Rotorcraft

Overview

The rotorcraft industry produces aircraft, powered by either turboshaft or reciprocating engines, capable of performing vertical take-off and landing (VTOL) operations. The rotorcraft sector includes helicopters, gyrocopters, and tiltrotor aircraft. Helicopters, which employ a horizontal rotor for both lift and propulsion, are the mainstay of the industry. Gyrocopters are produced in much smaller quantities, primarily for use in recreational flying. Tiltrotor aircraft, such as the V-22 Osprey[1], can take off vertically and then fly horizontally as a fixed-wing aircraft.

Rotorcraft are manufactured in most industrialized countries, based on indigenous design or in collaboration with, or under license from, other manufacturers. Manufacturers in the United States of civilian helicopters include American Eurocopter, Bell, Enstrom, Kaman, MD Helicopters, Robinson, Schweizer (now a subsidiary of Sikorsky), and Sikorsky. Bell moved its civilian helicopter production to Canada, with the last U.S. product completed in 1993.[2] American Eurocopter—a subsidiary of the European manufacturer and subsidiary of EADS NV—has manufacturing and assembly facilities in Grand Prairie, Texas and Columbus, Missouri.

European producers include AgustaWestland, Eurocopter, NHIndustries, and PZL Swidnik. Russian manufacturers including Mil Moscow, Kamov and Kazan helicopters, as well as a number of other rotorcraft related companies, have been consolidated under the Russian government majority-owned OAO OPK Oboronprom.[3] (See this report's Russia country analysis for a more detailed description of Oboronprom.)

Manufacturers in the United States

Company	**Products**
American Eurocopter[4]	military helicopters for U.S. Army
Bell Helicopter	civil and military helicopters, military and civil tiltrotors, UAVs
Boeing Rotorcraft Systems	military heavy and attack helicopters, military tiltrotors, UAVs
Enstrom Helicopter	piston and light turbine-powered helicopters
MD Helicopters	NOTAR®-equipped turbine-powered helicopters
Robinson Helicopter	light piston- and turbine-powered helicopters
Schweizer Aircraft	piston and light turbine-powered manned and unmanned helicopters, fixed-wing airplanes and airframe components
Sikorsky Helicopter	civil and military medium and heavy turbine-powered helicopters

[1] The V-22 Osprey was developed by Bell Helicopters and is manufactured by Bell in conjunction with Boeing Rotorcraft Systems. See http://www.boeing.com/rotorcraft/military/v22/ [1] Aerospace Industries Association, *Aerospace Facts & Figures 1995-96*, p.37

[2] Aerospace Industries Association, *Aerospace Facts & Figures 1995-96*, p.37

[3] http://www.oboronprom.com/en/show.cgi?/corporation/structure.htm

[4] A wholly owned subsidiary of Eurocopter, an EADS company.

Foreign Competitors

Company	Products	Countries
Eurocopter	civil turbine-powered helicopters	France-Germany
PZL Swidnik	single-engine, twin-engine light and light-medium turbine-powered helicopters	Poland
OAO OPK Oboronprom	Mil Moscow, Kazan, Kamov turbine-powered light, medium and heavy helicopters, rotorcraft related companies	Russia

Joint Ventures

Company	Products	Countries
AgustaWestland	civil and military turbine-powered helicopters	UK-Italy
Bell/Agusta Aerospace	civil tiltrotors	U.S.-Italy
NHIndustries	military large turbine-powered helicopters	Italy, UK, France, Germany, Netherlands

Market Trends

U.S. helicopter deliveries in 2010 declined 8.6 percent by value from 2009. Honeywell Aerospace forecasts that during the five-year period 2011-15, world deliveries of new turbine-powered civil helicopters will be 4,200 to 4,440. Orders for 2012 and 2013 are expected to increase 40 percent over 2011.[5] Rolls-Royce forecasts deliveries of about 10,900 new civil turbine helicopters, valued at $38.6 billion during the period 2011-2020. The civil market is expected to experience modest unit growth, especially for new entry-level turbine helicopters. Rolls-Royce projects about 10,300 civil helicopters to be delivered during the ten-year period with an estimated value of $38 billion. The civil market will be characterized by emerging near-term recovery followed by long-term growth.[6]

Future Markets

Emerging market demand and more favorable financing terms has caused the global rotorcraft industry to be more optimistic, than a year ago, about future orders in the long term. This optimism is based in part on the relative average age of the current fleet of operating helicopters, which is nearly thirty years old. Major customers like emergency medical service (EMS) providers and operators supporting offshore oil and gas exploration and production are seeking new, replacement aircraft, especially in the medium-sized twin-engine category, that meet the latest standards for design and safety features. Industry analysts anticipate that the large and fast-growing economies of India and China, for example, with their lack of airport infrastructure and their likelihood of huge construction projects, are ripe for rotorcraft.[7]

[5] "Honeywell Forecasts Modest Helicopter Market Recovery," *BCA Bulletin*, March 9, 2011.
[6] "Rolls-Royce 10-year Turbine Helicopter Market Forecast," *BCA Bulletin*, March 9, 2011.
[7] "Analyst: Civilian Helicopter Recovery to Lag Airplane Upturn," *BCA Bulletin*, February 23, 2011.

Developments

Robinson Helicopter delivered its first turbine-powered helicopter, the R66, in 2010. The R66 comes on the market just as Bell Helicopter is winding down the production of its light single turbine-powered helicopter, the 206B III JetRanger.

Several companies--including Sikorsky, Eurocopter, and Carter Aerospace Technologies--are developing compound helicopters to combine vertical/short take-off-and-landing capabilities with one or more propellers for increasing forward speed over conventional helicopter design. Sikorsky's X2 is a counter-rotating coaxial rotor helicopter with a pusher propeller behind the cabin. Eurocopter's X3 is a twin-engine turbine-powered helicopter with two propellers installed on short-span fixed wings.[8] Carter's Personal Air Vehicle (PAV) use's the company's slowed rotor/compound (SR/C) technology. The PAV has an unpowered rotor for low-speed flight and transitions to a pusher propeller and sailplane-like wing for high-speed flight.[9]

Author: Ronald D. Green,
E-mail: ronald.green@trade.gov
Phone: 202-482-3068

[8] "A Milestone for Eurocopter's X3 Hybrid Helicopter," Vertical Magazine on Line (http://www.verticalmag.com), December 9, 2010.
[9] "Compound Concept," *Aviation Week & Space Technology*, February 28, 2011.