



Made in Italy:

From Agusta to the Finmeccanica Helicopter Division

By Mauro Finati and Paolo Rollino

AgustaWestland's main plant in Vergiate, Italy, the company's primary production and flight test facility. (All photos by the authors.)

AgustaWestland is one of the most important helicopter manufacturers in the world today. More than 4,800 AW rotorcraft take off every day and the company has a full order-book for the next 30-36 months; 2014 data shows revenues of €4.4B (\$4.9B) and a workforce of 12,850.

As the company is now in the midst of a name change (see sidebar), this article focuses on the past, present and future of helicopter production at the company's main manufacturing plant in Vergiate, Italy.

A Brief History of Agusta

The Italian rotorcraft group traces its origins to the beginning of the 20th Century, when Giovanni Agusta designed and manufactured the AG-1 in 1907, a biplane glider that made its first flight towed by a car during a public parade at Capua. A few years later, in 1911, he invented the first drag chute in order to be able to slow the descent of a plane

due to a sudden in-flight failure; in 1913, Agusta started to work at the Caproni aircraft factory. Immediately following World War I, he founded Costruzioni Aeronautiche Giovanni Agusta with overhaul workshops at Tripoli and Benghazi in Libya, and Foggia, Italy. Finally, in 1923, he moved to Cascina Costa, a site close to the present day Milan-Malpensa Airport, which is still part of the modern AgustaWestland production plant and helicopter test center.

Giovanni died prematurely in 1927, and the company went under the guidance of his wife, Giuseppina, and his son, Domenico. At Cascina Costa, Agusta expanded its activity by producing aircraft licensed from Fiat (originally, Fabbrica Italiana Automobili Torino), Breda, IMAM

(Industrie Meccaniche e Aeronautiche Meridionali) and SIAI (Società Idrovolanti Alta Italia).

With the end of World War II, Agusta found itself at an impasse, due to the ban on Italy to produce aircraft. Taking advantage of the boom in the motorcycle industry and the superiority of their own knowledge in mechanics, Domenico,



A hangar full of AW139s being checked out and awaiting flight testing.

now alone at the head of the company, decided to establish a new company for the production and marketing of motor bikes. Thus, in February 1945, Meccanica Verghera Agusta was born and would produce more than 30 different models. But MV Agusta owes its fame and notoriety to its racing division: from 1952 to 1976 the racing team department was able to bring their riders — among them, Leslie Graham, Carlo Ubbiali, Gary Hocking and the unparalleled Giacomo Agostini — to the top step of the podium 3,000 times, with 279 Grand Prix wins and 76 World Championships.

Meanwhile, aviation activities at Cascina Costa finally resumed in 1950 with the creation of a small series of biplanes. But it was two years later that the company hit its turning point: on Aug. 11, 1952, Domenico Agusta signed an agreement with the American company Bell Aircraft Corporation and undertook the challenge of the future — to produce and sell helicopters. On May 22, 1954, the first helicopter built by the company — an Agusta-Bell 47G — took off from the Cascina Costa apron; only two years later, the 100th helicopter was delivered. Helicopter production increased dramatically in the 1960s after signing agreements with US manufacturers Sikorsky, Boeing and Hughes Helicopters.

Beginning in 1958, Agusta started to design, develop and fly machines of its own: from the heavy A.101G to the smaller A.103, A.104, A.105 and A.106. The production remained limited to a few prototypes, but these projects enabled the company to develop a complete and independent design capability. On Aug. 4, 1971, a few months after Corrado Agusta took over following the death of Domenico, Agusta made the first flight of its A.109 Hirundo (Swallow) — a twin-engine, four-bladed helicopter with innovative features and performance — which went into production in 1975. This helicopter was an immediate success, as it sold hundreds of aircraft, and is still in production 40 years later. Agusta engineers Bruno Lovera and Paolo Bellavita led the development of the A.109. [AHS would later bestow some of its highest honors upon the two. — Ed.]

In the meantime, the factory continued to produce hundreds of other helicopters, such as the Bell-licensed Agusta-Bell AB 204, 205, 212 and 412

AgustaWestland is the Brand

Finmeccanica is the leading high-tech industrial group in Italy and a top 10 global company in the aerospace, defense and security sector. Finmeccanica was established in 1948 as a holding company, itself a subholding for the mechanical industry of the state-owned *Istituto per la Ricostruzione Industriale* (“Institute for Industrial Reconstruction”); better known as IRI, it was dissolved in 2000. The prefix *Fin* denotes a state-controlled financial holding company that gathered together numerous smaller firms, with *Meccanica*, Italian for “mechanics.”

Finmeccanica has more than 47,000 employees (about 37% outside of Italy), and in 2014 recorded €14.6B (\$16.4B) in revenues and orders in the amount of €15.6B (\$17.5B). The company is partially owned by the Italian government through the Ministry of Economy and Finance, which holds 30.2% of Finmeccanica’s shares.

