



# CENTRE FOR AIR POWER STUDIES

## In Focus

New Delhi

CAPS InFocus: 83/2022

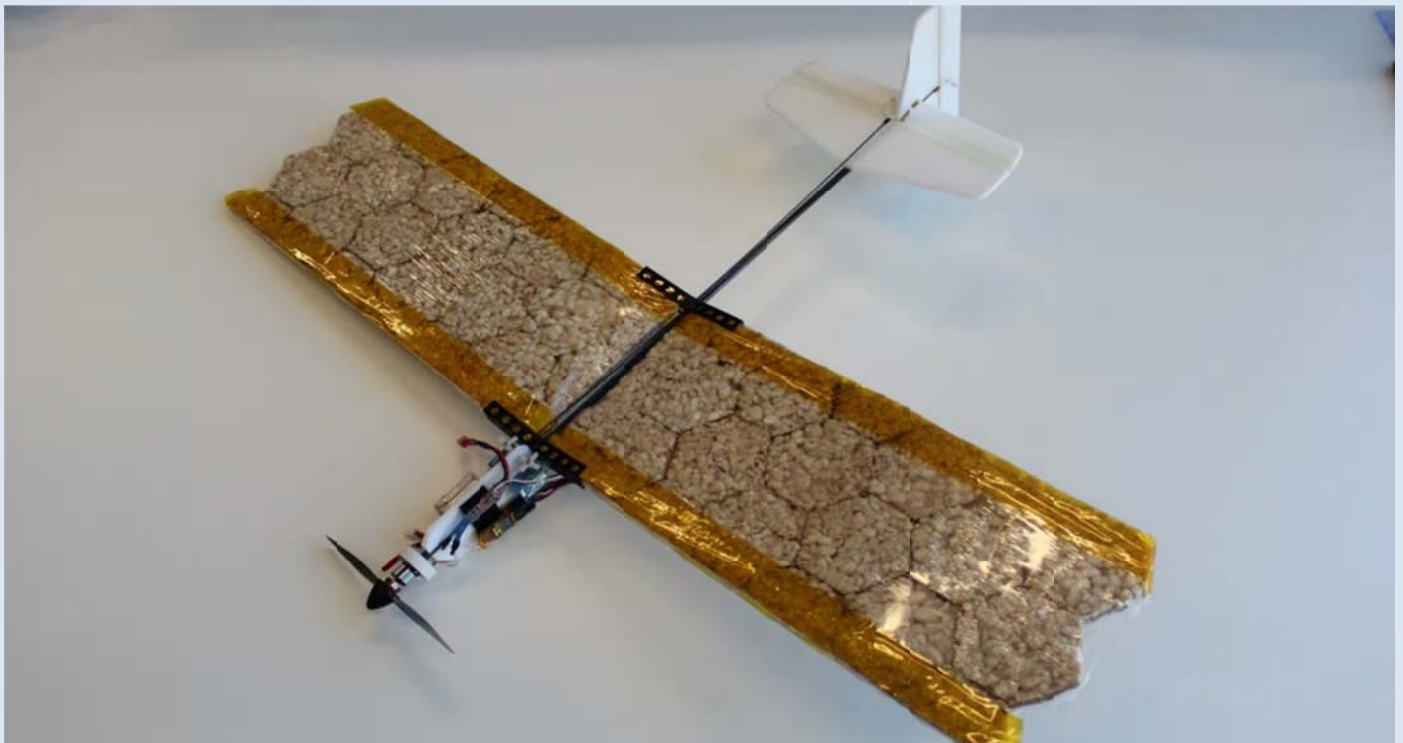
12 December 2022

## To Kill and Save: Abilities of New Age Drones

Prof (Dr) Dinesh Kumar Pandey, Senior Fellow,  
Centre for Air Power Studies



**Keywords:** Edible Drones, Humanitarian Aids



Source: designboom.com]



**Disclaimer:** The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS]

This work is licensed under Creative Commons Attribution – Non-Commercial – No Derivatives 4.0 International License.

**D**rones were developed to watch and eliminate targets. However, now its load-carrying abilities are exploited to save a life. Edible drones have been developed in order to supply food in times of need. With such advancements, edible drones stocked with food, drink, or medication supplies may prove crucial in humanitarian crises.

Drones have been proven to be efficient aircraft for unmanned transport missions, such as delivering supplies to people in need. UAVs can currently transport cargo in the affected areas that may contain small arms, currencies, documents, food, and medical supplies. However, various drone manufacturers have considered optimising this procedure by creating edible drones.

Some businesses have already started offering drone delivery services to cut down on the price of delivering small items over the last mile. Due to their dependability when hovering and manoeuvring, multicopter-type drones are most frequently used in such situations. However, as commercial drones can typically only carry 10 per cent to 30 per cent of their mass as payload, the amount of food that can be delivered in a single trip is limited. A team of researchers of the Somerset-based Windhorse Aerospace company has created a ground-breaking technique that boosts a drone's ability to transport food by recreating the structural elements of a drone out of edible ingredients. Such drones, used as food, are called 'edible drones.'<sup>1</sup>

