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BRISTELL: Profile of a Manufacturing Phenomenon

A year ago, the Czech manufacturer Bristell BRM Aero promised it would, by the beginning of 2022, certify (under the CS-23 standard) its B23 aircraft equipped with the Rotax 915 engine. And it kept its word! The B23 912 was already a favourite in several respects: manufacturing quality, ergonomics, piloting...and with the Rotax 915 it also obtains that of performance.

Milan and Martin Bristela, father and son, founders and managers of the BRM Aero company, held an event at the Courchevel Altiport in the French Alps to present their newly certified aircraft: the B23 915. They chose a demanding environment to assess their machine in all conditions, and it also represented a beautiful setting to photograph the aircraft.

Kunovice: Cradle of Czech Innovation

This CS-23 certified aircraft comes to us from Kunovice (LKKU) in the Czech Republic. Kunovice is not a field like most others. It is one of the cradles of the Czech aeronautical history, a nest where thousands of planes were born. Geographically located in the south-east of the Czech Republic, not far from the town of Zlin, the Slovak and Austrian border, it is here, around runway 02/20, that several companies are located, including the oldest, LET Kunovice. Among the aircraft produced at the airport since 1935 are the Aero 45, L-29 Delfin, LET C-11 a licensed Yak 11, LET 200 and its variants, the famous LET 410 and LET 610. This was a company that employed 5,500 people until the fall of the Berlin Wall in 1989.



LEFT TO RIGHT: MARTIN BRISTELA, EMMANUEL LAURENT, (FRENCH BRISTELL DISTRIBUTOR) AND MILAN BRISTELA.

A Family Story

BRM Aero is the most modern company on the field. It has 10,000m² of new buildings and a large hangar, built in 2019. The masters of the place are a father and his son, Milan and Martin Bristela. Milan, 63 years old and the CEO, is a discrete aeronautical engineer with an impressive CV, a true living bible with whom we spend hours discussing with passion. "The teacher" would be a nickname that suited him well.

After studying engineering specialising in aeronautical development and production at the Military University of Brno at the end of the 1970s, he worked as a fatigue analysis specialist at LET alongside some of the greatest aeronautical engineers of the time. In disagreement with the catastrophic management of his partner, he separated and two years later founded his own company with his son Martin: BRM Aero.

Since 2009, they have together produced more than 650 machines that fly around the world. With 110 employees, BRM Aero now releases four machines per week. In the catalogue you will find the XL 8, fixed-gear or retractable gear, which is very well known in the ULM world and which also exists in a classic-gear version. But also there is the B8, a two-seater high-wing aircraft which is finishing its flight tests.

B23: Drawing on Heritage

The B23 is inspired by the NG5 (XL8), but they nevertheless have several differences. The B23 912 is 150 kg lighter and the 915 155 kg lighter. The spar and the wing are reinforced and there is a difference of one metre in wingspan. The B23 has many qualities — "the general line is beautiful, harmonious, balanced. It's a nice little plane," says the company.

The structure is classic riveted aluminium, "a well-mastered and robust technique". The B23 has 1,700 parts produced at the factory, and requires 4,800 rivets. The rivet-head holes are filled with a syringe with resin for sealing. The low wings can be removed quickly by releasing the four-point attachment, making it easy to put the aircraft in a container for transportation. The flight controls are rigid, with connecting rods "guaranteeing precision piloting and harmonious controls." The tricycle landing gear consists of two composite half blades (for the main landing gear), designed for 850 kg, and a nosewheel based on a teleflex system.

The only composite parts are the propeller spinner, the fairings at the wing root, the canopy support, the cowl, the winglets, the elevator, and the rudder termination. The wing is totally devoid of aerodynamic appendages, a sign of high design quality. It has been carefully studied by Milan, who chose an MS ('Medium Speed') profile — MS316 at the root and MS 313 towards the tip of the wing, thus giving a twist guaranteeing healthy behaviour and roll control at critical incidences.

Two luggage compartments in the middle of each wing can accommodate 20 kg (40 kg total), in addition to 15 kg in a trunk behind the pilots. The tanks have a capacity of 120 litres (86.4 kg) offering 5-6 hours of flight, depending on the regime. A large oil hatch on the engine cover allows easy inspection. Mechanics will appreciate the space that the B23 allows for access to the engine, and everything is ventilated. Volume is a strong point of this aircraft, something you realise once seated on board — including 1.30 m width at the shoulders, which is appreciable.



