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Wednesday, April 1, 2009

Rotorcraft Report: RotorWay to Build FAA-Certified Turbine

COMMERCIAL

In the midst of what some are calling the Great Recession, kit helicopter builder RotorWay has unveiled plans to manufacture an FAA-certified, two-seat turbine helicopter. Announced by RotorWay CEO Grant Norwitz at Heli-Expo 2009, the turbine two-seater will use a Rolls-Royce RR300 turboshaft engine (300shp rated takeoff and 240shp rated cruise). It is a radical departure from the company's reliance on kit built, piston-powered aircraft sales.

When asked by *Rotor & Wing* why he would enter the turbine market when the economy is in dire straits, Norwitz quipped, "First of all, you are assuming that we have an economy." Becoming serious, RotorWay's CEO said, "The economy is going to recover. It's cyclical and it has been for years." What matters, he continued, is getting "into the market at the right time," and, as far as RotorWay is concerned, now is the right time to build an affordable two-seat turbine helicopter.

Even in bad times, "People don't want to stop flying," Norwitz explained. "Besides, there's about to be a huge release of military people supported by a VA bill who will keep flying." At $80 an hour, small turbine helicopters are a "very affordable" form of flying, he said. Add the fact that people who fly big turbine helicopters don't want to pay $800-$1,000 and an hour to keep their flight status, and the new RotorWay turbine is well-placed to garner sales.

"We are right at the forefront of being able to use our new helicopter as a proper trainer and, we believe, inexpensively," Norwitz declared. Add the fact that RotorWay has the necessary financing in place, and he believes that his company will prosper by moving into the FAA-certified rotorcraft market, recession notwithstanding.

Ray Jaworowski, a senior aerospace analyst with Forecast International, sees a lot of substance to Norwitz's arguments. "The FAA certification process can be long and costly, and often proves to be one of the main stumbling blocks for any company that attempts to break into the market," he told *Rotor & Wing*. "That being said, though, RotorWay has a long history in the kit built helicopter sector and, as such, is in a relatively good position to make the leap into marketing and producing a certificated turbine helicopter."

In terms of the actual helicopter itself, "The Rolls-Royce RR300 is a promising new engine that has also been chosen by Robinson for its new R66," Jaworowski said. "In addition, RotorWay's acquisition of PMC should help RotorWay control and oversee part of its component supply chain, potentially enabling the company to avoid some of the supplier problems that have tripped up other manufacturers in the past." Based in Phoenix, PMC Machining and Manufacturing is an ISO9000:2000- and AS9100-certified maker of aerospace and OEM machined parts.

As to Norwitz's belief that a new two-seat turbine helicopter can be successfully launched in the current economy, "The present environment in the civil rotorcraft market, as well as the larger economic and financial picture, makes the launch of any new product difficult for a variety of reasons," Jaworowski replied. "Still, manufacturers do often launch new models in the midst of a down market as a way to kick-start sales and to be ready with a new product when the market does finally recover."

More importantly, Ray Jaworowski does believe that a market is developing "for a new, low-cost turbine helicopter that can provide better performance than the pistons, yet at a lower cost than existing turbines," he said. "The two-seat configuration of the new RotorWay model does limit, somewhat, the variety of roles and missions for which it can be used. But there are nevertheless a wide variety of applications for which a two-seater has utility."

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Sunday, March 1, 2009

Heavy Lift: U.K. Heavy Lift Program

Tom Withington

Countries continue to scramble in order to supply troops in Iraq and Afghanistan with necessary search and rescue, attack and utility helicopters.

The availability of medium- and heavy-lift helicopters for U.K. military operations has been a pressing issue since Great Britain began military operations in Iraq and Afghanistan. During the past eight years, British newspapers have published articles bemoaning the nation's lack of military helicopters for intra-theatre lift in Iraq and Afghanistan with increasing frequency.

