

Gatwick's Circular System for Becoming a Zero Waste Airport

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OVERVIEW

Gatwick is the world's most efficient single runway airport, handling more than 46 million passengers and 280,000 air traffic movements in 2018. The airport is also home to over 120 operational and commercial businesses. In the past decade, Gatwick has invested over £2 billion in transforming the airport with an ongoing program of capital and refurbishment works.

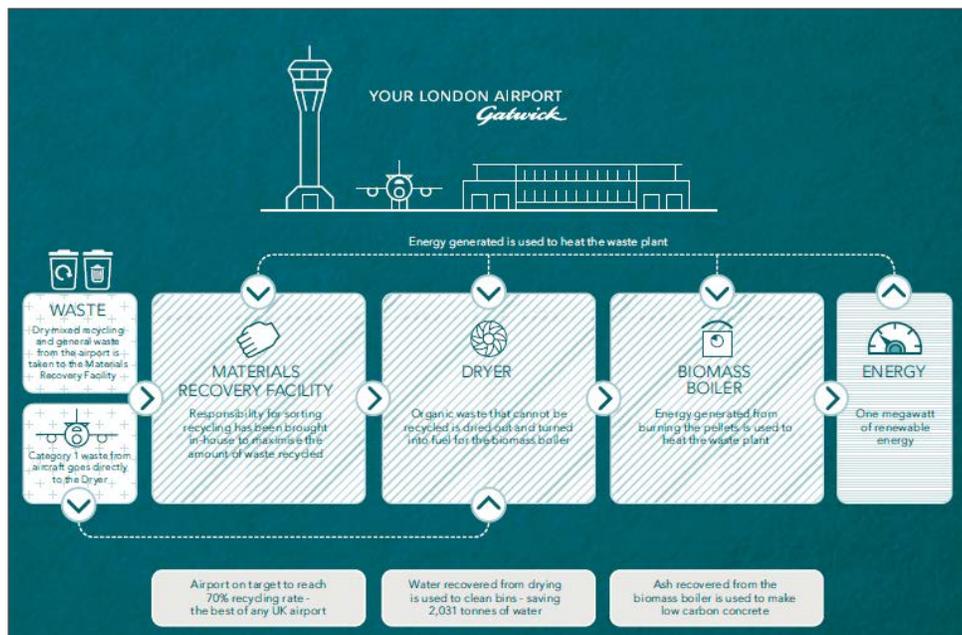
All of these activities generate materials that can be reduced, reused or recycled; some easily, others only with systemic innovation. In 2010, Gatwick launched the Decade of Change sustainability strategy which includes targets of zero waste to landfill and 70 per cent reuse and recycling by 2020.

By 2015 Gatwick had achieved zero waste-to-landfill for operational and commercial waste but the reuse and recycling rate was improving more slowly, rising from 40 per cent in 2010 to 49 per cent in 2015. This is above average performance in the United Kingdom but the aim is to do much better.

The focus now is to transform the way that 'waste' is conceived and processed at Gatwick. To do this, Gatwick adopted the Circular Economy ethos of utilizing as many recovered resources as possible within the airport property; and a "Logistics lens" to ensure that it is done efficiently.

Following a competitive tender, DHL Logistics was selected in May 2016 as Gatwick's partner in the project.

FIGURE 1: Gatwick's onsite Recycling & Reuse Centre deploys circular principles



The initiative commenced with a full review of waste management practices to identify the key opportunities to use resources more effectively across the airport. The resulting circular system approach incorporates four main areas of focus and investment:

- Redevelopment of materials collection sites and redesigned collection and transport logistics.
- New onsite materials sorting and separation facility.
- New onsite biomass boiler to process international catering waste and other organic matter into heat and water for onsite use.
- Ongoing training and awareness campaigns about Gatwick’s journey to zero waste.

ECONOMIC AND ENVIRONMENTAL BENEFITS

A key feature of Gatwick’s circular system is that it utilizes the same physical footprint as the previous waste ‘care center’ – a warehouse on the northern side of the airport property – while substantially increasing that site’s economic and environmental productivity.

