

Robotic drones to 'print' emergency shelters for those in need

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Whilst many drones are used for photography and surveillance, the drones in this project will utilise a revolutionary ABM system to remotely manufacture building structures such as shelters and bridges for those in need.

A new research project aims to develop the world's first flying robots capable of autonomously assessing and manufacturing building structures to help areas suffering from natural disasters.

The four year collaborative [research project](#) entitled 'Aerial Additive Building Manufacturing: Distributed Unmanned Aerial Systems for in-situ manufacturing of the built environment' involves researchers from

the University of Bath, Imperial College and University College London.

Providing disaster relief

The research team aims to develop drones that can use an Additive Building Manufacturing (ABM) system to reach remote and disaster areas, and 3D print structures such as shelters and buildings, providing much needed [disaster relief](#).

The drones being developed could fly to a disaster zone, scan and model the landscape using Building Information Management (BIM) systems, design temporary shelters, and print them on the spot. This could give those in need a place to live until emergency services personnel can reach them.

Revolutionising remote construction

ABM is a key technological [building](#) revolution currently transforming the construction industry by allowing the 3D printing of buildings and building components, resulting in quicker build times and reduced material and transport costs.

However, due to their large size, ABM systems are inflexible making it difficult for them to undertake maintenance and repair work, especially in remote and rural areas.

World's first mobile factories

In order to use this type of system for post-disaster reconstruction activities where the manufacturing speed of ABM would be hugely beneficial, the research team aims to develop the world's first ABM system consisting of a swarm of aerial robots that can autonomously

assess and manufacture building structures.

To do this, the team plans to miniaturise ABM and give it aerial capabilities so that it can be more mobile and able to manufacture complex high-rise structures. This would enable the robots to act as flying mini-factories, where they would land at to a construction site and work together to create buildings from scratch.

Co-investigator and Senior Lecturer in our Department of Architecture & Civil Engineering, Dr Richard Ball said: "We are delighted to be part of this ambitious and exciting project which will push the forefront of construction technologies into the future."

Co-investigator and Senior Lecturer in our Department of Architecture & Civil Engineering, Dr Chris Williams added: "It is exciting to be working on a project where the structure has to be so light and efficient that it can be built by small flying drones."

Provided by University of Bath

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