The world's first edible and disposable drone was named the 'Pouncer.' The Pouncer, which costs US \$183, is made of a thermoplastic that can be eaten and was based on starch. It can also be used as a shelter once it has been delivered to its intended recipients. The drone's 3 metre wide wingspan with 50kg of vacuum-packed food, water, and medical supplies can be delivered directly to people trapped in disaster areas. It was envisioned to be dropped with high accuracy into disaster zones to provide emergency food rations. The design caters to eradicating waste completely. Depending on the region the drone is being delivered to, compartments in the main body and wings will be filled with various foods, and the wing structure will be made of food. The remainder of the structure will be made of wood, which can be burned for cooking and heating. The drone will be reduced to almost nothing by the time it is destroyed and consumed. The drone will be guided to within 10 metres of its intended target by a tiny navigation system and cardboard fin. According to its design, its other key benefit is its long-range accuracy: a plane flying at 10,000 feet will be able to drop the Pouncer 21 miles from its destination.<sup>2</sup>

The wings are made of rice cakes that are round, out of the box and is laser cut into hexagons to make them more adherent. After everything has dried, the wing is packaged in plastic and taped to ensure it will not degrade in moist or humid environments. The glue is simply

gelatine. It is a quick, easy, and affordable process. The edible wing has a flavour similar to a chewy rice crisp cookie with a hint of plain gelatine. There is currently no artificial flavour present.

As a result of its edible wings, a drone has evolved into more than just a food-transporting machine and now has a mass ratio of 50% food. Furthermore, the edible drone will be more biodegradable than its non-edible version, leaving less trash in the ecosystem should it be abandoned in the environment after fulfilling its mission in an emergency. The scientists' flight-capable prototype can deliver 300 kcal and transport 80 g of water as payload. To enhance the concept, other structural elements, like the wing control surfaces (such as an aileron or a rudder), will be created using 3D food printing or moulding and made of edible materials in the next version. Additional factors to be considered include an edible or water-resistant coating on the edible wing's surface and monitoring the edible wing's degradability over time (and water exposure).<sup>3</sup>

Former army catering officer Nigel Gifford founded Windhorse Aerospace and considered how to deliver humanitarian aid to Aleppo, which was under siege, and realised his knowledge of logistics, aviation, and nutrition could all work together. He said that "food can be a component for building things." According to Gifford, "nothing other than what we have will function in battle zones as we have in Aleppo or Mosul." The issue with parachuted air drops is that one cannot predict where the cargo will land. "In Aleppo, we could have delivered aid directly into some of the streets, out of sight of ISIS (Islamic State)." <sup>4</sup>

According to a Forbes article, Windhorse Aerospace has been operating for two years and has spent that time inventing edible drones. These UAVs are made to move swiftly and efficiently. Supplies can be delivered to people in disaster-stricken areas or conflict zones at a reasonable cost.

Each drone would cost £150, and with 50 kg (110 lb) of food stored inside its compartments, it could deliver enough food to serve up to 50 people per day. The next iteration of the drone would employ edible materials instead of wood for the frame; the prototype version's structure is constructed of wood.<sup>5</sup> The creators claim that a Hercules C-130 transport aircraft could carry 90 edible drones that, when launched from a height of 10,000 feet and guided by an internal steering system for 22 miles, could potentially transport supplies to more than 7,000 people.<sup>6</sup>

## Conclusion

Although hunger is a weapon of war, the edible drone could be a humanitarian game changer for civil and military missions. Now, an edible drone can save a life by delivering life-saving supplies to remote areas affected by natural disasters or armed conflict, edible drones loaded with food, water, or medicine may soon prove indispensable in humanitarian emergencies. Even after running out of food, military teams operating in snow-covered forward regions will be able to survive. Edible drones are expected to be able to feed a team trapped in dangerous terrain.

Médecins Sans Frontières (MSF), an international medical charity, the International Rescue Committee, Oxfam, and the World Health Organization are among the humanitarian organisations that have already expressed interest in using the drone.<sup>7</sup>

\*\*\*\*\*

## NOTES:

<sup>1</sup>“An Edible Drone That Could Save Your Life”, *Design Boom*, <https://www.designboom.com/technology/edible-drone-saves-lives-mountaineers-emergency-epfl-11-14-2022/>. Accessed on December 07, 2022.

<sup>2</sup> Thomas Colson, “This is the world's first edible drone”, *Business Insider*, September 09, 2016, <https://www.businessinsider.in/finance/this-is-the-worlds-first-edible-drone/articleshow/54249914.cms>. Accessed on December 07, 2022.

<sup>3</sup> Evan Ackerman, “Eat This Drone With wings made from rice cakes, this drone is designed to save your life”, *Spectrum*, November 01, 2022, <https://spectrum.ieee.org/edible-robots>. Accessed on December 08, 2022.

<sup>4</sup> Magdalena Mis, “Imagine a drone. Now imagine you could eat it”, *World Economic Forum*, March 21, 2017, [https://www.weforum.org/agenda/2017/03/edible-drones-could-be-the-future-of-aid/?utm\\_content=buffer6611&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](https://www.weforum.org/agenda/2017/03/edible-drones-could-be-the-future-of-aid/?utm_content=buffer6611&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer). Accessed on December 07, 2022.

<sup>5</sup> Ibid

<sup>6</sup> Su-San Sit, “Edible drone to offer aid in disaster zones”, *Supply Management*, February 21, 2017, <https://www.cips.org/supply-management/news/2017/february/edible-drone-offers-aid-in-disaster-zones/>. Accessed on December 08, 2022.

<sup>7</sup> Magdalena Mis, “It's a bird...It's a plane...It's an edible aid drone!”, *Reuters*, February 20, 2017, <https://www.reuters.com/article/us-aid-innovation-drones-idUSKBN15Z1TG>. Accessed on December 08, 2022.