However, the British Ministry of Defence (MoD) is pursuing several programs aimed at ensuring that those helicopters the Army, Royal Navy and Royal Air Force (RAF) possesses under the cross-service Joint Helicopter Command umbrella are able to provide the required lift and can cope with the harsh hot-and-high operating conditions of Iraq and Afghanistan. At the same time, the MoD is thinking about the future composition of the U.K.'s medium- and heavy-lift military helicopter force as a number of types approach the end of their service lives.

Better Late Than Never

In early 2007, the MoD announced a series of measures to revitalize the U.K. medium- and heavy-lift helicopter fleet. Six AgustaWestland EH-101 Merlin helicopters were acquired second-hand from the Royal Danish Air Force at a cost of $341 million. Meanwhile, the RAF's 33-strong Westland Puma HC1 fleet is expected to receive an extensive upgrade, while the Royal Navy's Westland Sea King HC4 medium-lift machines have received new rotor blades. On the heavy-lift side, eight Boeing Chinook HC3 aircraft, which have yet to fly, will join the current 40-strong HC2 Chinook fleet.

The AgustaWestland EH-101s (known in RAF as the Merlin HC3) aircraft are the newest addition to the RAF medium helicopter family, having arrived earlier this century. The latest Danish additions are deployed with the 78 Squadron at RAF Benson air base in Oxfordshire. The base is already home to the 28 Squadron, which flies the balance of the air force's 22-strong Merlin fleet. Since their entry into service, the aircraft have been outfitted with forward looking infra red (FLIR) sensors, ballistic armor, machinegun pintle mounts and also a hook for underslung cargo; all as a result of Urgent Operational Requirements (UORs) for the Iraq and Afghan theatres.

Benson is also home to the 33 Squadron, which flies the Westland Puma HC1. One of the oldest types in RAF service, these aircraft were delivered in the early 1970s. Most recently they have been active in Iraq but the aircraft are not getting any younger. This has prompted the MoD, in collaboration with Eurocopter and British defense contractor QinetiQ, to perform a study on how the life of these aircraft could be extended. Any life extension program (LEP) could include new avionics, engines, communications and countermeasures. The improvements would take the service life of these aircraft to 2022; 12 years after their anticipated retirement. In MoD parlance, the upgrade: "will address obsolescence and enable the aircraft to continue to operate effectively in a battlefield environment."

What Else is New

In terms of the engine modification, Charles Claveaux, vice president for product and market strategy at Turbomeca, specified that this could include the replacement of the "Turmo engine with the Makila 1A1" powerplant. The Makila engine, which is standard equipment on the Eurocopter Super Puma/Cougar series, should not be too difficult to retrofit according to Clavaux, given the high degree of commonality between the two engine designs. "It's relatively easy to change the engine because the design of the Makila is close to the design of the Turmo, but you have to change some parts of the helicopter because the Makila is a larger engine than the Turmo". Crucially, the Makila will give the Pumas an increase in performance: "The Makila is a 1,800 horsepower engine compared to the Turmo which is 1,500 horsepower. The fuel consumption of the Makila is 20 percent less than the fuel consumption of the Turmo. The Makila engine is a really good improvement for the helicopter. It provides some performance improvements in hot and high conditions," said Claveaux.

However, as of late 2008, the British government had still to give the go-ahead for the Puma LEP, despite the fact that the aircraft continue to be heavily used by the RAF despite their age.

One recent arrival to the Afghan theatre is the venerable Sea King HC4 helicopter. Originally purchased to support Royal Marine commando operations, these aircraft have been outfitted with a new rotor blade system that will help them cope with the challenging environment. A Carson composite main rotor and AgustaWestland five-bladed tail rotor were installed, tested and deployed in only 12 months after a UOR from the MoD. The program cost $10.1 million.

