



40 YEARS OF ROTAX AIRCRAFT ENGINES HOW DID IT ALL START?

Gunskirchen, Austria, June 30, 2015 –The company celebrates this year 40 years of one of the most prestigious business segments in its history which dates back to 1920 were the company with the name ROTAX-WERK AG was founded. That means more than nine decades of excellence in motorization; but let us turn our attention back on to the aircraft business.

In the early 1970s, a number of passionate aviation enthusiasts, all members of the local flying club and working at Bombardier-Rotax (BRP-Rotax today), wanted to develop aircraft engines.

At the same time, there was a noticeable sales increase of Rotax spare snowmobile engines in North America. BRP-Rotax learned that a number of these engines were sold to the aviation market where snowmobile engines were adapted for aircraft applications.

Engines for recreational aircraft were usually spinoffs of automotive and industrial engines, which were extremely heavy. Rotax engineers noticed that the compact and lightweight design of Rotax engines perfectly fit the needs of the aviation market.

The outcome was the decision to enter the aircraft engine market.

“As in the 1970s, the company still benefits from working aviation enthusiasts in the Rotax aircraft business. Our 40-year story is inspired and driven by passion and innovation, with customer satisfaction at the forefront,” said Thomas Uhr, vice-president BRP-Powertrain and general manager BRP-Powertrain GmbH & Co KG.

1975: The first certified Rotax aircraft engine

After producing small quantities of the non-certified Rotax 642 version, the engine was certified in 1975 and provided the basis for the successful story of Rotax aircraft engines. The first certified Rotax aircraft engine was a two-cylinder, air-cooled engine with an electric start and a time between overhauls (TBO) of 300 hours.

1977 – 1989: The peak of ultralight flying and some famous Rotax two-stroke aircraft engines

Based on the Rotax 503 snowmobile engine, the development of the two-stroke, two-cylinder certified Rotax 501 and 505 engine, soon equipped with electronic ignition, started in 1977. These engine models were used mainly for motor gliders.

In the early 80s, the peak of the ultralight flying era, some well-known Rotax two-stroke ultralight aircraft engines were launched:

- The highrunner, the Rotax 503 UL engine, a two-cylinder, two-stroke fan-cooled engine with a 50-hp performance. In total more than 33,000 engines of this model were sold.
- The popular engine type Rotax 277 UL, a single-cylinder, air-cooled engine that was mainly sold to North America in the first few years of production.
- Further developments for the UL aircraft market were the 377 UL and the 447 UL engine, both 2-cylinder, air-cooled engines, with a performance ranging from 36 - 46 hp.

The first liquid-cooled Rotax aircraft engine, the Rotax 535, was developed in 1983 for the certified market.

In 1984, the Rotax 532 engine, a liquid-cooled two-cylinder, two-stroke engine was introduced onto the ultralight market.

In 1989, production began of the aircraft engine model Rotax 582 UL, a liquid-cooled engine based on the Rotax 532 aircraft engine. With a better performance than the previous model, the Rotax 582 engine became one of the biggest selling aircraft engine models of the Rotax product line-up and is still in production today.

“We will always remember that the Rotax two-stroke customers were the basis for our success. Without that market, Rotax never would have entered the aviation business,” Uhr is convinced.

1989: A 4-stroke engine concept that prolongs the success of Rotax aircraft engines

Despite these developments, market demand for a modern, reliable high-performance engine increased in the 1980s. In 1985, the company began developing the Rotax 912; a project dedicated to the aircraft market. For the very first time, all conditions needed for an aircraft engine were considered, like high security, high-quality standards for airplanes, etc. In consideration of the experimental airplanes and gliders, the power-to-weight ratio was one of the main targets.

A major advantage in the development of the Rotax 912 engine was the opportunity to influence the whole design engineering. The Research & Development effort was impressive but the big advantage was the ability to supervise the project from concept to production.

“With the development of a flat four-cylinder engine, we wanted to reach the next level – the 80-horsepower engine category. The engineers of the 912 engine concept were pilots. They fully understood the market requirements. To put it in a nutshell, the engine was developed by pilots for pilots,” said Uhr.

Finally, in 1989, serial production began of the first Rotax 912 UL engine. The target was the JAR-22 certification of the responsible aviation authority (Austrian Type Certification), which was received in 1990. The Rotax 912 A was born; The ‘Type Certificate’ of the Rotax 912 F engine in the United States followed in 1994.

In parallel, BRP-Rotax worked on the national approval as a production and maintenance organisation. The approval was received from the national aviation authority in 1990.

