Pratt & Whitney

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Pratt & Whitney

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• Pratt & Whitney's aircraft engines are widely used in both civil aviation (especially airlines) and military aviation.

• Pratt & Whitney is an American aerospace manufacturer with global service operations.

• In addition to aircraft engines, Pratt & Whitney manufactures gas turbines for industrial and power generation, and marine turbines.

Pratt & Whitney is an American aerospace manufacturer with global service operations. It is a subsidiary of United Technologies (UTC). Pratt & Whitney's aircraft engines are widely used in both civil aviation (especially airlines) and military aviation. Its headquarters are in East Hartford, Connecticut. As one of the "big three" aero-engine manufacturers, it competes with General Electric and Rolls-Royce, although it has also formed joint ventures with both of these companies. In addition to aircraft engines, Pratt & Whitney manufactures gas turbines for industrial and power generation, and marine turbines. As of 2017, the company reported having 38,737 employees supporting more than 11,000 (in 2014) customers in 180 countries around the world. In 2013, Pratt & Whitney's revenue totaled $14.5 billion.

History

Early history

• His agreement allowed him to carry the Pratt & Whitney name with him to his new corporation.

• In 1929, Rentschler ended his association with Pratt & Whitney Machine Tool and merged Pratt & Whitney Aircraft with Boeing and other companies to form the United Aircraft and Transport Corporation.

• This was the beginning of the Pratt & Whitney Aircraft Company.

In April 1925, Frederick Rentschler, an Ohio native and former executive at Wright Aeronautical, was determined to start an aviation-related business of his own. His social network included Edward Deeds, another prominent Ohioan of the early aviation industry, and Frederick's brother Gordon Rentschler, both of whom were on the board of Niles Bement Pond, then one of the largest machine tool corporations in the world. Frederick Rentschler approached these men as he sought capital and assets for his new venture. Deeds and G. Rentschler persuaded the board of Niles Bement Pond that their Pratt & Whitney Machine Tool (P&WMT) subsidiary of Hartford, Connecticut, should provide the funding and location to build a new aircraft engine being developed by Rentschler, George J. Mead, and colleagues, all formerly of Wright Aeronautical. Conceived and designed by Mead, the new engine would be a large, air-cooled, radial design. Pratt & Whitney Machine Tool was going through a period of self-revision at the time to prepare itself for the post-Great War era, discontinuing old product lines and incubating new ones. The Great War had been profitable to P&WMT, but the peace brought a predictable glut to the machine tool market, as contracts with governments were canceled and the market in used, recently built tools competed against new ones. P&WMT's future growth would depend on innovation. Having idle factory space and capital available at this historical moment, to be invested wherever good return seemed available, P&WMT saw the postwar aviation industry, both military and civil (commercial, private), as one with some of the greatest growth and development potential available anywhere for the next few decades. It lent Rentschler $250,000, the use of the Pratt & Whitney name, and space in their building. This was the beginning of the Pratt & Whitney Aircraft Company. Pratt & Whitney Aircraft's first engine, the 425 horsepower (317 kW) R-1340 Wasp, was completed on Christmas Eve 1925. On its third test run it easily passed the Navy qualification test in March 1926; by October, the Navy had ordered 200. The Wasp exhibited performance and reliability that revolutionized American aviation. The R-1340 powered the aircraft of Wiley Post, Amelia Earhart, and many other record flights.

The R-1340 was followed by another very successful engine, the R-985 Wasp Junior. Eventually a whole Wasp series was developed. Both engines are still in use in agricultural aircraft around the world and produce more power than their original design criteria.

George Mead soon led the next step in the field of large, state-of-the-art, air-cooled, radial aircraft engines (which the Wasp dominated) when Pratt & Whitney released its R-1690 Hornet. It was basically "a bigger Wasp".

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Recent

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In January 2017, 10 employees reportedly left the company, including the head of the F135 engine program. Incurred expenses used to transport South Korean officials to the company's West Palm Beach facility in 2012 were deemed unethical, which led to the departure of the employees.

Headquarters

• The home stadium for the University of Connecticut Huskies football team, Rentschler Field, is located adjacent to Pratt & Whitney's East Hartford, Connecticut campus, on Pratt's company-owned former airfield of the same name.

• In 2015, the stadium was renamed to Pratt & Whitney Stadium at Rentschler Field in time for the 2015–2016 University of Connecticut football season.

Pratt & Whitney is headquartered in East Hartford, Connecticut and also has plants in Springdale, Arkansas; Columbus, Georgia; Middletown, Connecticut; Middletown, Pennsylvania; Dallas, Texas; Palm Beach County, Florida, North Berwick, Maine; Aguadilla, Puerto Rico; and Bridgeport, West Virginia.