Comfortable, Functional Cockpit

Access to the cockpit is very easy thanks to a small step well located near the trailing edge. A handle between the headrests allows you to hold on before sliding into the luxurious leather interior of the cabin. The seats are comfortable, with an armrest, and the dashboard is clear and well-equipped: Garmin G3X, GMC 507 autopilot, GAP 26 AOA (Angle of Attack) gauge, emergency horizon associated with an independent battery, Garmin GNC 255A NAV/COM+VOR antenna, and a red LED lighting for night flying.

A sector throttle and hydraulic variable pitch control is provided as standard (there will be no fixed pitch version), and the cockpit also features a fuel selector, flap selector, ergonomic stick with roll trimmer adjustment and electric pitch on the joystick, and a parachute handle. "We can say that everything falls perfectly to hand," says Bristell. Small pockets at the sides allows you to store a few cards or documents. "Everything has been well thought out."

Instructors will enjoy spending a few hours flying in this comfortable environment, as will their students. "A welcoming and comfortable workplace is important." The rudder bars are adjustable with a small pull tab. The ergonomics of the pedals is interesting because it is in two parts, thus avoiding unwanted pressure on the brakes.

Flying the Bristell B23 915

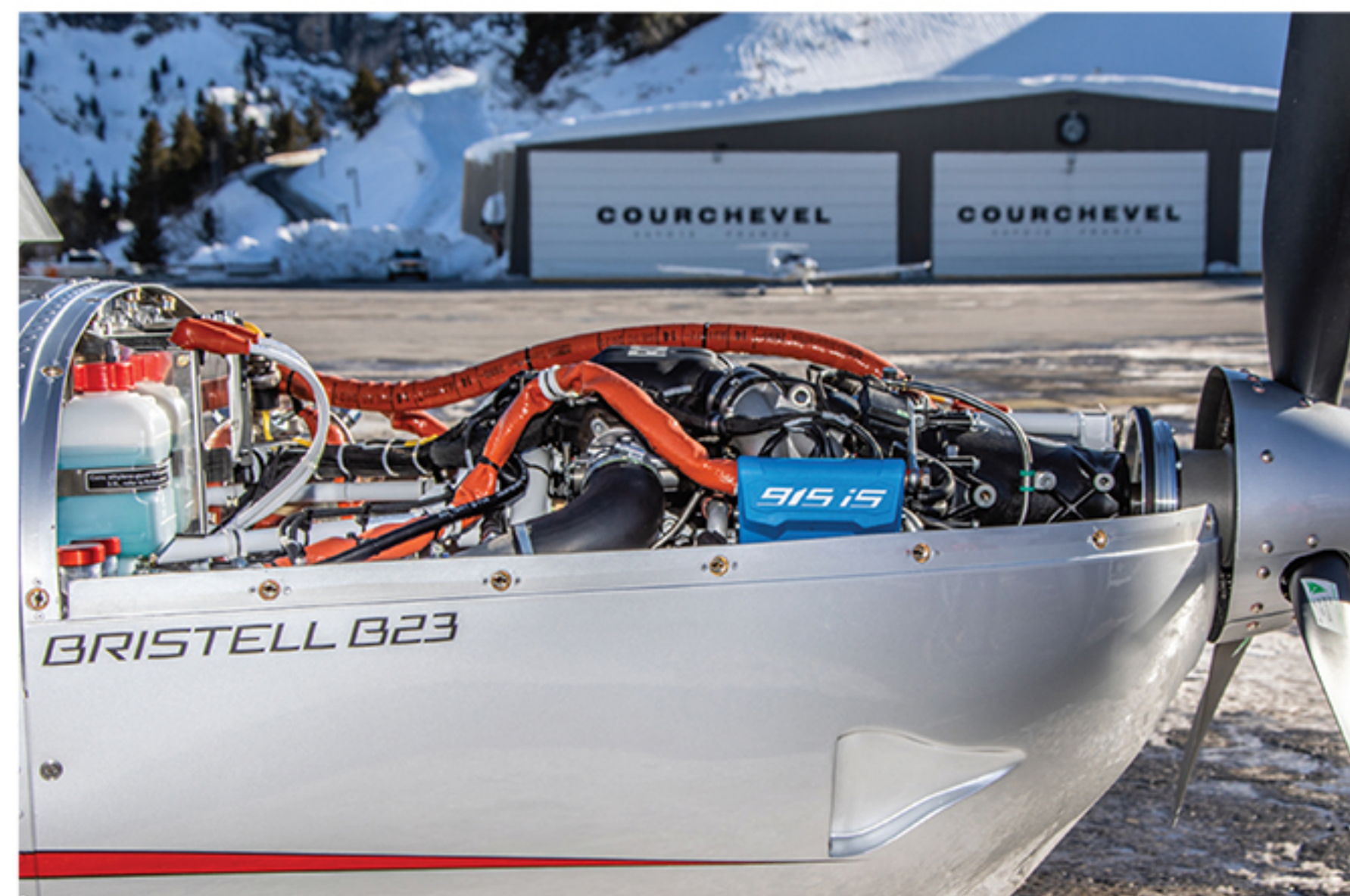
The management of the Rotax 915 is novel. It is a more complex environment than a 912 and requires greater rigour from the pilot. As it works with a great electrical dependence, everything is redundant: two generators, two alternators, two pumps, therefore two separate circuits, A and B. We start by starting the PFD (Master button) and then we launch the ELT for alignment of the HRS.

