Inside the RRS Sir David Attenborough

The RRS Sir David Attenborough is built to withstand harsh environments

Countdown begins to the first mission of one of the world's most advanced research vessels

This July will see one of the most sophisticated floating research platforms ever built take to the sea.

Packed with state-of-the-art labs, testing facilities, research equipment and unmanned drones, the RRS Sir David Attenborough has been designed to uncover the mysteries of our polar regions, helping scientists research the oceans, atmosphere, sea beds and ice located at some of the most remote and inhospitable parts of the world.

Commissioned by the Natural Environment Research Council (NERC) in 2014, the vessel will be operated by the British Antarctic Survey, replacing its two existing ships – the RRS Ernest Shackleton and the RRS James Clark Ross, which are nearing the end of their lives in polar exploration.

Named after legendary naturalist and broadcaster Sir David Attenborough, the ship will operate throughout the year, spending the northern hemisphere's summer in the Arctic, then sailing south for the southern summer, carrying out research and shipping supplies and staff to the British Antarctic Survey's bases and research outposts.

Due to its nature as a polar vessel, the ship has been designed to operate in extreme environments, with the ability to break through ice up to one metre thick. It can also carry enough fuel and food to remain at sea for up to 60 days at a time without needing to take on fresh supplies from support ships.

But it's in the scientific field that the ship is truly groundbreaking. It's equipped with both submersible and flying automated and remote-controlled drones. It also contains a 'moon pool' – a shaft running right through its middle, open to the sky at one end and the ocean depths at the other, so the remote craft can be launched and recovered.

Environmentally friendly visitor

Of course, for a ship that's tasked with keeping an eye on the damage being done to our polar regions, the last thing its designers want is for it to become part of the problem.

To this end, the vessel has been designed with four main Rolls-Royce engines that operate on ultra-low-sulphur fuel, limiting its sulphur dioxide emissions.

The ship is also fitted with an oily bilge water separator that consists of a high-speed centrifuge to reduce the oil content of the bilge water discharged. Biodegradable oils have also been used wherever possible. It can also store its own sewage for up to 45 days when it's in parts of the world where even treated sewage discharge isn't allowed.

The Rolls-Royce engines powering the ship are enormous feats of engineering alone

Sir David Attenborough officially launches the ship with his name

Introducing Boaty McBoatface

As a brand new research vessel designed for 2019 and beyond, the RRS Sir David Attenborough has been designed to act as a mother ship to a range of highly sophisticated remote and automated drones. One of these automated vessels is called Boaty McBoatface.

At just over 3.6 metres long, it's an 'autosub', an automated submersible that can travel for 2,000 kilometres on its own at depths of up to 6,000 metres.

One of three such marine robots carried by the mother ship, its ability to travel under ice for prolonged periods will enable it and its sister drones to explore up to 95 per cent of the ocean.

The autosub got its decidedly wacky name after the UK's Natural Environment Research Council conducted a poll to ask the public to name the ship itself (that would eventually be named the RSS Sir David Attenborough). Boaty McBoatface topped the results after it was suggested by a former BBC Radio Jersey presenter as a joke that backfired.

Boaty McBoatface is an unmanned submersible designed to explore beneath the ice

21st-century explorer

The RRS Sir David Attenborough features some of the most sophisticated research tech available today