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Divisions

• Pratt & Whitney is a business unit of industrial conglomerate United Technologies, making it a sister company to Collins Aerospace (previously known as UTC Aerospace Systems and Hamilton Sundstrand), Otis Elevator Company, UTC Fire & Security, UTC Power and refrigeration giant Carrier Corporation.

• It is also involved in two major joint ventures, the Engine Alliance with GE which manufactures engines for the Airbus A380, and International Aero Engines company with Rolls-Royce, MTU Aero Engines, and the Japanese Aero Engines Corporation which manufactures engines for the Airbus A320 and the McDonnell Douglas MD-90 aircraft.

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Commercial engines

• In June 2007, Pratt & Whitney’s fleet of large commercial engines surpassed 1 billion flight hours of service.

• Pratt & Whitney's large commercial engines power more than 25 percent of the world’s passenger aircraft fleet and serve more than 800 customers in 160 countries.

• With more than 16,000 large commercial engines installed today, Pratt & Whitney provides power to hundreds of airlines and operators, from narrow-bodied airplanes to wide-bodied jumbo jetliners.

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Global Material Solutions

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GMS received its first part certification in July 2007, when the Federal Aviation Administration (FAA) granted Parts Manufacturing Approval (PMA) certification for the GMS high-pressure turbine (HPT) shroud for the CFM56-3 engine. In March 2008, the FAA certified the GMS fan and booster with a Supplemental Type Certificate (STC) with FAA Chapter 5 life limits equal to the original type certificate holder. The STC was the first FAA certification ever granted for alternative life-limited engine parts. In May 2008, Global Material Solutions received FAA STCs for its remaining life limited parts for CFM56-3 engines.

Global Service Partners

• Pratt & Whitney Global Service Partners (GSP) offers overhaul, maintenance and repair services for Pratt & Whitney, International Aero Engines, General Electric, Rolls-Royce, and CFMI engines.

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Pratt & Whitney Global Service Partners (GSP) offers overhaul, maintenance and repair services for Pratt & Whitney, International Aero Engines, General Electric, Rolls-Royce, and CFMI engines. In addition to engine overhaul and repair services, GSP provides services including line maintenance, engine monitoring and diagnostics, environmentally friendly on-wing water washes, leased engines, custom engine service programs and new and repaired parts.

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Military Engines

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• In addition, Pratt & Whitney offers a global network of maintenance, repair, and overhaul facilities and military aviation service centers focused on maintaining engine readiness for their customers.

Pratt & Whitney's Military Engines power 27 air forces around the globe, with nearly 11,000 military engines in service with 23 customers in 22 nations. Pratt & Whitney military engines include the F135 for the F-35 Lightning II Joint Strike Fighter (JSF), the F119 for the F-22 Raptor, the F100 family that powers the F-15 Eagle and F-16 Falcon, the F117 for the C-17 Globemaster III, the J52 for the EA-6B Prowler, the TF33 powering E-3 AWACS, E-8 Joint STARS, B-52, and KC-135 aircraft, and the TF30 for the F-111 and F-14A. In addition, Pratt & Whitney offers a global network of maintenance, repair, and overhaul facilities and military aviation service centers focused on maintaining engine readiness for their customers.

Pratt & Whitney Canada

• If the orders did shift to another company, Pratt & Whitney could decide to move some of the industrial base work it is currently doing in Canada, Hess said.

• Pratt & Whitney Canada (PWC), originally Canadian Pratt & Whitney Aircraft Company, and later United Aircraft of Canada, provides a large range of products, including turbofan, turboprop and turboshaft engines targeted for the regional, business, utility and military aircraft and helicopter markets.

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Speaking to Reuters June 16, 2013, ahead of the Paris Airshow 2013, Pratt & Whitney President David Hess said he was confident that Canada would decide to stick with the F-35 program despite its recent discussions about having a new competition. If the orders did shift to another company, Pratt & Whitney could decide to move some of the industrial base work it is currently doing in Canada, Hess said. "We might reallocate the work elsewhere", he said, adding that reduced order volumes would likely trigger changes in Canada.

The division admitted in July 2012 to providing engines and engine software for China's first attack helicopter, the Z-10. This violated U.S. export laws and resulted in a multimillion-dollar fine.

Pratt & Whitney Space Propulsion

• Pratt & Whitney Space Propulsion provided advanced technology solutions to commercial, government and military customers for more than four decades.

• Products included the RL10, the upper stage rocket engine used on the Boeing Delta and Lockheed Martin Atlas rockets, high-pressure turbopumps for the Space Shuttle Main Engines (SSME) and the RD-180 booster engine, offered by RD Amross, a partnership between Pratt & Whitney and NPO Energomash of Russia, for the Atlas III and V programs.