The company reorganized on Jan. 1, 2016 from a financial holding group to a unified corporation, a significant change to its legal status in Italy. The individual companies in the holding group that were 100% owned by Finmeccanica — AgustaWestland, Alenia Aermacchi, Selex ES, OTO Melara and WASS — were dissolved, while it retained its parent company and corporate headquarters functions for those companies that are joint ventures — ATR, MBDA, Telespazio and Thales Alenia Space — as well as the wholly-owned US subsidiary, DRS Technologies, Inc.

Finmeccanica now operates as a single company with seven divisions: Helicopters, Aircraft, Aerostructures, Airborne & Space Systems, Land & Naval Defence Electronics, Defence Systems and Security & Information Systems. The company now operates exclusively in the aerospace, defence and security sector, as a result of the disposal of non-core business units (such as its AnsaldoBreda railcar company) that it completed in 2015.

There appeared to be a lot of confusion in the press and the public when Finmeccanica officially announced the divisions — just as most of Europe and North America were taking off for the Christmas holiday season — and said that “AgustaWestland” would be renamed the “Finmeccanica Helicopter Division.” The AgustaWestland website was taken down and the name was not evident on the main page of the Finmeccanica website. Eventually it was gleaned that although the corporate structure of AgustaWestland was dissolved, the brand and the “AW” aircraft designation would remain. (Speculation was that the AW139 would be called the FH139 or F139, etc.)

Despite this December announcement, the transition from a holding company had been approved by its board of directors in September 2014, and discussed regularly over the last few months of 2015. This past August, Finmeccanica CEO Mauro Moretti noted that he had been streamlining the company since he took over May 2014. *Defense News* quoted him in August as saying, “I have got rid of 200 managers and chosen the 10 that I need.”

Another part of the “One Company” strategy is to rename Finmeccanica. *Defense News* also reported in October that Moretti stated that “Finmeccanica is an obsolete name, we will truly change it,” and that the company will be given a name evoking “the sense of deep roots and a great future.” Moretti been expected to announce a new “short and memorable” moniker to take effect January 1, but it was decided to move ahead first with the legal corporate changes.

So, bottom line: While AgustaWestland is no longer the name of a company, it is still the name of the brand of the Finmeccanica Helicopter Division, which itself will soon be renamed. Got it?



The three-engine 13 t (28,400 lb) A.101G was Agusta's first indigenous design. It first flew in October 1964, but was dropped in 1971.



AgustaWestland carries out the integration and final assembly of the ICH-47F Chinook for the Italian Army.



The AW101 (originally the EH101) was a joint development between Agusta and Westland, and laid the groundwork for the eventual merger of the two companies.

Huey variants and the 206 JetRanger; Sikorsky-licensed SH-3D/HH-3F Sea Kings, and the Boeing-licensed CH-47C Chinooks for domestic use, as well as international customers and armed forces.

A few years later, Agusta began to develop a combat helicopter to meet the needs of the Italian Army. The A.129 Mangusta (Mongoose), the very first attack helicopter to be designed and built entirely in Europe, had its maiden flight on Sept. 11, 1983.

With the A.109 and the A.129 indigenous designs, Agusta fully entered into the exclusive ranks of the world's leading helicopter companies.

After the acquisition in 1969 of the well-known SIAI-Marchetti aircraft factory, Agusta moved its medium- and heavy-helicopter assembly line to Vergiate.

In 1973, by which time the company had more than 3,000 employees, the company needed cash to complete the development and production of the A.109, at the same time that Corrado

Agusta had to buy out the financial interests of his brothers' heirs. For this, the Agusta family sold 51% of the company to government-owned Agency for Financing of State's Manufacturing Industry (EFIM), which aimed at achieving an aerospace industry by acquiring various companies and placing them under its control in Cascina Costa. The new Gruppo Agusta was split into three divisions: the Aircraft Division, the Helicopter Division and the Aerospace Systems Division.

In 1992, EFIM folded, passing Agusta to Finmeccanica, which at the time was part of another state-owned conglomerate, the "Institute for Industrial Reconstruction" (IRI), but was in the process of being partially privatized. (Today, Finmeccanica is only about 30% owned by the Italian government.)

During this time, cooperation began with the British company Westland Ltd. for the design of the 15 t (33,000 lb), three-engined EH.101 (now AW101) helicopter; and with French, German and Dutch aviation industries — at the time,

Eurocopter, Eurocopter Deutschland and Stork Fokker Aerospace — for the 11 t (24,250 lb) NH90 military helicopter.

Coming into Recent Times

In July 2000, Finmeccanica SpA and GKN Ltd. signed an agreement for the merger of their helicopter industry subsidiaries (respectively Agusta and GKN-Westland Helicopters), creating AgustaWestland SpA. On May 26, 2004, GKN sold its entire stake, making AgustaWestland completely owned by Finmeccanica.

