# Igor Sikorsky

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Russian Aviators Sikorsky, Genner and Kaulbars abroad airplane "Russian Vityaz"; 1915

Sikorsky Aero Engineering Company Stock Certificate courtesy of Scripophily.com

**Igor Ivanovich** (or **Ihor Ivanovych**) **Sikorsky** (Ukrainian: Ігор Іванович Сікорський; Russian: Игорь Иванович Сикорский) (25 May 1889 – 26 October 1972)[1] was a pioneer of aviation who designed the first four-engine fixed-wing aircraft and the first successful helicopter of the most common configuration (single main rotor tail rotor).[2][1]

## Biography

Igor Sikorsky was born in Kiev, in the Russian Empire (currently the capital of Ukraine), as the youngest of five children. Sikorsky's father was a Pole whose family had been deported in the aftermath of the failed January Uprising, and a professor of psychology. His mother, Zinaida, Ukrainian, was a physician but did not work professionally. While homeschooling young Igor (until the age of nine), she gave him a great love for art, especially in the life and work of Leonardo da Vinci,

and the stories of Jules Verne. He started to experiment with model flying machines, and, by age 12, he had made a small rubber-powered helicopter.[1]

Sikorsky studied at the Naval War College in St. Petersburg from 1903 through 1909, but did not finish formal studies. For a short time, between the years 1906-1907, he studied engineering in Paris. In 1908, Sikorsky and his father traveled to Germany; there, he saw a newspaper picture of Orville Wright and his plane.[1] Sikorsky later said about this event: "Within twenty-four hours, I decided to change my life's work. I would study aviation."

With financial backing from his sister, Sikorsky returned to Paris, in 1909, to study aerodynamics at ESTACA engineer school (known at this time as ETACA). Paris was then the center of aviation in Europe. He met several French pilots, including Louis Bleriot, the first person to fly across the English Channel. Sikorsky returned to Kiev the same year and started to experiment with flying machines.

In 1912, Igor Sikorsky became Chief Engineer in the Russian Baltic Railroad Car Factory in Saint Petersburg.[2] In 1914, he was awarded the Degree in Engineering "Honoris Causa" by Saint Petersburg Polytechnical Institute. His S-6-B aircraft won a small order from the Russian Army. Other early work included the construction, as chief engineer, of the first four-engine aircraft, the *Bolshoi Baltiski*, which he called Le Grand. He was also the test pilot for its first flight, on 13 May 1913. Sikorsky's planes were used by Russia as bombers in World War I (see *Ilya Muromets*) and he was decorated with the Order of St. Vladimir.

Sikorsky's inspiration, for designing an airplane with more than one engine, was from a mosquito. During a demonstration of his record-setting (in 1911, 70 mph)S-5, the plane had to make a forced landing. It was discovered that the insect had flown into the gasoline and drawn into the carburetor. The close call convinced Sikorsky of the need for a plane that could continue flying if it lost an engine. [3]

After World War I, Sikorsky briefly became an engineer for the French forces in Russia during the Russian Civil War. Seeing little opportunity for himself as an aircraft designer in war-torn Europe (and particularly Russia, ravaged by the October Revolution and Civil War), he emigrated to the United States in 1919.

In the U.S., Sikorsky first worked as a school teacher and a lecturer, while looking for an opportunity in the aviation industry. In 1923, helped by several former Russian army officers, he formed the Sikorsky Aero Engineering Company. Among Sikorsky's chief supporters was composer Sergei Rachmaninoff, who introduced himself by writing a check for $5,000. Though his prototype was damaged in its first test flight, Sikorsky persuaded his reluctant backers to invest another $2,500; with it, he produced the S-29, one of the first twin-engine planes in America, with a capacity for 14 passengers and a speed of 115 mph [4]. The performance of the S-29 proved to be a "make or break" moment for Sikorsky's funding.

In 1928, Sikorsky became a naturalized citizen of the United States. The next year, Sikorsky Aero Engineering Company was purchased by, and became a subsidiary of, United Aircraft, itself now a part of United Technologies Corporation. The company manufactured flying boats, such as the S-42, used by Pan Am for trans-Atlantic flights and known as *Pan Am Clippers*.

Sikorsky had experimented with helicopter-type flying machines while in Russia. He brought his work to fruition on 14 September 1939 with the first flight of the Vought-Sikorsky 300, a machine with a single three-blade rotor powered by a 75 horsepower (56 kW) engine. Its first free (untethered) flight

was on 26 May 1940. The VS-300 was not the first successful rotary-wing aircraft to fly, but it was the first of the single-rotor configuration that became the world standard.