Pratt & Whitney Space Propulsion consisted of liquid space propulsion at the Liquid Space Propulsion Division (West Palm Beach, Florida) and solid rocket propulsion at the Chemical Systems Division (San Jose, California), as well as refurbishment and integration of the non-motor elements of the Space Shuttle's solid rocket boosters at the USBI Co. Division (NASA Kennedy Space Center, Florida). Pratt & Whitney Space Propulsion provided advanced technology solutions to commercial, government and military customers for more than four decades. Products included the RL10, the upper stage rocket engine used on the Boeing Delta and Lockheed Martin Atlas rockets, high-pressure turbopumps for the Space Shuttle Main Engines (SSME) and the RD-180 booster engine, offered by RD Amross, a partnership between Pratt & Whitney and NPO Energomash of Russia, for the Atlas III and V programs. The West Palm Beach site consisted of an engineering division and manufacturing division which designed and manufactured the high-pressure turbopumps(Fuel and Lox) for the Space Shuttle's Main Engines (SSME) which were manufactured by the former Rocketdyne Corporation.

Pratt & Whitney Rocketdyne

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P&W Rocketdyne engines powered the Space Shuttle, and the company also supplies booster engines for Delta II rockets and boosters and upper stage engines for Atlas III and V and Delta IV rockets.

In 2013, PWR was sold to GenCorp, which merged it with Aerojet to become Aerojet Rocketdyne.

Pratt & Whitney Power Systems

• In May 2013, United Technologies Corporation (UTC) sold its Pratt & Whitney Power Systems unit to Mitsubishi Heavy Industries (MHI).

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Pratt & Whitney Power Systems (PWPS) designs, builds, furnishes and supports aero-derivative gas turbine and geothermal power systems for customers worldwide. These industrial gas turbines power everything from small businesses to small cities. PWPS’ industrial turbines not only generate electrical power, but provide variable speed mechanical drive for marine propulsion, gas compression, and liquid pumping. PWPS has over 2,000 industrial gas turbines installed in more than 40 countries worldwide. PWPS also provides parts and repairs for heavy-duty frame gas turbines as an OEM alternative.

In May 2013, United Technologies Corporation (UTC) sold its Pratt & Whitney Power Systems unit to Mitsubishi Heavy Industries (MHI).

International Aero Engines

• The four engine manufacturers that make up IAE each contribute an individual module to the V2500 engine.

• Pratt & Whitney produces the combustor and high-pressure turbine, Rolls-Royce the high-pressure compressor, JAEC the fan and low-pressure compressor and MTU the low-pressure turbine.

International Aero Engines is a joint venture that develops, builds and services the V2500 aero engine family, which powers the Airbus A320 family and McDonnell Douglas MD-90 aircraft. The four engine manufacturers that make up IAE each contribute an individual module to the V2500 engine. Pratt & Whitney produces the combustor and high-pressure turbine, Rolls-Royce the high-pressure compressor, JAEC the fan and low-pressure compressor and MTU the low-pressure turbine.

Engine Alliance

• It competes with the Rolls-Royce Trent 900, the launch engine for the aircraft.

• Engine Alliance, a 50/50 joint venture between General Electric and Pratt & Whitney, was formed in August 1996 to develop, manufacture, and support a family of modern technology engines for new high-capacity, long-range aircraft.

Engine Alliance, a 50/50 joint venture between General Electric and Pratt & Whitney, was formed in August 1996 to develop, manufacture, and support a family of modern technology engines for new high-capacity, long-range aircraft. The main application is the GP7200, which has been designed for use on the Airbus A380. It competes with the Rolls-Royce Trent 900, the launch engine for the aircraft.

The first GP7200-powered Airbus A380 entered service with Emirates on August 1, 2008, on a non-stop flight from Dubai to New York City.

Motorsports

• Between 1967 and 1971, Pratt & Whitney turbine engines were used in American Championship Car Racing and Formula One.

Between 1967 and 1971, Pratt & Whitney turbine engines were used in American Championship Car Racing and Formula One. The STP-Paxton Turbocar dominated the 1967 Indianapolis 500 until a transmission bearing failed four laps from the finish. STP entered four Lotus 56s in the 1968 Indianapolis 500. One car crashed during qualifying. Two of the remaining cars qualified fastest and second fastest, but all three retired from the race. Turbine cars were deemed illegal before the following year's race, so Lotus chief Colin Chapman developed the car for use in Formula One and an updated 56B competed in half a dozen Formula One races in 1971.

