Flettner Fl 282 Kolibri

Le Flettner Fl 282 Kolibri était un hélicoptère de reconnaissance et d'observation réalisé en Allemagne pendant la Seconde Guerre mondiale par Anton Flettner.

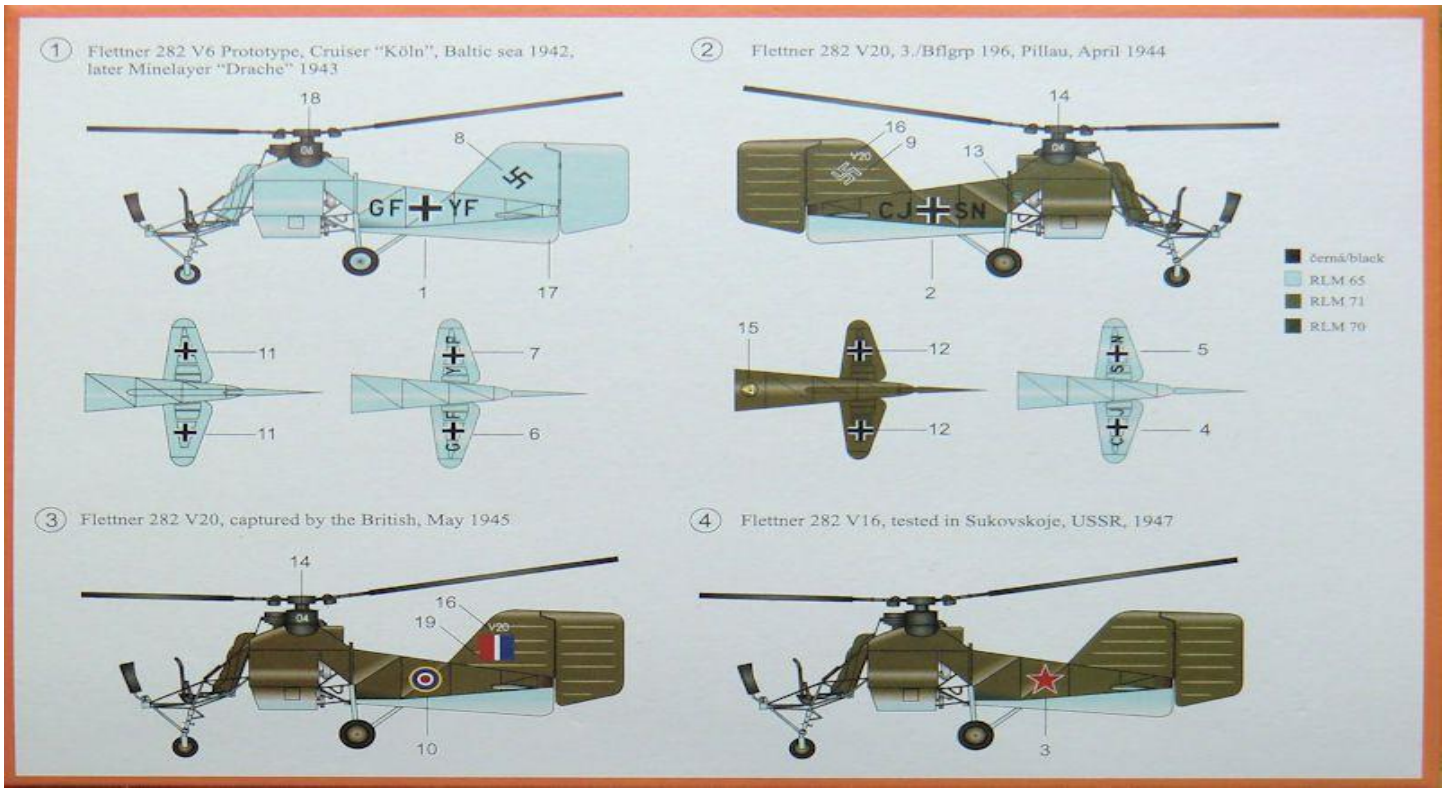
Sa caractéristique principale était son système de propulsion et de sustentation constitué de deux rotors bipales engrenants dont les mâts placés en « V » étaient entraînés par une boîte de transmission commune.

Caractéristiques techniques

Maquette

Sa construction avait commencé vraisemblablement en 1939 sur la base d'un prédécesseur nommé Fl 265. Le premier vol libre avait été réalisé le 30 octobre 1941 par le prototype Fl 282 V2 et le prototype V3 atteignit l'altitude de 3 800 m fin avril 1943.Il avait été conçu pour évoluer à partir de bâtiments de la Marine (la version Fl 282 U devait même être mise en œuvre à partir de sous-marins).