To implement the new system, Gatwick invested £4 million over two years with a return on investment of approximately £750,000 per year from: onsite energy and water cost savings, offsite processing and disposal cost savings, and income earned from recycling.

Gatwick’s recycling and reuse performance accelerated, from 52 per cent in 2016 to 64 per cent in 2018; and had increased to 70 per cent by the first quarter of 2019. Consequently, offsite recovery for energy has decreased from 48 per cent in 2016 to 36 per cent in 2018, and to 30 per cent in the first quarter of 2019. Since 2015, Gatwick has sent zero untreated waste to landfill, and in 2018 it was the first airport to achieve the Carbon Trust’s Zero to Landfill certification.

KEY FEATURES OF GATWICK’S CIRCULAR SYSTEM

Redesigned collection and transport logistics

Previously, mixed waste from the airport terminals, retail outlets, and offices was collected, consolidated and sent offsite for sorting and reprocessing. This restricts the full recycling potential from being realized because truly effective recycling requires clean dry materials rather than mixed materials that contain residual liquids and foods – the so-called contamination problem.

Now, materials are classified as “Wet” or “Dry” at the point of use and collection. For example, airport food and beverage outlets are required to separate items such as dry paper and card, plastic packaging, empty bottles and food scraps for collection. In the terminals, passengers are asked to put empty bottles, cups and newspapers in

FIGURE 2: Towards Zero Waste: Gatwick’s 2018 performance.



“dry recycling” bins, and items containing food scraps or liquids into another bin. In offices and crew rooms, staff are provided with separate bins for food scraps, coffee cups, and dry mixed recyclables.

In addition, by using small baling machines at the Terminals, and then compressing those into large “mill size” bales at various collection points, there are 200 fewer industrial-size waste bin collections per day at the Airport, and a similarly reduced number of lorry vehicle trips to external waste plants.

Onsite materials sorting and separation

This pre-sorting at point-of-use is facilitated by the installation of a manual sorting conveyor at Gatwick’s onsite Recycling Centre which began operating in September 2016. All mixed recycling bin bags from across the airport, and from EU aircraft, are sorted by this process. This enables close sorting and separation. For example, an empty coffee cup which can be recycled would be separated by the recycler from one containing congealed liquids which would be rejected. As a result, all dry paper, card and plastic packaging collected at Gatwick, including all empty coffee cups and plastic bottles, are being recycled.

Biomass generation and water reuse

The Facility also incorporates an onsite dryer and biomass boiler to process organic “wet waste” materials such as food scraps and food-contaminated paper and card which cannot be recycled. This material is dehydrated in a Gobi dryer, filtered several times to remove any small plastic shards, and baked into solid biomass fuel.

The process currently generates 4.75 million kWh of renewable heat per annum which is used to operate the drying process and heat the Facility building. The biomass boiler has been designed to operate to emission standards that are stricter than required by EU regulations. Gray water recovered from the drying stage is collected and used to clean waste bins, helping to reduce airport water consumption by 2 million liters per annum.

International catering waste

In a first for the aviation sector, Gatwick was the first airport in the world to undertake onsite processing of Category 1 International Catering Waste from non-EU aircraft, by converting it to biomass to create renewable heat. Category 1 waste comprises food waste and anything mixed with it from non-EU flights. Its disposal is

FIGURE 3: Simon Duggan, Gatwick’s Senior Commercial Operations Manager who led development of the Circular system, at the onsite materials sorting line



governed by strict rules that require specialist processing (until now, offsite) to protect against potential spread of disease and infectious material. Around 20 per cent of Gatwick's operational and commercial waste is Category 1.

Approval for onsite processing of Category 1 waste therefore required close collaboration with UK environment and health regulators. From the earliest planning stages onwards Gatwick has worked closely with the national and local authorities, and with airline cleaning contractors, to implement an effective and audited procedure for identifying waste collections from EU flights (Category 3 waste) and non-EU flights (Category 1 waste).

Furthermore, this strict approach to labelling and custodianship means that Gatwick can process rubbish bags from EU flights through the onsite mixed recycling facility sorting line, which extracts all recyclable materials from these bags.