The Rotax 912 engine, with 80 hp and weighing only 56 kilograms, was quickly recognized in the gliding sector and substituted other heavy engines. The TBO was 600 hours when the series was launched, but is now just 2,000 hours.

Gradually, different aircraft manufacturers developed airplanes and installed the new Rotax 912 engine.

In 1993, the Rotax 912 engine was modified and equipped with a turbocharger for an altitude flight test. The airplane (HK36 Super Dimona model) reached an altitude of 33,000 feet (approx. 11,000 m). The concept was successful. The company started the development of the turbocharged Rotax 914 engine with 115 hp, and serial production began in 1996.

The certification of the Rotax 914 F engine under the FAR 33 and JAR-E programs was obtained in the same year.

In parallel with the gliding sector, the ultralight (UL) – as well as the advanced UL – and the experimental airplane category further expanded. Due to the heavier take-off weight, more power was required.

At the same time, the General Aviation Revitalization Act was signed in the United States. It was intended to counteract the effects of prolonged product liability on general aviation aircraft manufacturers by limiting the duration of their liability for the aircraft they produce.

The development of the 100-hp Rotax 912 ULS engine began following market demand for more horsepower. The first engines for the ultralight market were delivered in 1999, followed by the certified version – the Rotax 912 S – also in 1999. More horsepower was one of the characteristics and the engine was intended for airplanes with a higher load capacity.

“Without any doubt, the Rotax 912 / 914 engines have substantially benefitted the light and ultralight aviation business. There is quite a large number of aircraft that were designed specifically for the Rotax aircraft engine series,” mentioned Uhr.

More than 50,000 engines of the Rotax 912 / 914 series were sold since 1989, resulting in more than 45 million flight hours of the fleet.

Important milestones for the Rotax aircraft engines business were the receipt of the European Aviation Safety Agency (EASA) Design Organisation Approval (DOA) in 2003 and the Production Organisation Approval (POA) in 2005. “We are very proud since a small number of organizations hold both approvals,” said Uhr.

2012: A proven concept and the latest engine technology

The market demand for a fuel injection system, similar to the systems of the automotive industry, has grown in the new century. In 2012, the company introduced the Rotax 912 iS engine with a modern fuel injection system and digital engine control unit (ECU) to ensure optimal fuel and air mixture at any altitude for longer flight range, lower operating costs and CO₂ emission reduction.

An even newer development introduced on the market is the Rotax 912 iS Sport. The engine is a development of the fuel-injected Rotax 912 engine series and delivers an improved take-off performance which results in a better climb rate and shorter take-off-run.

The Rotax 912 iS Sport engine provides the best fuel efficiency in its class. The new engine delivers 38% - 70% better fuel efficiency than comparable competitive engines in the light sport, ultralight aircraft and the general aviation industry.

The modern fuel injection system combined with a digital engine control unit makes the Rotax 912 iS Sport engine the most advanced concept in its class. The engine provides a time of 2,000 hours between overhauls (TBO); the same TBO as the 912 engines.

With more than 175,000 engines sold in 40 years, Rotax aircraft engines dominate the light-sport and ultralight aircraft industry. With 19 authorized distributors and a network of more than 220 points of sale, BRP supports customers worldwide and supplies Rotax aircraft engines to more than 80% of all aircraft manufacturers in its segment.

Upcoming events

The EAA AirVenture Oshkosh, takes place from July 20-26, 2015, with more than 800 exhibitors showcasing their products and services in Oshkosh, Wisconsin, U.S.A. Visit the booth of the Rotax Service and Training Centres and learn more about Rotax aircraft engines.

About BRP

BRP (TSX: DOO) is a global leader in the design, development, manufacturing, distribution and marketing of powersports vehicles and propulsion systems. Its portfolio includes Ski-Doo and Lynx snowmobiles, Sea-Doo watercraft, Can-Am all-terrain and side-by-side vehicles, Can-Am Spyder roadsters, Evinrude and Rotax marine propulsion systems as well as Rotax engines for karts, motorcycles and recreational aircraft. BRP supports its line of products with a dedicated parts, accessories and clothing business. With annual sales of over CA\$3.5 billion from 107 countries, the company employs approximately 7,600 people worldwide.

www.brp.com
[@BRPnews](https://twitter.com/BRPnews)
www.flyrotax.com

Ski-Doo, Lynx, Sea-Doo, Evinrude, Rotax, Can-Am, Spyder and the BRP logo are trademarks of Bombardier Recreational Products Inc. or its affiliates. All other trademarks are the property of their respective owners.

-30-

For information:

Alexandra Reisinger
Marketing & Communications
Rotax Aircraft Engines
BRP
Tel.: +43.7246.601.698
alexandra.reisinger@brp.com