Une première fiche technique provisoire datée du 23 décembre 1943 fait état de deux variantes : les Fl 282 B-0 et Fl 282 B-1. Sur la version B-0, le siège du pilote n'était pas caréné alors que sur la version B-1, il était équipé d'une verrière en plexiglas. La cellule était composée de tubes métalliques tendus de toile. Le pilotage s'effectuait au moyen de commandes de pas collective et cyclique. Le passage du mode hélicoptère au mode gyroplane était manuel. En cas de panne moteur, le passage au mode gyroplane était automatique. La version embarquée possédait une soute à bombes emportant deux charges militaires de 5 kg chacune ainsi que des bouées fumigènes. Il était également équipé de boulons d'amarrage explosifs permettant un décollage rapide. Une version destinée à l'observation comportait un siège arrière, l'observateur étant adossé au mât rotor.



Production

La Marine allemande avait testé plusieurs versions pour la lutte anti-sous-marine et la récupération d'équipages tombés en mer (notamment en Méditerranée à bord du poseur de mines Drache) et commandé au total 110 exemplaires mais ils ne furent pas construits pour cause de manque de capacités. Par la suite l'armée de Terre (Heer) voulut tout d'abord en acquérir jusqu'à 1 000 exemplaires en 1943 mais la Luftwaffe ne voulut pas bloquer les capacités de production pour d'autres matériels et la commande fut annulée à la fin de la même année.

Après la guerre

Deux exemplaires furent transférés aux États-Unis comme prises de guerre et servirent à la société Kaman. La structure primaire et la boîte de transmission supérieure d'un troisième sont aujourd'hui exposées au Midland Air Museum de Coventry en Grande-Bretagne.

source : http://militaires-d-hier.forumgratuit.org/t548-flettner-282-kolibri
http://milguerres.unblog.fr/flettner-fl-282-kolibri/

version anglaise

The **Flettner Fl 282 *Kolibri*** ("Hummingbird") is a single-seat intermeshing rotor helicopter, or *synchropter*, produced by Anton Flettner of Germany. According to Yves Le Bec, the Flettner Fl 282 was the world's first series production helicopter.

Design and development

The Fl 282 *Kolibri* was an improved version of the Flettner Fl 265 announced in July 1940, which pioneered the same intermeshing rotor configuration that the *Kolibri* used. It had a 7.7 litre displacement, seven-cylinder Siemens-Halske Sh 14 radial engine of 110–120 kW (150–160 hp) mounted in the center of the fuselage, with a transmission mounted on the front of the engine from which a drive shaft ran to an upper gearbox, which then split the power to a pair of opposite-rotation drive shafts to turn the rotors.

The Sh 14 engine was a venerable, tried-and-true design with low specific power output and low power/weight ratio (20.28 hp/L, 0.54 hp/lb) which could (anecdotally) run for up to 400 hours without major servicing, as opposed to the more powerful 27 litre displacement, nine-cylinder BMW/Bramo *Fafnir* 750 hp radial engine powering the larger Focke Achgelis Fa 223 helicopter, whose higher output (27.78 hp/L, 0.62 hp/lb), more modern design required moderate maintenance as often as every 25 hours (such as changing spark plugs, etc., well within the norm for modern radial engines of that era). While such a heavy and low-powered engine would work well in a very small craft like the Fi 282, to try and scale it up and use an engine of equivalent power/weight ratio in the 700-1000 hp class would result in a massive and heavy engine leaving little excess capacity for cargo or passengers. 750 hp was the lowest rating that the Fafnir was available in - indeed, it was a low-power, low maintenance design compared with many other engines of this era. The Fl 282's fuselage was constructed from steel tube covered with doped fabric, and it was fitted with a fixed tricycle undercarriage. The German Navy was impressed with the *Kolibri* and wanted to evaluate it for submarine spotting duties, ordering an initial 15 examples, to be followed by 30 production models. Flight testing of the first two prototypes was carried out through 1941, including repeated takeoffs and landings from a pad mounted on the German cruiser *Köln*. The first two "A" series prototypes had enclosed cockpits; all subsequent examples had open cockpits and were designated "B" series.

In case of an engine failure, the switch from helicopter to autorotation was automatic. Three-bladed rotors were installed on a test bed and found smoother than the vibrating 2-blade rotor, but the concept was not pursued further. The hover efficiency ("Figure of Merit") was 0.72 whereas for modern helicopters it is around 60%. Intermeshing rotors were not used on a mass production helicopter until after World War Two.

