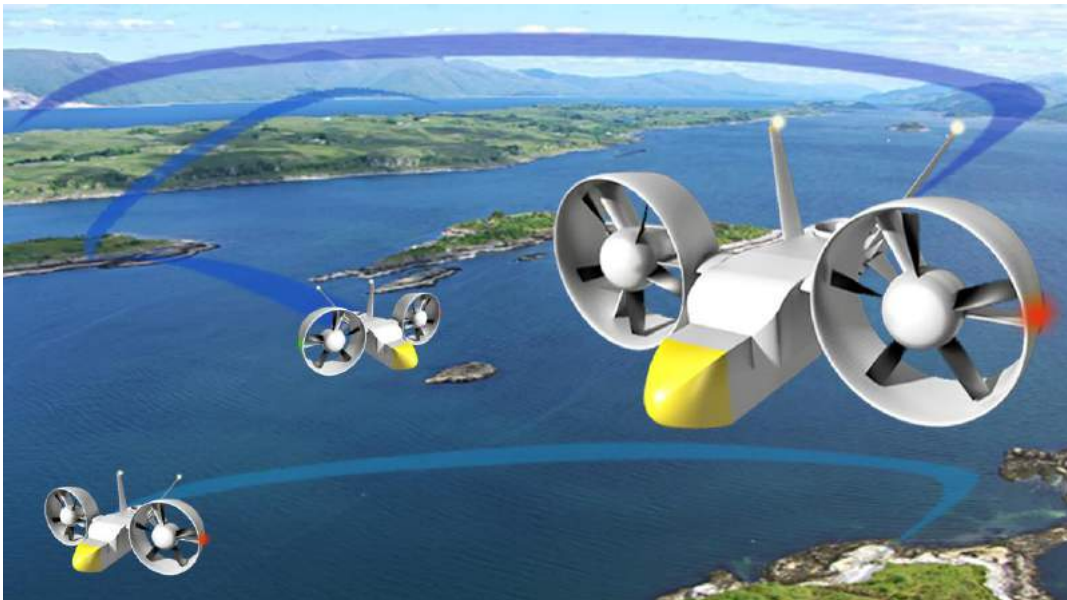


SkyHopper[®]

ACD-200S Surveyor variant



Designed and built in Scotland

What is Sky Hopper[®]?

Sky Hopper[®] is the central platform of an unmanned aerial system designed and built in Scotland.

Initial target uses are in remote and isolated areas worldwide, with a focus on coastal marine operations.

The platform uses a core vehicle with interchangeable cargo modules. This provides flexibility in potential mission uses. These include:

- Surveying payloads such as multi-spectral cameras, LIDAR, radar, atmospheric gas detectors, data loggers and other survey apparatus of value.
- Equipment delivery and recovery to and from distant sites that can be difficult to access. Our aim is to offer a completely automatic collection system.
- Cargo logistics into remote and isolated places where critical supplies for infrastructure services are needed.

Over the summer of 2018 Main Hunter Aerospace Ltd, the developer representing a consortium of innovators, built a structures and engineering demonstrator.

Primarily built of alloy, this platform provides for the stress calculations and hard-point locations for a repeatable manufacturable system involving carbon fibre sub-assemblies connected to an alloy core.

The development team is now working on an electrical and electronics demonstrator. The goal is to develop a system capable of fast repeated production at economic cost with easy field servicing.

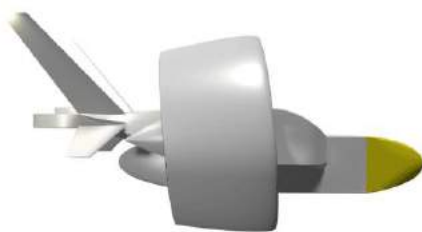


The Sky Hopper structures and engineering demonstrator on show at the Marine Alliance of Technologists and Scientists for Scotland in Glasgow

An electric workhorse

Sky Hopper[®] is a tri-fan vehicle with both vertical take-off and landing (VTOL) and cruise capability. The initial design has the code name ACD-200S – a two metre design platform focussed on surveying missions¹.