Lined up on Courchevel runway 04, full throttle, the B23 915 pulled out of the ground effect before it was halfway along the runway (537 m). Quickly it accelerated to 100 kt and you have to show it a pitch-up attitude so as not to exceed V_{fe} , and quickly retract the flaps. Courchevel is at an altitude of 6,588 ft and thanks to the turbo the B23 915 does not lose power at altitude. We climb rapidly towards Mont Blanc, displaying 82 kt at VY and 1750 ft/min. Arrived at FL150, 5000 rpm, 35 inches at the intake we have 135 kt of TAS for a fuel consumption of 24 litres/hour. A test at full intake pressure (48.5 inches) and full throttle at 5,000 rpm, the B23 915 flew at 157 kt for 40 l/h. With our 120 l in the wings we can fly over 450 nm!

We descended to 8,000 ft to try the performance with an economical display, i.e. 45% power, we obtain 110 kt TAS for only 17 l/h, enough to last seven hours in the air.

The stall tests in all the configurations give a parachute drop between 39 kt and 43 kt. The plane warns and shows good healthy behaviour. Handling tests at different speeds show that the controls harden with speed, especially at the ailerons and remain very soft at low speeds. The B23 915 is precise thanks to its rod controls.

The most impressive thing in flight is the superb visibility offered by a magical panorama of the Alps. The return to Courchevel and the landing are a formality for the B23. This plane has all the assets: that of a fast traveller if you are in a hurry, or an economical plane if you want to enjoy the scenery. Just enough time to put on the skis once the engine is off (be sure to wait two minutes for the turbo) and the ski slopes are ours! **A fabulous experience with this small plane that has everything a big one can offer!**



TECHNICAL SPECIFICATIONS

Certification:	CS-23
	Metal construction
Engine:	915 iS
Propeller:	Three-bladed MTV Prop, Hydraulic variable pitch
Cell parachute	
Undercarriage:	Tricycle, fixed, bladed, conjugate nose wheel

Leather interior
Foot brakes

DIMENSIONS

Wingspan:	9.13m
Wing area:	11.75m ²
Wing loading:	51.06 kg/m ²
Length:	6.45m
Height:	2.28m
Cabin width:	1.30m

AVIONICS

Garmin G3X
Garmin GMC 507 autopilot
with emergency LEVEL button
Night VFR

WEIGHTS & VOLUMES

Empty mass:	440 kg
Max take-off weight:	750 kg
Tank capacity:	120 l
Payload fully loaded:	224 kg
Cockpit luggage compartment:	15 kg
Wing luggage compartment:	2 x 20 kg
Load factors:	+4/-2g

SPEEDS (915 IS)

VS1 stall (smooth):	43 kt
VS0 stall (full flap):	40 kt
Maneuvering speed V_A :	98 kt
Max cruising speed:	157 kt
VNE:	156 kt
Vy:	75 kt - 1750 ft/min
Vx:	66kt
Take-off distance (passing 15 m):	469 m
Landing distance (passing 15 m):	329 m

For more information
please contact BRM Aero:

www.bristell.com