Operational history

Model of the 282

Intended roles of Fl 282 included ferrying items between ships and reconnaissance. However, as the war progressed, the Luftwaffe began considering converting the Fl 282 for battlefield use. Until this time the craft had been flown by a single pilot, but by then a position for an observer was added at the very rear of the craft, resulting in the B-2 version. Later the B-2 proved a useful artillery spotting aircraft and an observation unit was established in 1945 comprising three Fl 282 and three Fa 223 helicopters. Good handling in bad weather led the German Air Ministry to issue a contract in 1944 to BMW to produce 1,000 units. However, the company's Munich plant was destroyed by Allied bombing raids after producing just 24 machines. Towards the end of World War II most of the surviving Fl 282s were stationed at Rangsdorf, in their role as artillery spotters, but gradually fell victim to Soviet fighters and anti-aircraft fire.

Variants

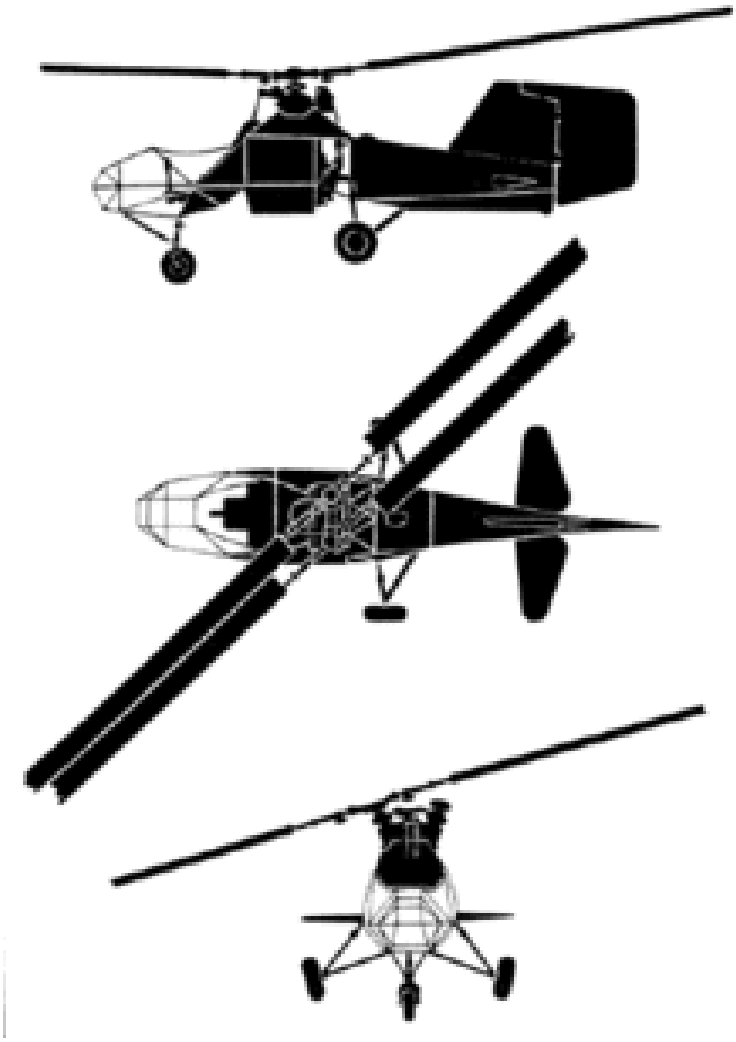
Fl 282 V1/7
Prototypes.

Fl 282A-1
Single-seat naval reconnaissance type, for operation from cruisers and other warships. Tested in the Baltic, Mediterranean and Aegean Seas.

Fl 282A-2
Single-seat reconnaissance type for submarines equipped with special deck hangar, project only.

Fl 282B-1/B-2
Two-seat land reconnaissance-liaison helicopter

Specifications (Fl 282 V21)



Fl 282

General characteristics

- **Crew:** 1
- **Length:** 6.56 m (21 ft 6 in)
- **Height:** 2.2 m (7 ft 3 in)
- **Empty weight:** 760 kg (1,676 lb)
- **Max takeoff weight:** 1,000 kg (2,205 lb)
- **Powerplant:** 1 × Bramo Sh.14A 7-cyl. air-cooled radial piston engine, 119 kW (160 hp)
- **Main rotor diameter:** 2 × 11.96 m (39 ft 3 in)
- **Main rotor area:** 224.69 m^2 (2,418.5 sq ft)

Performance

- **Maximum speed:** 150 km/h (93 mph, 81 kn) at sea level
- **Range:** 170 km (110 mi, 92 nmi)
- **Service ceiling:** 3,300 m (10,800 ft)
- **Hover ceiling:** 300 m (984 ft)
- **Rate of climb:** 1.52 m/s (299 ft/min)
- **Rotor loading:** 8.84 kg/m2 (1.81 lb/sqft)

source : https://en.wikipedia.org/wiki/Flettner_Fl_282