

An appetite for AI: Airlines and food waste

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Lufthansa Industry Solutions uses computer vision AI to avoid food overproduction (Lufthansa Industry Solutions) PHOTO CREDIT: LUFTHANSA GROUP

This year marked 53 years since Earth Day began, raising awareness of environmental issues and promoting actions seeking to improve sustainability.

In addition to the increasing commitment to the use of sustainable aviation fuel (SAF) to help reduce the carbon emissions of aircraft, airlines have also pledged to better manage their cabin waste and positively contribute to the circular economy by reducing, reusing and recycling.

The International Air Transport Association (IATA) defines cabin waste as having two distinct streams. Cleaning waste, as its name implies, is leftover rubbish from items given to passengers on the aircraft and includes newspapers, food dropped on the floor, plastic bottles, etc. It also includes the contents of washroom bins and medical waste.

Catering waste, the second stream, comes from inflight meals, snacks and beverages served to passengers and includes leftover food and drinks, as well as ice. According to the association, around 20 percent of cabin waste comprises untouched food and drink.

IATA sees that aviation has a role to play in 15 of the UN's 17 Sustainable Development Goals (SDGs). Goal 12, "Ensure Responsible Consumption and Production Patterns", is committed to cutting global food waste per capita in half by 2030. The role of aviation in meeting this target is significant.

While waste generated on flights operating within the European Union can be efficiently processed, recycled and reused, the same is not true for waste from international flights originating outside the EU.

In 2002, the EU introduced the Animal By-Products legislation (No. 1774/2002) which classified international catering waste (ICW) as a biohazardous waste (Category 1). The current EU legislation (Regulation (EU) 1069/2009) requires that ICW be subject to strict control and treatment by incineration or disposal by deep burial in an authorized landfill.

IATA believes that up to 40 percent of the uncontaminated waste from an estimated 400,000 – 450,000 tonnes of ICW Category 1 generated each year could be reused or recycled.

To mitigate the effects of cabin food waste, airlines and their suppliers are turning to the use of Artificial Intelligence (AI).

AI technology can help airlines collect anonymized data on passengers' food consumption behaviour, helping airlines understand food preferences. Tracking the consumption of food items served on board flights with detailed information around components and portions of the meal that are not consumed, can not only highlight food wastage patterns but also reduce overall food waste, improve meal planning and reduce operating costs such as the fuel burn associated with carrying excess weight.

The Food Waste AI from Lufthansa Industry Solutions (LHIND), a Lufthansa subsidiary that helps clients, both within and outside the Lufthansa Group with digital transformation, is the result of its collaboration with Lufthansa and caterer LSG Sky Chefs.



AI will be increasingly used to forecast inflight meal demands (Lufthansa Industry Solutions) more accurately

The solution uses the “computer vision” technique, a field of AI that enables computers to derive meaningful information from digital images and other visual inputs and make recommendations based on that information.

Each meal tray is visually recorded after the meal on board and fed into a database. Based on the captured meal tray data, a before-and-after analysis of all menu components i.e. ingredients, is possible, allowing more accurate predictions for inflight catering production and delivery in the

medium term, which in turn will help reduce food and packaging waste.

Those involved in the project say the tool can also be used across industries for canteens and restaurants.

LHIND isn't the first to explore the use of AI to combat food waste.

In 2020, Emirates Flight Catering (EKFC), selected Winnow as its technology partner to embed Artificial Intelligence across its production facilities to drive down wastage. Winnow is a provider of cutting-edge technology to help chefs cut food waste in half.

The EKFC culinary team uses Winnow Vision, Winnow's flagship AI product which harnesses the power of computer vision and machine learning. Winnow Vision uses computer vision, taking information in an image, breaking it down in detail, and then making the computer analyze this information to understand what the image is. The system takes photos of wasted food as it's thrown away and, using the images, the machine trains itself to recognize what is thrown in the bin.

More recently, in 2021 Etihad joined forces with UAE-start-up The Concept, to develop the NEOS Fly+, an internet of things (IoT)-based inflight smart tray. The NEOS Fly+ tray is made from sustainable materials including PET bottles previously used on board and then recycled.

As AI is rolled out across the wider hospitality and catering industries, airlines and their suppliers have a great opportunity to make zero waste onboard less aspirational and more realistic, and surely that's something to savour.