Sikorsky has been designated a Connecticut Aviation Pioneer by the state legislature. The Sikorsky Aircraft Corporation in Stratford, Connecticut, continues to the present day as one of the world's leading helicopter manufacturers, and a nearby small airport has been named Sikorsky Airport.

Sikorsky was a deeply religious Russian Orthodox Christian and authored two religious and philosophical books (The Message of the Lord's Prayer, The Invisible Encounter). He had a daughter born in Russia and four sons born in the United States. His eldest son, Sergei, remained active with the company following Igor's death in 1972. Sikorsky died in his house in Easton, Connecticut, on October 26, 1972.

**See also**

- Aerosan—Sikorsky built some of these propeller-powered sleighs in 1909–10.
- Il'ya Muromets - Second aircraft designed by Igor Sikorsky
- Sikorsky Prize - A prize for human powered helicopters named in his honor.

## Sikorsky Russky Vityaz

Early version with two propellers.

Improved version with four propellers.

The **Sikorsky Russky Vityaz** (*"Русский витязь"* in Russian, or Russian Knight), also called **Le Grand**, was the first four-engine aircraft in the world, designed and built by Igor Sikorsky in Russia in the spring of 1913.

Sikorsky conceived the *Russky Vityaz* in 1911, when no known aircraft could lift more than 600 kilograms. The carrying capacity record belonged to a French pilot Ducis, who had flown 800 meters with a load of 600 kg. On hearing about the ongoing construction of the Russky Vityaz and its capabilities in the early spring of 1913, the experts and the media around the world were predicting its complete failure. However, the first aerial test of the Russky Vityaz on May 10, 1913 was successful. At the time, many people in other parts of the world considered it to be a newspaper hoax, and did not believe it. Observers believed that an aircraft with such dimensions would never leave the ground.

The Russky Vityaz was a four-engine multi-stanchion biplane with different-sized wings. The dual-spar wings had a rectangular form and a depth of 2.5 m. The distance between the wings was 2.5 m, as well. Its fuselage represented a girder with a rectangular section, trimmed with plywood sheets. The aircraft had a cabin with a duplicated steering column, two passenger cabins and a storage room

for spare parts. There was also an area in the pilot's cabin equipped with a searchlight and machine gun. The ailerons on the upper wings secured the aircraft's stability. The Russky Vityaz was equipped with four engines, installed in tandem (it was designed as a two-engine plane).

After the Russky Vityaz's first test flights between May 10 and May 27, 1913, it was established that a passenger could even walk around the cabins without causing any problems to stability. The aircraft left the ground after a 700-meter takeoff run.

Unfortunately, Sikorsky's aspirations for the Russky Vityaz proved to be short-lived. While parked on the runway, the aircraft was crushed by an engine, which had fallen off of the landing one-passenger Morane aircraft. Sikorsky decided not to repair the seriously damaged Russky Vityaz and began working on his next brainchild – the famous *Ilya Muromets*.

**Specifications (Russky Vityaz)**

**General characteristics**

- **Crew:** 3
- **Length:** 20 m (65 ft 7 in)
- **Wingspan:**
- **Top wing:** 27 m (88 ft 7 in)
- **Bottom wing:** 20 m (65 ft 7 in)
- **Height:** 4m ()
- **Wing area:** 120 m² (1,290 ft²)
- **Empty weight:** 3,400 kg (7,495 lb)
- **Loaded weight:** 4,000 kg (8,820 lb)
- **Max takeoff weight:** 4,940 kg (10,890 lb)
- **Powerplant:** 4× Argus Motoren inline engines, 75 kW (100 hp) each

**Performance**

- **Maximum speed:** 90 km/h (55 mph)
- **Range:** 170 km (105 mi)
- **Service ceiling:** 600 m (1,970 ft)

**Related content**

# Sikorsky Aircraft

**Sikorsky Aircraft Company**

| | |
|---|---|
| **Type** | Manufacturer |
| **Founded** | 1923 |
| **Founder** | Igor Sikorsky |
| **Headquarters** | Stratford, Connecticut, USA |
| **Industry** | Aviation |
| **Parent** | United Technologies Corporation |
| **Website** | http://www.sikorsky.com/ |

**Sikorsky** is an American aircraft and helicopter manufacturer. It was founded 1923 by a Russian born American aircraft engineer Igor Sikorsky, who made the first stable, single-rotor, fully-controllable helicopter to enter large full-scale production in 1942, upon which the majority of subsequent helicopters were based (though he did not invent the helicopter itself). The company became a part of United Aircraft in 1934, now United Technologies Corporation (UTC), and remains one of the leading helicopter manufacturers, producing such well-known models as the UH-60 Black Hawk and SH-60 Seahawk, as well as experimental types like the Sikorsky X-Wing. It is a leading defense contractor. Sikorsky has supplied the helicopter of the President of the United States, Marine One since 1957. (Note that in January 2005 the U.S. Government selected Lockheed Martin's AugustaWestland EH101-based entry as the replacement to the current Marine One aircraft, which caused an outcry from many in Sikorsky Aircraft's home state of Connecticut.) Sikorsky's VH-3 (H-3 Sea King) and VH-60 (UH-60 Black Hawk) currently perform this role.