Two large main fans drive the vehicle; the third smaller vectored fan is for flight control. The main fan ducts rotate to become ring wings providing lift in cruise.



Cruise mode



VTOL Mode

Flight duration and distance depends on the mission but an initial duration of one hour in cruise is targeted. VTOL operations are power intensive so repeated “hops” during a survey exercise reduce flight duration.

A low centre of gravity and a short vehicle length provide stable control in wind and offer tight landing zone performance.

Sky Hopper[®] is electrically powered. The re-chargeable battery pack can be safely and easily changed in the field.

Maximum payload is 20kg in a cargo bay 800mm long x 400mm high x 300mm wide. A powered tray system allows drop off and collection or a look-down view for survey equipment.



*Sky Hopper in the workshop being prepared for display.
The underslung cargo module sub-system is clearly visible.*

¹ ACD = Autonomous Cargo Drone

The Cargo Module – a delivery sub-system

Sky Hopper's cargo module is designed to be as flexible as possible. This maximises the commercial potential of the system platform.

Its three segmented elements make up a mission-adaptable sub-system. The aim is to allow cargo to be delivered and retrieved either manually or automatically.

1) The top segment

The top segment has two bar handles for easy carrying in the field. These also act as locking bars to bring the module into a stowed position on the vehicle. This segment can be used to carry unusual shapes of cargo on short flights.

2) The central segment

The central segment provides a standard 800mm x 400mm x 400mm equipment space. There is also room for a winch at the forward end to allow a tethered rover or submersible to be deployed and recovered.

3) The lower section

The lower section carries a sliding tray to allow automatic delivery of equipment, cargo pallets or expeditionary robot rovers or submersibles.

One vehicle can have multiple cargo/equipment modules. We are working with a number of organisations on collaborations to define, specify and build diverse mission capabilities. Payload preparation can be contracted out to third parties.

The module has a locator beacon so that Sky Hopper can engage in networked operations optimising the use of the powered lifting platform across a wide area to move cargo modules. Using renewable power sources to re-charge our battery packs will allow us to operate a networked delivery solution at low overhead cost.



Sky Hopper is ship operations capable for rapid replenishment support of expeditions and disaster relief.

Equity release – winter 2018

The Sky Hopper® project is funded privately. It is led by a consortium of manufacturers and professional technologists.

We are further supported by the academic and research community in Scotland - acting as problem-solvers.

We are releasing equity for further development using a “syndicated pledge” approach. This allows investors to offer to purchase shares in our project in £250 “blocks”. The accumulated pledge offers will be called in as separate tranches once pre-agreed totals are reached.

To find out more please contact us at: skyhopper@mainhunter.co.uk

We will respond with more detail about the pledge scheme.

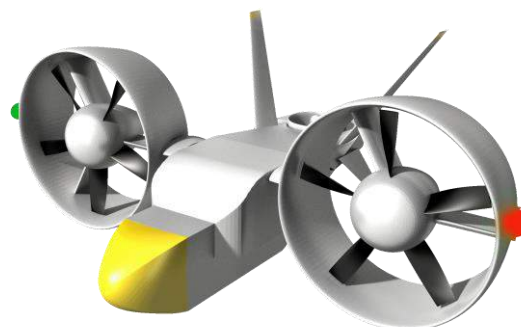
There are of course uncertainties associated with this investment and you should only offer to invest if you can accept the loss of these funds.

The Special Enterprise Investment Scheme (SEIS):

Our plan for all equity holders is to use the Special Enterprise Investment Scheme (SEIS) which allows investors to claim income tax relief on their investment. There are other capital gains advantages as well.

In order to meet new rules for approval of the terms of the Special Enterprise Investment Scheme we have to show HMRC that we have the support of a known group of investors. This is why we are using the pledge system above.

The goal for this investment round is to enable us to prepare for Sky Hopper’s first flights in Scotland 2019. Please help us reach that goal by offering a pledge.



Innovation in practice

SkyHopper®

ACD-200C Carrier variant



Designed and built in Scotland