



Sort without touching

Innovation serving waste sorting

Remote operated sorting is a major innovation for the recycling sector and a world first.



REMOTELY OPERATED SORTING: A TOUCH SCREEN TO SORT WASTE WITHOUT TOUCHING IT

Remotely operated sorting is sophisticated technology developed at the source-separated waste collection center in Amiens (France). The sorting operator points on a touchscreen the household waste packaging he or she wants to eject from the sorting conveyor. **With remotely operated sorting, the sorting operator no longer has to handle the waste.**

Remotely operated sorting improves sorting quality. It is a key step in converting waste into recycled raw materials **in order to provide industry with recycled raw materials to replace virgin materials.**

Remotely operated sorting is an industrial prototype developed by Veolia Research and Innovation. Its development involved a multi-disciplinary team of experts in mechanical engineering, signal processing, sociology, psychology and ergonomics, supporting the operation teams.



REMOTELY OPERATED SORTING: TECHNOLOGY SERVING SAFETY AND THE PRODUCTION OF RECYCLED RAW MATERIALS

By removing all contact between the sorting operators and the waste, remotely operated sorting means improved operator safety by overcoming the risk of cuts and impact.

Remotely operated sorting also improves sorting performance. At the Amiens (France) sorting center, **an additional 6% of household packaging is recovered compared with manual sorting.**

Remotely operated sorting is a Veolia solution for improving sorting and the quality of the sorted products. It is a crucial step in the production of standardized recycled raw materials that **provide industry with the same quality, supply and availability guarantees as virgin materials.**

Remotely operated sorting complies with the increasingly stringent recycling regulations, in particular France's Energy Transition for Green Growth Bill that sets a target of 60% for recycled non-hazardous waste by 2025, compared with 51% today.

Optimizing the performance of Veolia's sorting centers has also factored in the more detailed plastics sorting instructions in France's upcoming Eco-Packaging recommendations.

Did you know?

Out of every million metric tons of plastic packaging released on the market, only 40% is currently covered by sorting instructions; and only 235,000 metric tons is actually recycled (Source: Eco-Emballages).



HOW DOES REMOTELY OPERATED SORTING WORK?

Two Veolia patented technologies are combined to sort plastic packaging (beverage cartons, flasks and bottles), TSA2 and remotely operated sorting:

- **TSA2 (auto-adaptive sequential sorting)** automatically sorts packaging according to its material and color: once a minute, the TSA2 system selects the majority type of waste detected on the conveyor (for example, clear PET, such as water bottles) to sort it before selecting another family.
- **Remotely operated sorting** is used in the second stage to refine the result of the TSA2 sorting operation. A sorting operator sits in front of a screen showing the image of the waste sorted by the TSA2 (for example, clear water bottles). The operator selects the waste that is not part of this type and not identified by the TSA2. The operator simply touches the unwanted waste on the screen. The items are then automatically ejected by a compressed air system.



1 Sorting large cartons

The operators remove all waste except cartons

2 Sorting newspapers, reviews and magazines

Operators remove all waste except newspapers, reviews and magazines

3 Sorting small papers

The operators remove all waste except paper

4 Packaging sorting (flasks, beverage cartons and bottles)

(flasks, beverage cartons and bottles)