On Jan. 28, 2005, the US Navy announced that the US101 (dubbed the VH-71 Kestrel), was selected as the new US Presidential Helicopter, with teammates Lockheed Martin and Bell Helicopter. Sadly, the program was canceled in June 2009 due to ballooning costs. The nine completed aircraft were eventually sold to Canada to support their CH-149 Cormorants, another AW101 variant. In 1998, AgustaWestland created a new joint venture with Bell called the Bell/Agusta Aerospace Company (BAAC) for the development of the Agusta-Bell AB-139 helicopter and for the Bell-Agusta BA609 tiltrotor. AgustaWestland bought out Bell's involvement in what is now the AW139 in 2005, and became the lead company for the AW609 in 2011.

Today and Tomorrow

In 2009, AgustaWestland bought 90% of PZL-Świdnik, one of the biggest Polish helicopter/aircraft companies. With this acquisition, AW now has four production and assembly lines, in four



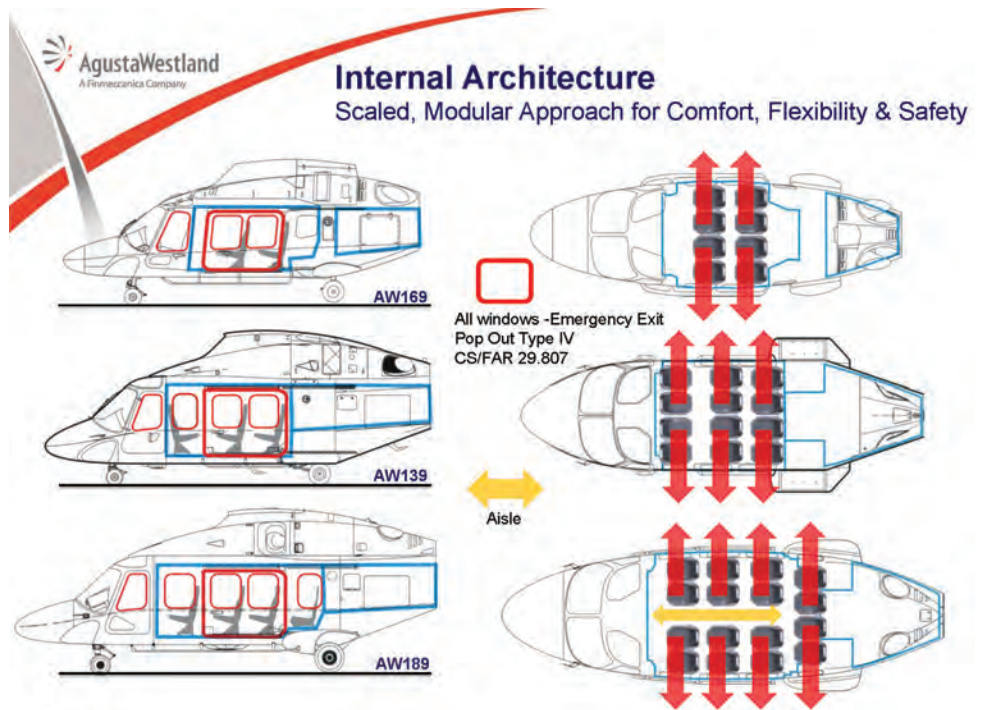
This AW109SP GrandNew is one of the latest descendants of the Agusta A.109 that first flew in 1971.

different countries: Vergiate, Italy; Yeovil, UK; Philadelphia, USA; and Świdnik, Poland.

At Vergiate, the AW109 Power, AW109 LUH, AW109 GrandNew, AW139, AW169, AW189 and ICH-47F all come together and make their first flights; in future, they will be joined by the AW109 Trekker. At the Yeovil plant is the final assembly line for the Super Lynx 300, AW159, AW101 and AW189 (SAR version only). In Philadelphia, Pennsylvania is the assembly line of the AW119Kx and AW139 today, and in the future will also include the AW169 and AW609. Also on the US assembly line is the customization (final completion) of the AW109 Power and GrandNew; they are assembled in Italy, but sold to the American market. Świdnik is charged with the assembly of the PZL SW-4 Puszczuk and W-2A Sokol. If the Polish Armed Forces decide to buy the new AW149, then this production line will also be opened there.

Most of the parts for all the helicopters are manufactured in Italy: at Cascina Costa, transmission and avionics integration; at Anagni, rotors heads and fiber-composites blades; at Brindisi, fuselages; at Tesserà, the NH90 fuselage; and at Benevento, other high-tech structural components. The AW139/169 transmissions are produced at Yeovil and 25 AW139 fuselages per year by Turkish Aerospace Industries (TAI) in Akinci, Turkey.

