight tests of the TR918 Eagle Eye unmanned aircraft system. In what the company hopes will be a good omen, the aircraft flew a second test flight 30 minutes after landing at the end of its first flight. Launch customer is the US Coast Guard.

Eurocopter has also chosen to bid on the US military light utility helicopter (LUH) contract and has proposed a militarized version of the EC145. Walden feels the helicopter would make an ideal choice.

“The same things that make it a success in the commercial market would make it work here as well. It’s powerful, visibility and noise signature are excellent—and, because the fuselage is made of composites, you have a helicopter that’s lighter in weight [than the BK117 from which it is derived] with a bigger useful load. It’s a phenomenal aircraft.”

Bell’s MAPL legacy

Bell is developing several airframes based on what it hopes will become its own “legacy” technology, known as the Modular Affordable Product Line (MAPL).

Senior VP of Marketing and Sales Bob Fitzpatrick explains that MAPL is “a set of technologies that we are using to improve our entire product line. Whether it be on the light single, the intermediates or the mediums, we are taking those technologies that Bell Helicopter has been investing in during the past 10 to 15 years and now starting to incorporate them into actual products.”

He continues, “We actually have 9 different MAPL technologies on our 429 today—the cabin, the flight control system, the autopilot—for which the flight control laws are developed inhouse—as well as the tail rotor, the main rotor and hub assembly. Those are some of the technologies that are coming off our



Eurocopter has begun preliminary research and design work on what will be its next offering—the EC175. While targeted primarily at the offshore service market, it may also be an ideal candidate for interurban transport.



Photos courtesy Bell

Bell's 429 is the launch aircraft for the Modular Affordable Product Line (MAPL)—a group of scalable technologies that will streamline design and certification of future planned aircraft.

Bell Pres & CEO Mike Redenbaugh has reason to smile—the V22 is finally going operational, the BA609 is exceeding flight test expectations and the 429 order book now stands at over 100 aircraft.

MAPL. We'll take those same technologies and apply them to aircraft that are [bigger or smaller] than the 429. We're able to scale them up and down [in modular fashion] to meet the needs of our next-generation products.

The Bell 429, now known as the GlobalRanger, is scheduled to begin flight testing in 3Q06, and the company expects to certify it by mid-2007.

Third Bell tiltrotor flies

Bell has also begun flight tests of its TR918 Eagle Eye unmanned aircraft system (UAS), having flown the aircraft for the first time on Jan 26 this year. The maiden flight lasted 9 minutes, all of which were spent in a hover. Less than 30 minutes later the aircraft was flown again.

Powered by a single P&WC PX-200/55 (a "UAS-optimized" variant of the PW207D) developing 641 shp, the TR918 is a follow-on to the 7/8-scale TRX911 technology demonstrator. Initial TR918 deployments will be on US Coast Guard vessels.

"This is a tremendous achievement for Bell Helicopter and our Team Eagle Eye partners," says Bell Helicopter CEO Mike Redenbaugh.

"An immense amount of effort and dedication has gone into getting this aircraft in the air successfully."

Bell Unmanned Aircraft Systems Exec Dir Bob Ellithorpe has said in

a published statement, "Eagle Eye offers a capability never seen in the UAS industry." He continues, "In the hands of the Coast Guard and other potential users, Eagle Eye will successfully accomplish a number of critical missions including the most important mission—saving lives. Reaching this first flight milestone puts us one step closer to getting this unmatched capability in the field."

The TR918 test program will continue advancing the tiltrotor nacelles to full airplane mode while exploring the flight envelope. Among the equipment selected for use aboard the UAS is a FLIR Star SAFIRE thermal imaging system, a Telephonic TDR1700 multimode radar imager and the Sierra Nevada Unmanned Aerial Vehicle Common Automatic Recovery System (UCARS-V2). The latter will allow for fully automatic launching and recovery of the TR-918 Eagle Eye during shipboard deployments.