Products

Reciprocating engines

• Pratt & Whitney R-985 Wasp Junior

• Pratt & Whitney R-2000 Twin Wasp

• Pratt & Whitney R-1830 Twin Wasp

• Pratt & Whitney R-1340 Wasp

• Pratt & Whitney R-1690 Hornet

• Pratt & Whitney R-2800 Double Wasp

• Pratt & Whitney R-2180

Pratt & Whitney R-1340 Wasp

Pratt & Whitney R-1690 Hornet

Pratt & Whitney R-1860 Hornet B

Pratt & Whitney R-985 Wasp Junior

Pratt & Whitney R-1535 Twin Wasp Junior

Pratt & Whitney R-1830 Twin Wasp

Pratt & Whitney R-2000 Twin Wasp

Pratt & Whitney R-2180

Pratt & Whitney R-2800 Double Wasp

Pratt & Whitney R-4360 Wasp Major

Turbojet engines

• Pratt & Whitney JT12 (J60)

• Pratt & Whitney J57 (JT3C)

• Pratt & Whitney J75 (JT4A)

• Pratt & Whitney J48 (JT7)

• Pratt & Whitney J58 (JT11D)

• Pratt & Whitney J91 (JT9)

• Pratt & Whitney J52 (JT8A)

Pratt & Whitney J42 (JT6) (Rolls-Royce Nene)

Pratt & Whitney J48 (JT7)

Pratt & Whitney J52 (JT8A)

Pratt & Whitney J57 (JT3C)

Pratt & Whitney J58 (JT11D)

Pratt & Whitney J75 (JT4A)

Pratt & Whitney J91 (JT9)

Pratt & Whitney JT12 (J60)

TF33s of a C-141 Starlifter leave contrails over Antarctica

F-22 showing F119 (PW5000) engines in afterburner

Turbofan engines

• Pratt & Whitney JT9D

• Pratt & Whitney PW4000

• Pratt & Whitney JT8D

• Pratt & Whitney PW1000G

• Pratt & Whitney PW300

• Pratt & Whitney JT3D (TF33)

• Pratt & Whitney PW6000

Pratt & Whitney JT3D (TF33)

Pratt & Whitney JT8D

Pratt & Whitney JT9D

Pratt & Whitney TF30 (JTF10A)

Pratt & Whitney F100 (JTF22)

Pratt & Whitney F119 (PW5000)

Pratt & Whitney F135 (derived from F119)

Pratt & Whitney PW300

Pratt & Whitney PW1000G

Pratt & Whitney PW1120 (derived from F100)

Pratt & Whitney PW2000 (F117)

Pratt & Whitney PW4000

Pratt & Whitney PW6000

Engine Alliance GP7000

International Aero Engines V2500

Turboprop/turboshaft engines

• Pratt & Whitney T34 (PT2)

• Avco/Pratt & Whitney T800 (APW34)

• Pratt & Whitney XT57 (PT5)

• Pratt & Whitney T52 (PT3)

• Pratt & Whitney XT45 (PT4)

• Pratt & Whitney T73 (JFTD12)

Pratt & Whitney T34 (PT2)

Pratt & Whitney XT45 (PT4)

Pratt & Whitney T52 (PT3)

Pratt & Whitney XT57 (PT5)

Pratt & Whitney T73 (JFTD12)

Avco/Pratt & Whitney T800 (APW34)

Aeroderivative industrial and marine gas turbines

• Pratt & Whitney GG3/FT3

• Pratt & Whitney ST40M – based on Pratt & Whitney Canada PW150A

• Pratt & Whitney GG4/FT4

• Pratt & Whitney FT8

• Pratt & Whitney ST18M – based on Pratt & Whitney Canada PW100

Pratt & Whitney GG3/FT3

Pratt & Whitney GG4/FT4

Pratt & Whitney FT8

Pratt & Whitney ST18M – based on Pratt & Whitney Canada PW100

Pratt & Whitney ST40M – based on Pratt & Whitney Canada PW150A

Engine maintenance systems

• Pratt & Whitney now markets its Ecopower pressure-washing service, which uses a high-pressure water spray run through several nozzles to clean grime and contaminants from jet engine parts, most notably turbine blades, to prevent overheating, improve engine operating efficiency and reduce fuel burn.

Pratt & Whitney now markets its Ecopower pressure-washing service, which uses a high-pressure water spray run through several nozzles to clean grime and contaminants from jet engine parts, most notably turbine blades, to prevent overheating, improve engine operating efficiency and reduce fuel burn. The system collects the runoff from the washing process for appropriate disposal. The washing is accomplished at the airport tarmac in about one hour. Customers include United Airlines, Air India, Martinair, Thai Airways International, Virgin Atlantic, and JetBlue.

See also

• Turkish Engine Center

Mirabel Aerospace Centre

Turkish Engine Center

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External links

• Official website

Official website