The assembly line in Vergiate is planned over six stations for each model: larger aircraft stay for 7 to 8 working days in each position and then move on, while the smallest ones (A.109 family) stay only six days each. Workers have a pre-assembled construction kit with



The family concept of AW169, AW139 and AW189 featured three very similar helicopters in weight categories from 4 t (8,800 lb) to 9 t (19,800 lb). (AgustaWestland graphic)

all the tools and instrumentation to fix in the helicopter on a certain day so they will not make any mistakes. All the instrumentation, as well the engines, are pre-checked to be fixed without any issues or lost time.

If the future of AgustaWestland seems bright, it is in part due to the new planning and construction philosophy it has brought to the recent commercially-successful products.

The AW139, with 950 aircraft ordered, was the first model that was responsible of the recent success, but the company's true innovation was to pull off the "family concept" that arose from the design — creating three similar helicopters in different weight categories. The AW139

(7 t), AW169 (4 t), and AW189 (9 t) have some 20% of parts commonality and some 30% of similar maintenance work. Flying procedures and cockpits are also similar, which reduce training and training transition costs, and time. This is a real economical bonus for the large fleet operators that loan helicopters or flying hours to other customers.

Thanks to this design philosophy, there are 150 AW169s on order and almost the same number of AW189.

Another winning move is the "dual role" concept, i.e. helicopters with civil certifications sold to government agencies that can be used for military or paramilitary tasks — it represents 11% of the total AgustaWestland income.



This aircraft, the second AW609, was lost in a crash in Oct. 2015, but the third prototype is being readied. The United Arab Emirates recently announced it would buy the civil tiltrotor.



The AW149 was derived from the AW139 as a larger, military version. Although it has not yet found a military customer, the civil version — the AW189 — has been a runaway success.



Vergiate integrates the British transmission and Canadian engines with the fuselage, rotor hubs, blades, avionics, etc., from other AgustaWestland plants around Italy.



The AW189 is considered a “super medium” aircraft. Like the AW139, its main gearbox benefits from an unsurpassed 50 minute “dry-run” capability.



The AW139 assembly line in Vergiate. The aircraft is also built in the US by AgustaWestland Philadelphia and in Moscow by the company’s HeliVert joint venture.

The civil market represents one-fourth of the global business and almost the same for military helicopters sales. A third source of profit is the “customer and support training” that, with its simulators and flying school, is responsible for the remaining 36% of the total AW revenues.

AgustaWestland is a fully-integrated company that works to be “synonymous with helicopters and vertical flight” around the world. Always on the technological frontier, AW invests in research, design and development — approximately 11% of its revenues each year.

Development of new products is often made in partnership with the most demanding customers. An example of this is the recently announced order placed by the famous Swiss Air-Rescue Rega for three AW169 light intermediate twins and one GrandNew light twin-engine helicopter, which will join the current fleet of a GrandNew and nine single-pilot configured A109 SP Grand “Da Vinci” helicopters, a modification specifically developed for Rega by AgustaWestland.

The new aircraft will perform emergency medical service and search and rescue missions (EMS/SAR) all over Switzerland, from the lowlands to the high mountains of the Alps. This order is of great importance, not only because this leading rescue service operator is expanding its AgustaWestland helicopter fleet, but because the AW169 ordered under the “Project Icebird” will set a new standard for EMS/SAR rotorcraft in its weight category. In fact, Rega AW169s will feature a jointly-developed, highly-customized EMS/SAR configuration to meet their

future all-weather requirements. This will include a Full Ice Protection System (FIPS) for operations in demanding icing conditions — making the AW169 the lightest helicopter ever built with such a feature — advanced next-generation satellite navigation capabilities, Synthetic Vision System (SVS), Enhanced Vision System (EVS) and a Selex ES-made Laser Obstacle Avoidance and Monitoring (LOAM) system for enhanced safety and situational awareness.

One final thing to mention is that in December 2015, Canadian Emergency Medical Services — after ten months of study and evaluation of the Ornge EMS helicopters fleet compared to other medium-sized helicopters — said that, at the moment, AW139 is the most cost-effective helicopter of this category in that specific configuration (EMS) and in that particular environment.

About the Authors

Paolo Rollino has been a photographer and aviation journalist since 1982. He has published reports, news articles and photos in some of the most prestigious magazines in the field. His website is www.paolo-rollino-photography.com.

Mauro Finati lives in the “Aviation District” in northwest Italy. As a freelance writer and photographer, he has been involved in military aviation for over 25 years. He has published numerous articles in leading Italian and other European aviation magazines.

Together, Finati and Rollino publish www.aviobook.com.



The AW139 has been a runaway commercial success for AgustaWestland. The company claims a 56% market share in the intermediate twin segment, with some 900 orders to date.