Zero waste to landfill certification

In June 2018, Gatwick became the first airport to achieve the Carbon Trust's new Zero Waste to Landfill accreditation. This standard was established to provide a robust framework for verifying zero waste-to-landfill performance. Commenting on Gatwick's certification,

Hugh Jones, Managing Director, Carbon Trust Business Services, said:

"We are delighted to be able to recognize Gatwick's achievement of zero waste to landfill certification for the first time. Gatwick is setting an excellent example, showing how a business can improve its operational efficiency and its environmental results at the same time, as well as encouraging higher levels of action elsewhere by positively influencing other companies that operate at the airport site."

Promoting passenger recycling and reuse

To encourage greater recycling awareness, particularly for plastic bottles and coffee cups, in 2018 the signage on all bins throughout the terminals was standardized. This initiative is now being extended to bins in airport car parks.

Gatwick's passenger website and app, and the signage at the entrance to Security screening areas, provide visible messaging to passengers that they can take an empty bottle through security and refill it at water fountains in the departure lounges. Free water refills are also provided by all of Gatwick's food and beverage outlets.

FIGURE 4: New, clearer recycling signage to encourage waste segregation has been deployed across the airport



FIGURE 5: New, high visibility signage placed at security and in airside areas to encourage passengers to reuse water bottles



Airport staff campaigns

Regular and ongoing engagement with airport staff working in offices, terminal operations, retail outlets, on the airfield and for airlines and cleaning companies is a key feature of the initiative to promote continuous improvement in materials segregation and handling.

Quarterly forums are held with airlines and cleaning companies to increase the segregation of EU waste which can be recycled and to ensure correct handling of Category 1 aircraft cabin waste.

To support retail concessionaires, a standard template has been created to ensure correct set-up of waste sorting and handling systems within every retail unit and back of house area, and process conformity is audited regularly. In addition, training sessions, information packs, and quarterly performance infographics are provided to each retail store.

In early 2019 Gatwick convened an event involving all airport retail concessions to launch the Gatwick Recycling Champions forum. This brings together a staff member from each retail store to create a community of people to champion the right recycling behaviors in retail operations.

FIGURE 6: Lanyard badge, made of recycled plastic, for Retail Recycling Champions forum members



FIGURE 7: Gatwick staff canteen campaign to reduce single use plastics



To encourage recycling by Gatwick staff, clear signage has been printed on bins, and wall posters have been posted in staff canteens, kitchen areas, and crew rooms to promote recycling behaviors. As well, regular team talks are undertaken by the waste logistics manager, sustainability manager, and DHL Logistics.

Gatwick's own business units are expected to identify specific ways to improve their recycling behaviors and performance through annual EHS improvement plans. This includes talks from Gatwick's waste manager to provide information and encourage best practices. The annual improvement plans support Gatwick's annual environment targets, including for recycling and reuse. In FY2018/19, the annual target set for recycling and reuse was 65 per cent which was achieved.

In 2018, reusable coffee cups were provided to Gatwick staff in exchange for a small donation to Gatwick's charity partners. Reusable cups attract a range of discounts at the airport's coffee shops and staff canteens.



LOOKING AHEAD

Gatwick expects to achieve 70 per cent recycling and reuse consistently throughout 2019, thus fulfilling its Decade of Change sustainability goal. In the new decade from 2020, the Airport will continue to focus on becoming a zero waste airport. This will involve attention and action in at least three areas:

1. Maintain and further improve Gatwick's recycling and reuse rate as the airport continues to grow.
2. Continue to seek out innovators in the UK and European materials reprocessing value chain that can help to maximize reuse, recycling and recovery of embodied materials, including by identifying new and higher value re-use and recycling opportunities. For example, some materials that are presently recovered for heat or electricity may provide higher environmental and economic value if used as feedstock for sustainable aviation fuel blends.
3. Continue to promote waste reduction, reuse and recycling initiatives with Gatwick staff and passengers, including further uptake of reusable options for common "on the go" items.

And last but not least, we want to find another word for 'waste', as we wish to abolish it in both word and deed!



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CHAPTER NINE

States' Action Plans and Capacity-building

