



The first SHARK prototype came into existence in 2009. The first three aircraft were delivered in 2011, and at the beginning of 2013 SHARK received Czech and German type certificates. As of March 2022, more than 100 aircraft had been delivered to 22 countries worldwide, with Zara's SHARK bearing S/N 080.

# SHARK Aircraft Celebrates Round-the-World Flight

In January 2022, SHARK went down in history when one of its aircraft conveyed 19-year-old British-Belgian Zara Rutherford around the world, leading to her becoming the holder of two Guinness World Records. For the whole five months, 200 flight hours and 52,000 kilometres, SHARK proved its reliability and versatility far beyond any doubt.

The aircraft and its technical condition, which was being checked non-stop thanks to online data sharing, did not raise even a single worry although the conditions were truly extreme. It was rather weather pitfalls which made the SHARK team restless. Freezing temperatures combined with snowing in Iceland, Canada, Alaska and Russia; heavy rains in the wettest city in the world – Quibdo in Colombia — as well as in Indonesia or Singapore; thunderstorms in the whole region of South-East Asia; or hurricanes in the US, and a super-typhoon off the East coast of The Philippines; smoggy areas in South Korea and India; strong gusting winds in Dubai or in Russia; and, last but not least, desert heat and haze in the Middle East, or earlier in Mexico and in the south of the US. Even the last two legs in Europe did not go according to plan due to weather issues.

## Challenging Flights

While SHARK.AERO's CEO, Vladimír Pekár, considers flights above Iceland, Greenland and over the Bering Strait to be the most difficult and even too much given local low cloud cover combined with low temperatures, Zara reported long flights above uninhabited Siberian lands to be the most demanding due to almost no possibility of diversion.

Nonetheless, throughout the expedition, Zara could count on SHARK's performance, uncompromising aerodynamics, incredible flight characteristics, manoeuvrability, and capability to be operated on

all surfaces and in all climates, whether in freezing Magadan, Russia with temperature as low as -34°C or in Monterrey, Mexico with temperature climbing to +36°C.

Altogether the circumnavigation took SHARK and Zara across 30 countries and five continents. The longest flight (2,000 km) took place from Mumbai, India to Al-Ain, the UAE, and the longest flight over water (1,861 km) led from India to the coast of the Sultanate of Oman. The highest altitude of 12,750 ft was recorded above Greenland. On the other hand, while detouring over the Sea of Japan to avoid North Korean airspace, the altitude of just 7,000 ft impeded any successful radio transmission.

## What's SHARK?

What is the SHARK aircraft and how was the aircraft with Serial Number 080 modified for the record-breaking journey? Zara was lent an ordinary, fully equipped SHARK with main landing gear doors, heated pitot tube and an integrated parachute.

The configuration comprises Rotax 912 ULS 100hp engine; Woodcomp two-bladed hydraulically adjustable propeller; 150-litre fuel tanks; 92-litre Turtle-Pac tank (with pump) on the rear seat; Dynon SkyView HDX avionics with autopilot; anti-collision system; and Flybox OBLO back-up EFIS.

**Modifications:** A valve and switch were added for pumping fuel from the bladder tank into the fuel

tank in the right wing. Back-up Trig radio with antenna (not needed at all throughout the journey). Integrated Iridium satellite phone. Removed sidesticks and other control systems on the rear seat.

**Spare parts:** Reserve tyre, regulator, accumulator, ventilating flaps' servo, oil and spark plugs.

**Applied cruise regime:** 5,000 RPM, MAP 26 = consumption of 20 l/h, speed of 260-270 km/h (in fact a little bit less – uncleaned plane, GoPro camera on the wing and elevator, another antenna), endurance of 12 hours, range over 3,200 km. Speed of 250 km/h for planning and flight in strong turbulence. Most flights lasted for 4-5 hours, in some cases less. The longest, Mumbai to Al Ain, took eight hours.

**Support and failures:** Zara could address the SHARK team even during flights and she did so few times. The biggest issue was a clogged pitot tube following take-off from Spaceport America, which was repaired by local mechanics after a safe landing back on the ground. A ventilating flap servo was replaced in Russia. Dynon logs (up to 30 hours in case of second-by-second sampling) being sent by Zara to the SHARK team enabled remote diagnostics. After landing in Singapore, she asked for a voltage check. Log analysis indicated an issue which was solved by replacement of the regulator as well as accumulator for precautionary reasons.

More information about SHARK aircraft available at [www.shark.aero](http://www.shark.aero).