According to Malcolm Tier, QinetiQ business group manager for rotary wing evaluation services at MoD Boscombe Down, "The Carsen blade project will enable the aircraft to operate in theatres which were hitherto unavailable to it. You can take the old blades off and put the new ones on and you get a vast increase in capability. The big problem about operating the Sea Kings in Afghanistan is the country's height above sea level. The air is much thinner and the drop-off in terms of lift and forward speed is significant. The Carson blade is enabling the aircraft to operate at its operational and design capability at higher altitudes." The MoD is now also looking at whether the Sea King's life can be extended to 2017. However, before then the U.K. MoD is expected to launch the Future Medium Helicopter program that could see the acquisition of up to 60 medium-lift machines to replace the Sea Kings and Pumas.

More to Come

In 1995, the MoD purchased eight Chinook HC3 helicopters from Boeing to support special forces operations. However, since their delivery between 2001-2002 they have languished on the ground unable to fly until some undisclosed technical issues are resolved. That these highly capable machines have been grounded has caused something of a minor national scandal in the U.K., particularly at a time when helicopter lift has been in such demand. The purchase cost the British taxpayer $491 million and the acquisition was described by the House of Commons Public Accounts Committee as one of the "worst examples of equipment acquisition."

The aircraft were allegedly grounded because of problems relating to the certification of their hybrid digital-analogue flight controls. However, Boeing will not be drawn on the reasons why, "That's a really difficult question. It's a really sensitive issue with the Boeing Company" said Ed Palek Boeing chinook Mk.3 reversion program manager.

The aircraft will be returned to flight, with all eight in service by 2010 following a $261 million reversion program. This will put the total acquisition price for the aircraft around $682 million, making these eight Chinooks the most expensive helicopters that the MoD has ever purchased. Boeing is the prime contractor for the Chinook revitalization, "We're responsible for the design, development, modification and test of those eight aircraft as we go through this capability modification and bring the aircraft to a suitable flight status" remarked Palek. "The eight Chinooks will receive some changes; modifications to the cockpit displays and the introduction of a health and usage monitoring system."

In terms of the other Chinooks operated by the RAF, the MoD launched Project Julius in October 2008, as an initiative to roll out an improvement package that includes digital avionics integration and an upgrade for the type's Honeywell engine to T55-714 status. Other modifications include the addition of General Dynamics Bowman radios and the Raytheon Successor Identification Friend or Foe system. Project Julius will be rolled out across the entire Chinook force, including the eight special forces' machines undergoing the reversion work. This will enable the Chinook fleet to remain in service until around 2040. This is an important consideration given that RAF Chinook operations in Afghanistan have increased by 25 percent since May 2008.

Palek noted that the U.K. MoD, "Has found upgrades to be a very cost-effective alternative to going forward and adapting new airframes." Upgrades also help to defer the cost of purchasing new helicopters, notwithstanding the six Merlins bought from Denmark. That said, the combined medium- and heavy- lift helicopter force would dip from its present 132 aircraft to 97 machines in 2017 with the Sea King retirement and to 64 aircraft in 2023 once the Pumas are withdrawn.

The Future of the Lift

With no further medium-lift helicopter purchases during the next 10 years, the fleet size in 2025 could be under 60 percent of today's inventory. Given the protracted nature of defense acquisition, particularly of aircraft, the MoD will have to start thinking soon about the future medium helicopter if it is to ensure that new helicopters are in service as the Sea Kings and Pumas leave service. However, as noted below, the economic outlook for the U.K. is bleak for the moment. Moreover, the government has to call a general election before June 2010 and the governing Labour party may wish to defer large defense purchases when it will no doubt be looking to score political points with voters by keeping taxes down.

While British operations in Iraq may have concluded by then, new unexpected crises may have flared up, not to mention additional contingencies in other parts of the world to which British forces may be asked to respond. Moreover, the U.K.'s combined military helicopter fleet could reduce in size by 40 percent during the next 15 years and future helicopter purchases or upgrade programs could be stymied by the U.K.'s poor economic outlook, with the country having been declared officially in recession in late January. While few would doubt the aplomb with which the U.K.'s medium- and heavy-lift helicopter fleet have operated in Iraq and Afghanistan, during the next few years they may not only face challenges from hostile action but also from the financial pressures that could grip the British treasury.