Optical sorting

Optical sorting

Magnetic sorting

Loop conveyor

TSA2 auto-adaptive sequential sorting

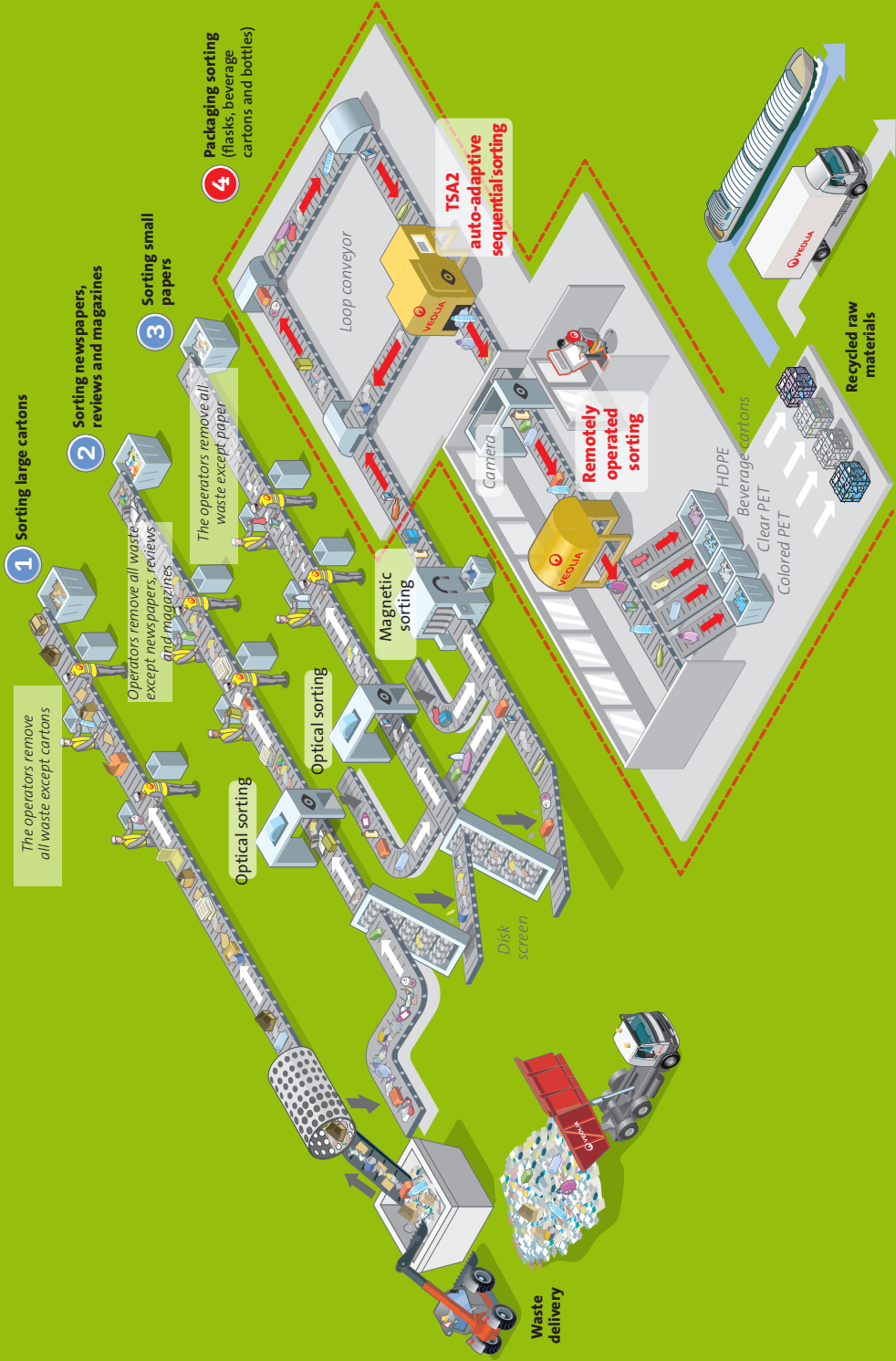
Remotely operated sorting

Camera

HDPE Beverage cartons
Clear PET
Colored PET

Recycled raw materials

Waste delivery



THE OUTLOOK FOR REMOTELY OPERATED SORTING

The innovation's rollout in France is currently being examined.

Veolia is examining for all its sorting centers in France:

- The technical and economic relevance of installing the TSA2 and remotely operated sorting technology.
- The potential expansion of remotely operated sorting (new types of waste, additional screens at the same sorting center, etc.).

Remotely operated sorting is opening the way to a new generation of sorting centers.