UTC has recently acquired Schweizer Aircraft Corp., which is now a subsidiary of Sikorsky. The product lines of the two firms are complementary, and have very little overlap, as Sikorsky primarily concentrates on medium and large helicopters, while Schweizer produces small helicopters, UAVs, gliders, and light planes. The Schweizer deal was signed on August 26, 2004, exactly one week to the day after the death of Paul Schweizer, the company's founder and majority owner.

Also, in late 2005, Sikorsky completed the purchase of Keystone Helicopter Corporation, located in Coatesville, PA. Keystone had been maintaining and completing Sikorsky S-76 and S-92 helicopters prior to the sale.

Sikorsky's main plant and administrative offices are located in Stratford, Connecticut. Other Sikorsky facilities are in Shelton, and Bridgeport, Connecticut; West Palm Beach, Florida and Troy, Alabama. Other Sikorsky-owned subsidiaries are in Trumbull, Connecticut; Coatesville, Pennsylvania and Grand Prairie, Texas; and the company has branches around the world.

**Aircraft**

Sikorsky designates nearly all of its models with S-numbers; numbers S-1 through S-20 were designed by Igor Sikorsky in Russia. Later models, especially helicopters, received multiple designations by the military services using them, often depending on purpose (UH, SH, and MH for

instance), even if the physical craft had only minor variations in equipment. In some cases, the aircraft were returned to Sikorsky or to another manufacturer and additionally modified, resulting in still further variants on the same basic model number.

**Products**

**Airplanes**

- Sikorsky S-29-A: twin-engine cargo biplane. First Sikorsky built in the U.S. Appeared in Howard Hughes' *Hell's Angels* (1924)
- Sikorsky S-30: twin-engine, never built. (1925)
- Sikorsky S-31: single-engine biplane (1925)
- Sikorsky S-32: single-engine two-passenger biplane (1926)
- Sikorsky S-33: "Messenger" single-engine biplane (1925)
- Sikorsky S-34: twin-engine flying boat prototype. (1927)
- Sikorsky S-35: three-engine biplane prototype (1926)
- Sikorsky S-36: eight-seat two-engine flying boat "Amphibion" (1927)
- Sikorsky S-37: "Guardian" eight-seat-seat two-engine biplane (1927)
- Sikorsky S-38: eight-seat-seat two-engine boat flying boat (USN PS) (1928–1933)
- Sikorsky S-39: five-seat single-engine variant of S-38 (1929–1932)
- Sikorsky S-40: "Flying Forest" four-engine 28-passenger flying boat (1931)
- Sikorsky S-41: twin-engine flying boat (1931)
- Sikorsky S-42: "Clipper" four-engine flying boat (1934–1935)
- Sikorsky S-43: "Baby Clipper" twin-engine amphibious flying boat (1935–1937) (Army OA-1, USN JRS-1)
- Sikorsky S-44: four-engined flying boat (1937)
- Sikorsky S-45: six-engine flying boat (for Pan Am. Never built.)

**Helicopters**

- VS-300
- Sikorsky S-47 (R-4): world's first production helicopter. (1940)
- Sikorsky S-48 (R-5/H-5): helicopter designed with higher load, endurance, speed, and service ceiling than the R-4 (1943)
- Sikorsky S-49 (R-6): improved R-4
- Sikorsky S-51: world's first commercial helicopter. (1946)
- Sikorsky S-52 (H-18): helicopter with all-metal rotors (1947)
- Sikorsky S-55: utility helicopter (1949)
- Sikorsky S-56: twin-engined helicopter, H-37A Mojave (1953)
- Sikorsky S-58: improved S-55 (1954)
- Sikorsky S-59 (XH-39): 2 H-18s converted to use one turboshaft engine (1953)
- Sikorsky S-60: prototype "flying crane" helicopter, crashed 1961 (1959)
- Sikorsky S-61: H-3 Sea King; ASW, SAR or transport helicopter (1959)
- Sikorsky S-61R: redesigned S-61 with rear cargo ramp; CH-3, HH-3 "Jolly Green Giant", and HH-3F Pelican (1963)
- Sikorsky S-62: HH-52 Seaguard amphibious helicopter (1958)
- Sikorsky S-64: CH-54 Tarhe "flying crane" (1962)
- Sikorsky S-65: CH-53 Sea Stallion medium/heavy lift helicopter (1964)
- Sikorsky S-67 Blackhawk: prototype attack helicopter (1970)
- Sikorsky S-69: prototype with contra-rotating co-axial rotors, twin conventional tail (1973)
- Sikorsky S-70: UH-60 Black Hawk, SH-60 Seahawk (1974)