Mending fences at MD

MD Helicopters continues down the road to recovery, despite a few hiccups following the company's acquisition by New York investment fund Patriarch Partners. *Professional*



Photos courtesy MD Helicopters



After a period during which operators feared their aircraft (such as this MD902) would be orphaned by the demise of MD Helicopters, spares and rotables have re-entered the pipeline following the purchase of the company.

Since acquiring MD Helicopters in Jul 2005, Chairman & Interim CEO Lynn Tilton and her team have made significant progress toward bringing the company back from the brink of extinction.



Sikorsky's S92 has made significant inroads into the offshore helicopter market, which many analysts estimate will be the industry's fastest growing segment in years to come. The S92 was the first helicopter to be certified to the new FAR Part 29 standards.

Pilot had an opportunity to discuss MD's past, present and future with Patriarch CEO (and MD Helicopter Chairwoman) Lynn Tilton, who has taken Patriarch from zero to \$6 billion in assets over the course of its 5-year existence.

When Tilton and Patriarch purchased MD from RDM—the previous owners who themselves had purchased the company from Boeing—they found a company that was “broken—more broken than I could have imagined

“The reality was that McDonnell Douglas spent many years developing this incredible [NOTAR] technology, and then they sold the company shortly [afterwards] to Boeing, who in turn really didn't have an interest in the commercial side of the business.

“Then it was sold to RDM, who really didn't have the depth of capital base to be able to support the company,” she continues. “The aerospace industry is very working-capital-intensive, and if you make any kind of mistake procuring for long-term production [it becomes a problem] if you don't have sufficient working capital. You end up piecing it together financially, and that's sort of a death spiral. So you have problems stemming from the absence of working capital and then you stop attracting the right management and it really becomes a self-fulfilling prophecy.”

During RDM's tenure the company saw long-term customers express

their dissatisfaction as painfully as possible—by purchasing other manufacturers' aircraft—and in some cases grounding aircraft they had chosen to keep in hopes that spares would eventually become available. Confidence in the company plummeted and vendors stopped filling orders for both original manufacture and spare parts.

Patriarch has literally spent millions to repay the vendors who had, for all intents and purposes, written off the debt incurred during the RDM years. Still, Tilton was shocked at the ill will many of the vendors still felt toward the company.

“I was very unpleasantly surprised,” she says. “I didn't expect to have the taint of the past with the suppliers. I expected to be able to pay them off and start fresh, and it hasn't worked out that way. It has taken a lot to make them believe in us again. I thought [vendors] would have been grateful that we were buying the company and were paying them money that they would have otherwise never received.

“I thought that we would be embraced by the people who had gotten burned [by RDM], but they were very tentative.

“When you take over a company that has basically been broken and shuttered, you can only win back people so quickly—but for every one who has turned their back on MD there are 10 people waiting to open the door. Some people will jump all over the negative aspects



Lockheed Martin-led “Team US101” has been entrusted with supplying the next-generation VH71 to USMC squadron HMX1, which will operate it on *Marine One* duties—most importantly, transporting the US President. The US101 started life as the AgustaWestland EH101.

of what was, and some people will rise on what will be.”

Tilton continues, “This is not new to me. This is what I do every day for a living. I have built an almost-\$6-billion company in 5 years—and you don't do that without making magic happen. And I always start from the same place—a company that's been written off. And until we make our customers happy we can expect nothing less than that some people will lose hope.

“Patriarch bought this company back in the end of July 2005,” notes Tilton. “Since then we have gone in as a prime contractor on a compliant LUH bid, we've been chosen to go to SFPD with a compliant bid [and we've] built 2 beautiful LUH aircraft that are heading down to Alabama for the fly-off.

“We've rebuilt the production line, reduced AOGs by 80%, gotten a supply chain up and running, delivered helicopters to the Turkish Police,” says Tilton. “This team has made tremendous strides. Do we still have a long way to go? Absolutely. We are walking dual paths. We are walking one path of what I would call triage—getting your supply chain up and running, meeting your promises to customer demand, as well as LUH needs to meet production.

“The second is starting from the bottom up at refining and cleaning and re-sourcing to make sure that you can take the company into the future.”