

ARCHIVED REPORT

For data and forecasts on current programs please visit

www.forecastinternational.com or call +1 203.426.0800

Grob SPn

Outlook

- The SPn project is owned by a creditor of the now-dissolved Grob Aerospace
- Daher-Socata has decided against acquiring the SPn program

Orientation

Description. Twin-turboprop-powered, 9/10-seat business aircraft.

Sponsor. The SPn assets are owned by Allied Aviation Technologies.

Status. The SPn project is currently on hold.

Total Produced. Four flyable prototypes, one static test airframe, and two production aircraft have been built.

Application. Business/utility transport, charter operations, fractional ownership programs, air taxi service, cargo transport, maritime patrol, air ambulance.

Price Range. \$8.7 million in 2009 U.S. dollars.

Grob SPn

SPn

Source: Grob Aerospace

Contractors

Prime

Allied Aviation Technologies GmbH	Lettenbachstr. 9, Tussenhausen, 86874 Germany, Prime
--	--

Subcontractor

Honeywell Bendix/King	http://www.bendixking.com , One Technology Center, 23500 W 105th St, M/D #19, Olathe, KS 66061 United States, Tel: + 1 (913) 782-0400, Fax: + 1 (913) 791-1302, Email: bendix.king@honeywell.com (Primus Apex Avionics System)
Saint-Gobain Sully	16 Rte D'Isdes, Bp 32, Sully Sur Loire, F-45600 France, Tel: + 33 238 373039, Fax: + 33 238 373005 (Cockpit and Cabin Windows)
Williams International	http://www.williams-int.com , 2280 E West Maple Rd, PO Box 200, Walled Lake, MI 48390 United States, Tel: + 1 (248) 624-5200, Fax: + 1 (248) 669-0040 (FJ44-3A Turbofan Engine)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Services/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

Design Features. The fuselage and the wing of the SPn are all-composite, constructed entirely of carbon-fiber-reinforced plastic (CFRP). The airframe minimum service life is set at 28,000 flight hours. The wing is mounted low on the fuselage; wing attachment points are made of titanium. The wing is equipped with

Grob SPn

winglets and trailing-edge Fowler flaps. The wing flaps have replaceable armor plates on their bottom surfaces. The aircraft tail has a swept fin and swept horizontal stabilizers.

The SPn has reinforced, hydraulically actuated, retractable tricycle type landing gear as well as carbon brakes and an anti-skid brake control unit.

The SPn is powered by two Williams FJ44-3A turbofan engines. The engines are mounted in nacelles on the aft fuselage of the aircraft. The FJ44-3A features Full Authority Digital Engine Control (FADEC).

The SPn is equipped with an enhanced version of the Honeywell Primus Apex integrated avionics system. The Honeywell RE100 auxiliary power unit (APU) would be available as an optional item for the SPn.

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length	14.81 m	48.58 ft
Height	5.12 m	16.81 ft
Wingspan	14.86 m	48.75 ft
Cabin maximum height	1.64 m	5.40 ft
Cabin width	1.52 m	5.0 ft
Cabin length	5.10 m	16.75 ft
Cabin volume	11.5 cu m	405 cu ft
Weight		
Maximum takeoff weight (MTOW)	6,300 kg	13,889 lb
Maximum payload	1,130 kg	2,491 lb
Capacities		
Maximum fuel	2,498 liters	660 U.S. gal
Performance		
Mmo	Mach 0.70	Mach 0.70
Maximum cruise speed (ISA; 29,000 ft)	769 km/h	415 kt
Maximum operating altitude	12,497 m	41,000 ft
Balanced field length (SL; ISA; MTOW)	914 m	3,000 ft
Range with six pax and one crew(a)	3,334 km	1,800 nm
Propulsion		
SPn	(2)	Williams FJ44-3A turbofan engines rated 12.5 kN (2,800 lbst) each.

Seating

The SPn can carry nine passengers and one pilot, or eight passengers and two pilots.

(a) ISA; 41,000 feet; NBAA IFR fuel reserves (100-nm alternate).

Variants/Upgrades

HALE G 600. Grob designed an SPn derivative called the High Altitude and Long Endurance (HALE) G 600. Specifications for the G 600 included a length of 18.65 meters (61.2 ft), a wingspan of 35.6 meters (116.8 ft), and payload capacity of 1,200 kilograms (2,650 lb). Performance estimates included a range of 11,500 kilometers (6,209 nm) and a maximum altitude of 19,810 meters (65,000 ft).

