**PROJECT DESIGNATION Atlantis RFID**

Implementation of automatic production data collection (RFID transport units) at the Vista Alegre Atlantis industrial plant.

**GOALS** Support the aggregation of a large amount of data; Improve processes and new business opportunities; Reduce human intervention in non-value-added tasks; Reduce faults/errors and non-conformities; Enable quicker and better decisions.

**BASIC CONCEPTS** RFID tags; RFID readers/antennas; Production card; Transport units (crates, boxes, pallets, carts).

**RFID** will identify a transport unit (crate/pallet/by product) and will be associated with a material code and a unique transport quantity.

**Unique Transport Quantity** Number of pieces needed in the "Transport Unit" (TU) to be moved between workstations/Work centres/Sections.

The **antenna** identifies the Process/Work Centre/Section. The antenna has a scanning area and continuously enters the RFID present in an opening area into a database.

The **production card** Identifies product/unique quantity per TU.
Colours of the sachets; **Green** TU "Good" "base product" destination "Warehouse" **Red** TU "Breaks" Yellow UT "Recovery circuit" Blue TU "withdrawal Intermediate buffer" (use in the case of bottle stoppers) **White** TU "For intermediate-buffer production" (use when we order intermediate production for stock in the factory).
•       1 production card represents an article code to be produced which includes the article code, the minimum transport quantity per UT (Ex: UT -Grade).
•       1 Production card + 1 RFID + 1 colour sachet (STAPLES) + 1 plastic box + Article = 1 TU.
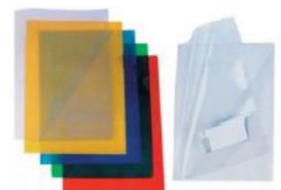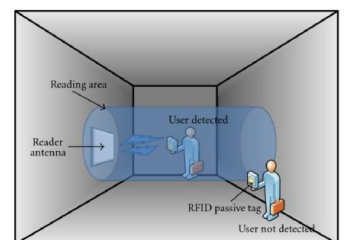
**RFID/HPI PILOT TEST**
The project was designed on the HPI bottle; the TU were Crate type; Green, red, yellow and white sachets were used; The unique transport quantity is 6 units per crate; The green sachets identify those found to be good in the work centres; The red sachets for breaks in the pilot will not have RFID, they will only be used for visual management, since the breaks are registered online, on a tablet, in the work centre explaining the reasons.

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## PROPOSED LOCATION OF RFID COLLECTION BY ANTENNAS
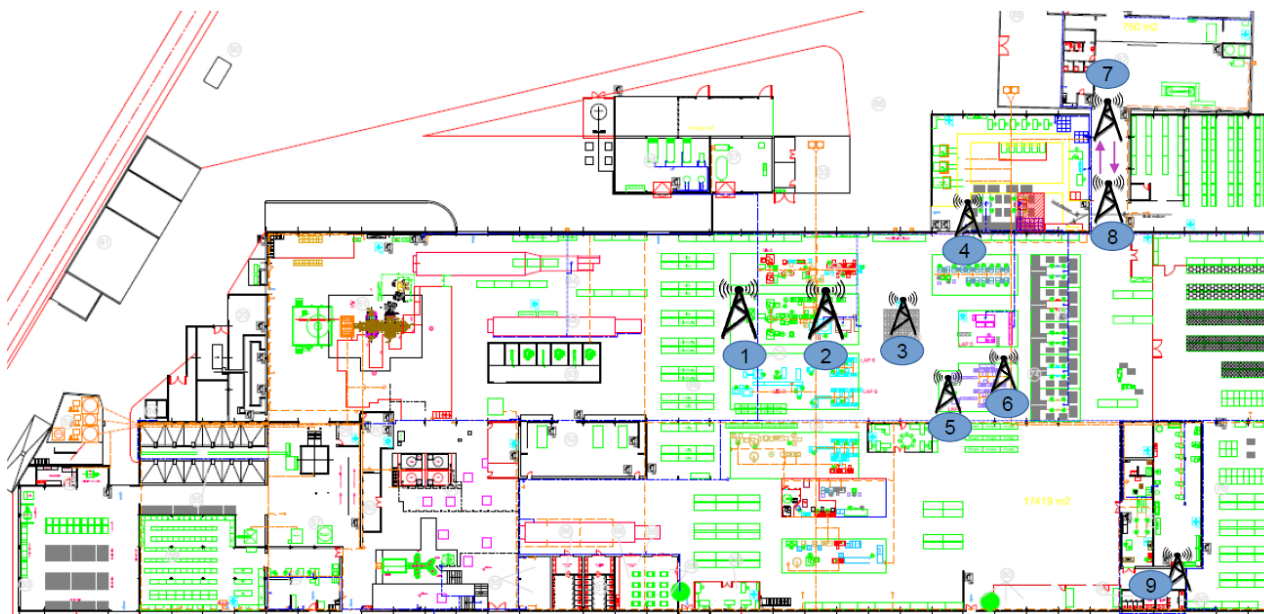


