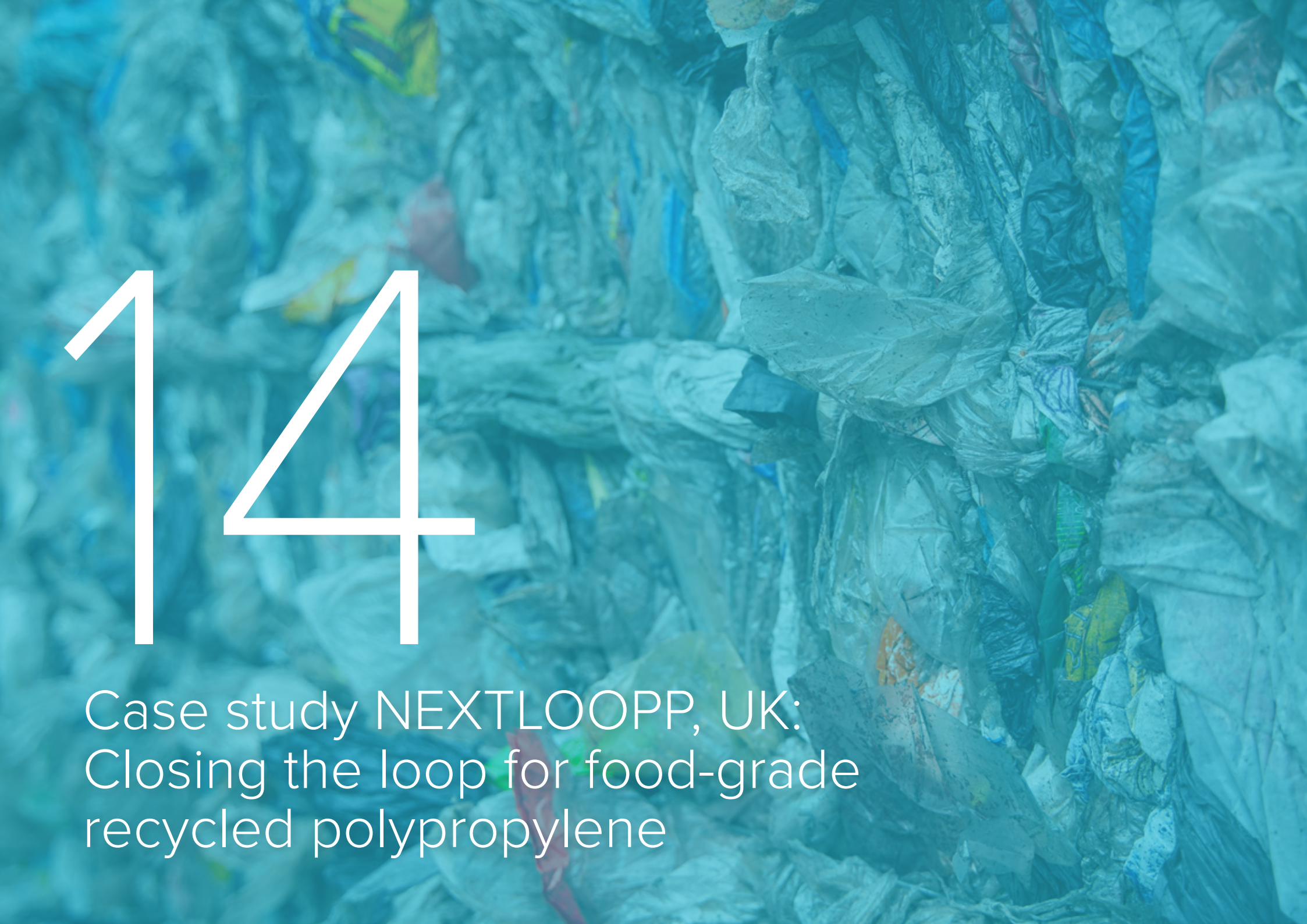


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Case study NEXTLOOPP, UK: Closing the loop for food-grade recycled polypropylene

Key facts

Operational since
Not specified

Facility model / role in the system
Focuses on food-grade recycled polypropylene from post-consumer packaging

Capacity
Not specified

Performance
Addresses one of the main barriers in polypropylene recycling: separating food-contact from non-food-contact polypropylene
Combines sorting, decontamination, testing, and design-for-recycling work
Has explored AI-supported recognition to improve separation of food-contact polypropylene

Outputs
Not specified.

System role
Advanced mechanical recycling

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NEXTLOOPP shows why advanced mechanical recycling is not only about processing plastic after it has been recovered. For more demanding applications, especially food-contact packaging, the whole chain has to work together: packaging design, sorting, decontamination, testing, and end-market use.

Polypropylene (PP) is widely used in food packaging, including pots, tubs, trays, lids, and other rigid packaging formats. The challenge is that food-contact PP and non-food-contact PP can look similar in the waste stream. A standard polymer sort can identify PP, but that does not automatically tell the recycler whether the packaging was previously used for food. For food-grade recycling, that distinction becomes critical.

NEXTLOOPP was created to address that gap. Its work focuses on producing food-grade recycled PP from post-consumer packaging by combining more precise sorting with decontamination and material validation. The aim is not simply to recover PP, but to create a route where selected post-consumer PP can be returned to higher-value packaging applications.

Sorting is the first critical step. NEXTLOOPP's work has included approaches that help separate food-contact PP from non-food-contact PP. This has included marker-based sorting as well as newer AI-supported recognition, where packaging can be identified by visual and design features such as shape, format, size, and other repeatable characteristics. That makes the design of the packaging itself part of the recycling system.

If packaging is easier to recognise, separate, and clean, it has a better chance of moving into a higher-quality recycling route.

The second step is decontamination. Food-grade recycled PP requires more than polymer separation. Labels, adhesives, inks, residues, and possible contaminants all have to be addressed. NEXTLOOPP's work therefore links sorting with cleaning, decontamination, and testing, so the recycled PP can be assessed against the safety and performance requirements of the intended application.

This makes NEXTLOOPP a useful advanced mechanical recycling case because it shows the difference between recycling PP into lower-demand uses and preparing it for food-contact applications. The technical challenge is higher, but so is the system value. If food-grade PP can be recovered, sorted, decontaminated, and validated, more post-consumer packaging can move back into packaging rather than being limited to lower-value uses.