The G 600 might have been sold in both manned and unmanned configurations; a manned configuration would have consisted of one or two pilots plus two additional mission specialists. The aircraft would have

been powered by a pair of Williams FJ44 turbofan engines.

Grob SPn

Grob envisioned possible applications for the G 600 to include telecommunications research, surveying, mapping, refueling, surveillance, and testing.

Grob intended to launch full-scale prototyping of the G 600 only if a customer for the aircraft had been secured. The company estimated a period of 13 months

from program launch to first flight, with an additional 11 months for full certification.

Grob also designed a longer-range version, the G 600 ER, featuring a range of 21,000 kilometers (11,340 nm).

Program Review

Background. Grob Aerospace GmbH announced the launch of a new business jet, the SPn Utility Jet, in June 2005 at the Paris Air Show. The initial SPn prototype was on static display at the show. Previously, Grob had primarily been known as a manufacturer of gliders, military piston trainers, and corporate/utility turboprops. The SPn was the company's first turbofan-powered aircraft.

The SPn had an internal company designation of G 180. According to Grob, the aircraft was called "SPn" to denote "Special Performance, Superior Payload, and Single Pilot capabilities – all to the nth degree." Grob stated that the SPn combined the performance and passenger comfort of a light business jet with the operational versatility of a turboprop.

Initially, Grob was partnered on the SPn with the Swiss investment firm Executive Jet Investments (EJI). Each company held a 50 percent share in the program. EJI subsidiary ExecuJet Aviation Group was appointed the exclusive worldwide sales distributor and maintenance support partner for the SPn. Grob and ExecuJet had begun collaborating on the project more than 20 months prior to the June 2005 announcement of the program. ExecuJet had specified requirements for the aircraft, and Grob subsequently designed the aircraft to meet those specifications. The initial SPn flying prototype made its first flight in July 2005.

Initially, Grob attempted to position the SPn as both an executive jet and a utility aircraft. The company hoped that the SPn would find a sizable market as a utility turboprop replacement. However, interest from utility operators was less than Grob had anticipated.

Grob soon adjusted its sales campaign in order to present the SPn with more of a corporate jet image. The "Utility Jet" moniker was dropped, and characteristics such as luxury and comfort received greater emphasis in SPn sales literature.

Grob Acquired by EJI

In October 2006, EJI acquired a majority, controlling share in Grob. Subsequently, EJI operated Grob through a newly established Zurich-based holding company called Grob Aerospace AG.

Porsche-Designed Interiors

As part of a long-term partnership with Grob announced in 2006, Austria-based Porsche Design Studio, a subsidiary of Porsche Design Group, designed new interiors for the SPn. Customers had a choice of two interior layout concepts: Executive and Business. The six-seat Executive layout was furnished in wood, soft leather, and metal finishing, and had luxury carpeting and fully articulated seats. The Italian firm Geven was to supply seats for production SPns fitted with the Executive interior.

The eight-seat Business layout had an emphasis on space optimization while providing passenger comfort. Grob referred to the Business interior as a "plug-and-play" design, denoting the layout's quick-change capability. The seats in the Business interior were mounted on a fast-release mechanism, permitting conversion to an all-cargo or mixed cargo/passenger configuration.

Second Prototype Lost

The second SPn flying prototype made its initial flight in September 2006. However, in November 2006, this aircraft was lost in an accident at the Grob facility in Tussenhausen-Mattsies, Germany. The test pilot was killed in the crash, which happened during a demonstration flight.

Grob temporarily ceased SPn test flights following the accident. In February 2007, flights resumed of the initial SPn test aircraft (D-CSPN), marking a resumption of the flight certification program. In agreement with Germany's Federal Office of Civil Aviation (LBA), the flight test program resumed after completion of a 300-hour maintenance check that was combined with a thorough inspection of the aircraft.

The third SPn flying prototype made its first flight in October 2007, joining the initial prototype in the flight test program. The third aircraft was equipped with most of the systems that were slated to be installed in fully conforming series production aircraft. Its initial flight had been postponed by a few months because of delayed deliveries from certain suppliers, as well as a need to relocate some of the aircraft's systems. In the

Grob SPn

meantime, Grob took advantage of the extra time to update the SPn's flight management system.