Show Me the Money

By James Careless

Forecast International's research expects that 3,924 new-build medium/heavy military rotorcraft will be produced from 2009 through 2018. "The value of this production, in constant FY09 U.S. dollars, is estimated at $88.1 billion," said the study.

The rotorcraft covered by this market include non-U.S. products, like the NH Industries NH90 and the Korea Aerospace Industries Korean utility helicopter, plus the new UH-60M variant from Sikorsky's Black Hawk line, the CH-47F model from Boeing's Chinook family and the Bell/Boeing V-22 tiltrotor.

The study says Sikorsky will remain the market leader during 2009-2018 in unit production and value of production. "Sikorsky is expected to produce 1,478 helicopters for a sizable market share of 37.7 percent," it stated. "NH Industries is ranked second in unit production with forecast production of 569 NH90s, representing a 14.5 percent share of the market." This number does not include 51 NH90s that Forecast International believes will be built under license by Finnish manufacturer Patria Aviation.

As for the all-important dollar value? "Sikorsky garners a 32.2 percent share of production, worth $28.3 billion," according to the study. "Second place goes to the Bell/Boeing V-22 partnership, with production worth $21.5 billion, a share of 24.4 percent. Third is NH Industries, with an 11.5 percent share of production valued at $10.1 billion."

Given these totals, it is clear that Forecast International's warning about the U.S. losing market share is not an imminent one; at least not in terms of an immediate collapse. However, the possibility of this happening over time as non-U.S. manufacturers increase their percentages is worth paying attention to. After all, there was a time when GM was America's largest automaker. Now it's Toyota.

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Sunday, March 1, 2009

Rotorcraft Report: U.S. Losing Medium/Heavy Military Sales

James Careless

NEWS

U.S. medium/heavy military helicopter manufacturers are losing ground to foreign competitors, precisely because U.S. manufacturers have concentrated on giving the Pentagon what it asked for. That's the conclusion of a new Forecast International study entitled, "The Market for Medium/Heavy Military Rotorcraft - 2009-2018."

Here's how pleasing the Pentagon is working against U.S. manufacturers: "In recent years, when the U.S. military has gone to buy rotorcraft, they have concentrated on improved versions of helicopters already in their fleet," said study author Ray Jaworowski in an exclusive interview with *Rotor & Wing*. To meet this demand, U.S. medium/heavy manufacturers have put their efforts into updating current models rather than developing brand new helicopters. "The result is their product lines for military aircraft are composed of derivatives, going up against new designs from Europe and Asia," he said.

This wouldn't matter if the Pentagon stuck to buying U.S. products, as has been the case in the past. "But in the last few years, the U.S. military has opened up the U.S. platform market essentially to all comers," Jaworowski said. "As we saw with the LUH program and the presidential transport, the U.S. military is now willing to buy helicopters from non-U.S. manufacturers."

This has put U.S. medium/heavy manufacturers in a "weird Catch-22," he noted. By providing the Pentagon with the derivatives it has requested — in an effort to enhance fleet harmonization and control development costs — U.S. manufacturers have put themselves at a competitive disadvantage for Pentagon contracts. "Ironically, since the U.S. military market is no longer a captive market for domestic manufacturers, the U.S. military is now willing to buy from non-U.S. manufacturers," Jaworowski noted.

The result is that non-U.S. manufacturers are getting traction in the U.S. military market, and improving their competitive position globally. This is not good news, given how high the stakes are for helicopter manufacturers. "In terms of dollar revenue, medium/heavy military rotorcraft constitute the largest segment of the overall rotorcraft market," the Forecast International study warned. "It is this segment where manufacturers compete for the most lucrative contracts in the rotorcraft industry. Thus, it is no coincidence that the medium/heavy military sector is seeing an influx of new models, production of which will help expand and then stabilize yearly output in the segment."

