



Washing Machine



Cup return bin

SWAPBOX

SwapBox is an innovator in the area of re-usable plastic cups. For companies, restaurants, and petrol stations they provide plastic cups for coffee machines, and collect them after use. They are washed in their industrial washing machine, and then returned to the locations where they were collected. SwapBox has a fleet of electric vans to collect and distribute these cups to their customers. In this way they allow their customers to comply with the *European Directive on Single-Use Plastics (applicable from July 2024)*.

However, the end-users of the cups are not yet familiar with the implications of the regulations. So cups get lost, accidentally disposed of, or taken out of the washing loop. SwapBox had the idea of creating a frictionless return system which is deposit free, but which does familiarise end-users with the concept of returning and washing the cups.

With EasyLogic SwapBox developed a system which:

- dispenses cups identified with an RFID tag;
- identifies the end-user with their bank card or bank app, and lends up to 7 cups at a time;
- when the cup is returned via the return bin, or detected in the washing machine, it is marked as returned by the end-user, and he or she does not pay for the cup;
- if the cup is not returned within a 2 week period, and the end-user needs a new cup, he or she first needs to pay for the unreturned cups.

Fotos: EasyLogic

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INNOVATIONS

EasyLogic, together with its development partner TSS Company, developed an embedded, innovative UHF RFID reader to be used in the cup dispensers. This is connected to a custom board with motor drivers and sensors which controls the cup dispenser.

Each cup's RFID token is registered when dispensed.

With our knowledge of the payment processes we configured a Payter payment terminal as the user interface to the Dispenser system. The terminal returns a token which identifies the bank-card or app of the end-user, and we store the token with the RFID identifier of the cup in a backoffice system.

All communication between the dispenser and the backoffice system, is via a 4G router with vandal proof antennae, and encrypted, secure connections.

RETURN BIN

Used cups are returned in Return Bins. The RFID of the cup is scanned and immediately removed from the end-user, allowing him or her to borrow a new cup. The system also keeps track of the number of cups returned and schedules a pick-up of cups by a SwapBox van.

LOGISTICS

SwapBox has a number of vans, operating throughout the Netherlands for cup collection and cup distribution. Additionally they run a washing street in a central location where cups are cleaned, and packaged for



distribution. If a cup has not been detected in the return bin (e.g. because there is still liquid in there or debris) it is always detected with an RFID reader at the end of the washing process.

FRICTION FREE

People can very easily collect up to 7 cups from the dispenser. They only need to pay when these have not been returned in time. The responsibility for returning the cup shifts from the client to the end-user. If an end-user wants to verify their transactions, they can register at a dispenser and get access to their account at the back office system, to review their transactions and payments.

FOR MORE INFORMATION

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