



Electrifying Flight

Rolls-Royce is leading a highly specialised challenge to build the world's fastest all-electric aircraft. Our zero-emission 'Spirit of Innovation' aircraft is expected to make a run for the record books with a target speed of 300+ MPH later this year.

Inspiring tomorrow's scientists and engineers is a key aim of the project and we are proud to be working with fly2help, a charity that supports our aims to engage with young people and get them thinking about a possible career in aviation.

Here's a look at the great innovation in our record breaking aircraft.

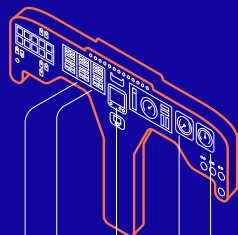
Aircraft name	Spirit of Innovation
Max power	400kW
Top speed	300+ MPH
CO2e	Net Zero



At max power the system delivers more power than a Formula E car at 400kW or 535 horsepower.

Controls

This all-electric racer features a state-of-the-art controls system, providing the pilot all the information required to fly safely and quickly.



Power usage

Temperature warning

IAS knots

Maximum indicated power available

Altimeter

Batteries

With 6,000 battery cells on board, ACCEL is truly a feat of design and engineering. The world's most energy-dense flying battery pack contains a bespoke cooling system to regulate heat and enough energy to power 250 homes.

Powertrain

Built upon Rolls-Royce's world-class expertise in aviation design and safety, ACCEL's all-electric powertrain is the key to achieving 90% energy efficiency and zero-emission flight. By comparison, Formula 1 race cars top out at 50% efficiency.

Motors

For the record attempt, ACCEL will use three 750R lightweight e-motors manufactured by the British electric motors company YASA. Combined, these power-dense motors will deliver more than 500 horsepower to the propeller at a lower RPM than a conventional airplane, which means increased stability and less noise.

Propeller

Three electrically actuated blades spin at 2,400 RPM

Inverter

The powertrain will run at 750 volts, similar to a Formula E racer, enabling high-power output at relatively low weight.

Active Thermal Management System

Cooling radiator
Coolant pumps

Auxiliary Systems

ACCEL's avionics bay contains the control hardware, including the engine control unit (ECU), power distribution unit (PDU), and flight sensors.

Airframe

The proven sport-class aircraft is specially designed for air racing.



Regulating the temperature of the battery pack is one of the biggest design challenges for the engineers.

Length 23 ft

Wingspan 24 ft