A fourth flying prototype made its initial flight in early August 2008.

In its April 2010 report on the November 2006 crash of the second SPn prototype, the German Federal Bureau of Aircraft Accident Investigation (BFU) said that the cause of the accident was that "the horizontal stabilizer broke up in flight due to aerodynamic flutter, with the result that the aircraft could no longer be controlled." The BFU added, "Due to the absence of flight data and the limited investigation options, it was not possible to conclusively determine the factors that led to the flutter."

Insolvency

Grob Aerospace GmbH filed for preliminary insolvency in mid-August 2008. The situation arose following a review of the SPn program and schedule. The SPn effort had already suffered some delay, and the program review indicated that more delay was in store: namely, the fourth quarter of 2008 target date for certification of the aircraft would have to slip to the right. This generated a need for additional cash to see the program through to certification. However, the company's chief investor and loan provider, Irish financier Dermot Desmond, chose not to put additional funds into the program. With funding essentially dried up, Grob made the preliminary insolvency filing.

An administrator was appointed to oversee Grob. The company continued operations under the protection of German bankruptcy law. SPn development efforts, including test flights, continued on a limited basis. Assembly of the first two production SPns was completed (neither aircraft has ever flown). Design and development of the HALE G 600 variant was frozen, however. In the meantime, Grob attempted to secure a new source of funding.

Grob suffered a further blow in September 2008 when Bombardier, due to uncertainty surrounding Grob's financial position, terminated an agreement under which Grob was to develop the composite structure for Bombardier's new Learjet 85 business jet. Prior to canceling the agreement, Bombardier had considered the possibility of acquiring either Grob or just the SPn program, but ultimately decided against either option.

In early October 2008, Grob CEO Niall Olver signed a Memorandum of Understanding with an unidentified financial backer. However, the deal was not able to be finalized within the timeframe allowed by German law. As a consequence, Grob was declared insolvent on the last day of October 2008.

In February 2009, the German company H3 Aerospace purchased Grob Aerospace's core training and utility aircraft business. H3 now operates this business under the name Grob Aircraft AG. The acquisition, however, did not include the assets of the SPn business jet program.

The assets of, and rights to, the SPn project instead became the property of one of the creditors of Grob Aerospace, in exchange for mortgage rights on Grob facilities. A firm called Allied Aviation Technologies owns the SPn assets and rights on behalf of the creditor, who has never been publicly identified. Allied Aviation Technologies is headed by former Grob Aerospace CEO Niall Olver, who is also the CEO of ExecuJet Aviation Group.

In September 2010, Allied Aviation Technologies signed an exclusive agreement with the French company Daher-Socata, under which the latter evaluated the SPn as a possible basis for a new, twin-engine, all-composite business aircraft program. Later that year, two of the SPn prototypes were moved to Daher-Socata's test facility in Tarbes, France, for use in the evaluation.

In July 2012, Daher-Socata decided not to acquire the SPn program.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Jun	2005	Grob announces launch of SPn
Jul	2005	First flight of initial SPn prototype
Oct	2008	Grob Aerospace GmbH declared insolvent
Sep	2010	Daher-Socata agrees to evaluate potential SPn-based aircraft program
Jul	2012	Daher-Socata decides not to acquire SPn program

Forecast Rationale

ARCHIVED REPORT

For data and forecasts on current programs please visit

www.forecastinternational.com or call +1 203.426.0800

In July 2012, Daher-Socata decided not to acquire the SPn program. The French company had been evaluating the SPn as a possible basis for a new, twin-engine, all-composite business aircraft program under a 2010 agreement with Allied Aviation Technologies. Daher-Socata is the manufacturer of the TBM 850 single turboprop, and has been looking to expand its aircraft product line.

Allied Aviation Technologies chief Niall Olver has estimated the cost of completing SPn certification at approximately EUR150 million. Grob had about 100 orders for the SPn at the time of the company's insolvency. All SPn sales contracts were legally dissolved when Grob was declared insolvent.

Should the SPn ever be revived, it would compete in the light jet class of the business aircraft market. Its direct sales competition would come from such aircraft as the Cessna CJ4 and the Embraer Phenom 300.

Due to design compromises, the SPn is somewhat slower than much of its business jet competition. Maximum cruise speed at 29,000 feet is 415 knots. However, a number of customers might be willing to sacrifice speed in favor of the SPn's short field capability and relatively large cabin.

* * *