In his study, Jaworowski cited Sikorsky as being the world's dominant medium/heavy military helicopter manufacturer. So what does Sikorsky think of Forecast International's report? "I don't agree completely with these market share conclusions," replied Sikorsky spokesman Paul Jackson. "New development programs entail risk that could eventually hurt market share, while upgrades can generally get products to market much faster. I believe Black Hawk and Seahawk helicopters will continue to hold solid market share through FMS sales, and with new products such as the Armed Battle Hawk and the international Black Hawk continuing to progress toward production, the market share for the overall Hawk line should be poised for future growth. I also would cite the S-92 and H-92 programs, as well as the CH-53K development program, as examples of successful upgrade programs with solid market growth prospects."

As for other helicopter manufacturers, NH Industries did not acknowledge repeated requests for interviews, while Boeing did but declined to comment. But Kaman Aerospace was willing to talk. "Undoubtedly there is a serious threat with Russia consolidating their helicopter industry and the growth potential of India and China," said Mark Tattershall, Kaman's director of marketing and business development. Part of the threat to U.S. medium/heavy helicopter manufacturers comes from their willingness to transfer technology to non-U.S. companies; an advantage that non-U.S. companies then use to compete in the U.S. military market, he said. "In my opinion, American manufacturers should be very reluctant to transfer technology overseas."

Tattershall also said that U.S. manufacturers must be willing to invest in R&D to keep up with foreign manufacturers in the global marketplace. "We need collectively to ensure that research and development budgets are sufficient to maintain our competitive edge," he told *Rotor & Wing*. "Defense exports are one of the few major success stories that the U.S. has got."

The bottom line: Forecast International's study points to a very real vulnerability in the U.S. helicopter sector trying to ride out a recession. "Measured by dollar volume (though not by units produced), the medium/heavy military class is easily the largest segment of the rotorcraft market," the study said. "Near-term growth and longer-term stability in this segment will help rotorcraft manufacturers survive through what may be difficult times in the civil side of the rotorcraft market in the next few years."

This is why losing ground in this market matters so much to U.S. manufacturers. With the civil side cooling down, reliable military revenues are more important than ever.

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Monday, December 1, 2008

Rotorcraft Report: Bright Future for Light Military Helicopters

NEWS

The Newtown, Conn-based aerospace market analysis firm, Forecast International (FI), concluded its three-month study of the helicopter industry and determined light military helicopters will be the most dynamic sector worldwide for the rotorcraft market.

FI's data, which they gather on an annual basis, indicates production of light military helicopters will double in the next several years, rising steadily from approximately 132 units in 2008 to 291 in 2014.

The study lists several factors that are driving those numbers, including the intention of the U.S. Army to acquire additional aviation assets, such as the UH-72 Lakota and a new armed reconnaissance helicopter designed to take the place of Bell's ARH offering that was cancelled in September 2008 due to delivery and cost overruns.

In a conversation with *Rotor & Wing*, Raymond Jaworowski, FI's senior aerospace analyst, cautioned that the study defines a light helicopter as having a maximum gross weight of less than 15,000 lb. The Federal Aviation Administration defines them as weighing less than 6,000 lb.

"It's arbitrary," Jaworowski said of the 15,000 lb definition. "Generally what we're trying to do is place rotorcraft in a category that makes sense to us from a market evaluation point of view, so we use 15,000 lb as a guide line."

Although FI's forecast for light helcopters is bright, other industry observers wonder if U.S. troop standdowns in the Middle East, such as those suggested by President-elect Barack Obama during his campaign, will affect those figures.

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Friday, June 20, 2008

Firm Sees Piston Production Tailing Off

The market analysis firm Forecast International sees piston-powered helicopter production to taper off in coming years. Production in that category has been booming since 2002, when only about 290 units were built, said Ray Jaworowski, senior analyst for the Newtown, Conn.-based firm. He expects nearly 800 piston helicopters to be built this year. After that, “we expect that piston output will gradually decline to more sustainable levels.” A key reason is the advent of new, low-cost single-engine turbines like the Robinson Helicopter R66 and the Schweizer Aircraft 434. “We also expect we'll eventually see a new single turbine from Bell to replace the B3 Jet Ranger, which is being taken out of production.” For related news

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