- Sikorsky S-72: rotor systems research for NASA (1975)
- Sikorsky S-75: Advanced Composite Airframe Program (ACAP) all-composite proof of concept helicopter (1984)
- Sikorsky S-76 Spirit: 14-seat commercial (1977)
- Sikorsky S-80: CH-53E Super Stallion heavy lift helicopter (1974)
- Sikorsky S-92 and military H-92 Superhawk and CH-148 Cyclone (1995)
- Sikorsky X2: concept demonstrator with twin, contra-rotating rotors and a pusher prop.

**Other Aircraft**

- Sikorsky Cypher: Doughnut-shaped UAV (1992)
- Sikorsky Cypher II: development of above (2001)

**Customers**

Sikorsky's helicopters are used in a variety of applications fairly balanced between commercial and military use. This gives Sikorsky a wide customer base within the United States as well as internationally. Some specific customers are given below:

- In 1938, Howard Hughes purchased an S-43 for a proposed round-the-world flight. Hughes is pictured in *The Aviator* teaching Katharine Hepburn to fly in an S-38.

- Pan American used the S-40, S-42 and other models for their early "flying clippers".

- In January 2005, the Republic of Singapore Navy (RSN) acquired six new Sikorsky S-70B naval helicopters which will operate off the RSN's new Formidable class frigates [1].

- In addition, Sikorsky is a major supplier of helicopters to the U.S. Military including Marine One and the versatile Black Hawk.

**Museum displays**

- Mid-Atlantic Air Museum, Reading, Pennsylvania

  1958 UH-34D Seahorse
  1962 HH-52A Seaguard

- New England Air Museum, Windsor Locks, Connecticut

  1915 S-16 Replica
  1930 S-39 Amphibian
  1942 VS-44A
  1947 S-51
  1958 LH-34D Seabat
  1967 HH-52A Seaguard
  1969 CH-54B Skycrane

- Henry Ford Museum, Dearborn, Michigan

  19?? VS-300

## Gallery

UH-60 Black Hawk

MH-53J/M Pave Low

CH-53 Super Stallion

MH-53J Pave Low III

CH-54

H-34 Choctaw

## See also

- Aerosan—Sikorsky built some of these propeller-powered sleighs in 1909–10.
- Igor Sikorsky
- Helicopter

## External links

- Sikorsky homepage
- Sikorsky H92 Selected as New Canadian Forces Maritime Helicopter
- Sikorsky Timeline at the Helicopter History Site
- Sikorsky entry at Aerofiles
- Patents owned by Sikorsky Aircraft Corporation. *US Patent*

| VS-300 |
|---|
|  |
| Igor Sikorsky in the VS-300, at the end of 1941 |

| | |
|---|---|
| **Type** | Experimental |
| **Manufacturer** | Vought-Sikorsky |
| **Designed by** | Igor Sikorsky |
| **Maiden flight** | 13 May 1940 |
| **Variants** | Sikorsky R-4 |

The **Vought-Sikorsky VS-300** was a helicopter designed by Igor Sikorsky. It first flew on 14 September 1939 and was a single three-blade rotor powered by a 75 horsepower (56 kW) engine. Its first free (untethered) flight was on 13 May 1940. While not the first successful helicopter to fly, it was the first of the configuration that would later become the most popular.

**Specifications (VS-300)**

**General characteristics**

- **Length:** ft in (m)
- **Wingspan:** ft in (m)
- **Height:** ft in (m)
- **Wing area:** ft² (m²)
- **Empty weight:** lb (kg)
- **Loaded weight:** lb (kg)
- **Useful load:** lb (kg)
- **Max takeoff weight:** lb (kg)

**Performance**

- **Never exceed speed:** knots (mph, km/h)
- **Maximum speed:** knots (mph, km/h)
- **Cruise speed:** knots (mph, km/h)
- **Stall speed:** knots (mph, km/h)
- **Range:** nm (mi, km)

- **Service ceiling:** ft (m)
- **Rate of climb:** ft/min (m/s)
- **Wing loading:** lb/ft² (kg/m²)

## [edit] References

## [edit] External links

- http://www.thehenryford.org/museum/heroes/inventors/sikorsky.asp

## [edit] Related content

### Related development

- Sikorsky R-4