### Operational Centre (with quality assessment)

Scanning is done by antenna; Information is collected as soon as the RFID is spotted; it's considered to be still in the work centre/process if it has not yet entered the next centre; the workstation is equipped with a tablet to identify the number of breaks and the reasons why they happened.
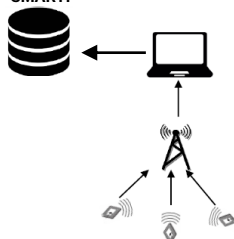


### SMARTI (Database)

The table refers to the data collected from the antennas. Each line is made up of the identifier of the tag read (idTag), the antenna that read it, when it was read for the first time and the last time, as shown in the example.



| idTag | Antena | DateInput | DateOutput |
|---|---|---|---|
| 07 00 EE 00 E2 80 48 50 | 1 | 2018-08-28 14:42:08 | 2018-08-28 14:43:32 |
| 07 00 EE 00 11 11 28 83 | 1 | 2018-08-28 14:43:17 | 2018-08-28 14:43:30 |
| 07 00 EE 00 E2 00 40 D4 | 1 | 2018-08-28 14:43:21 | 2018-08-28 14:47:05 |

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## OUTSIDE THE CHAMBER [Hot zone after the ovens]

An RFID/Production Order has been associated with a Quantity - Transport Unit.
The TU is associated with the crate/pallet/basket or product by product.
It is scanned by an antenna via USB to make the association and collect the information.



Associação RFID/CP    Lançamento de quebras
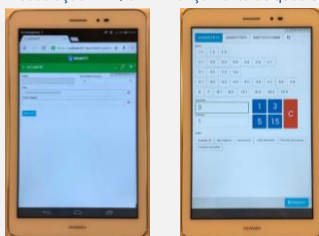


The choice of product varies depending on the type of product that has been registered on the antenna.

## LAP 6

This centre contains antennas 1 and 2; Green and red boxes can be seen; the tablet will be used to launch breaks and reasons.
The choice of product varies depending on the type of product that has been registered on the antenna.



Lançamento de quebras



## MIDDLE BUFFER

This centre contains antenna 3; only green boxes can be seen; the antenna will take a constant reading to collect information in real time.

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### PICK UP AND RETRIEVE

This centre contains antennas 5 and 6; only green, red and yellow boxes can be seen; there will be a tablet used to launch breaks and record the reasons.
The choice of product varies depending on the type of product that has been registered on the antenna.



Lançamento de quebras

### ACID

This centre contains antennas 7 and 8; Green and yellow boxes can be seen.
The choice of product varies depending on the type of product that has been registered on the antenna.



Lançamento de quebras

### ENGRAVING

This centre contains antenna 9; you can see green, red and yellow boxes; there will be a tablet used to launch breaks and record the reasons.
The choice of product varies depending on the type of product that has been registered on the antenna.



Lançamento de quebras

### PAINTING

This centre contains antenna 4; Green and red boxes can be seen; There will be a tablet used to launch breaks and record the reasons.
The choice of product varies depending on the type of product that has been registered on the antenna.
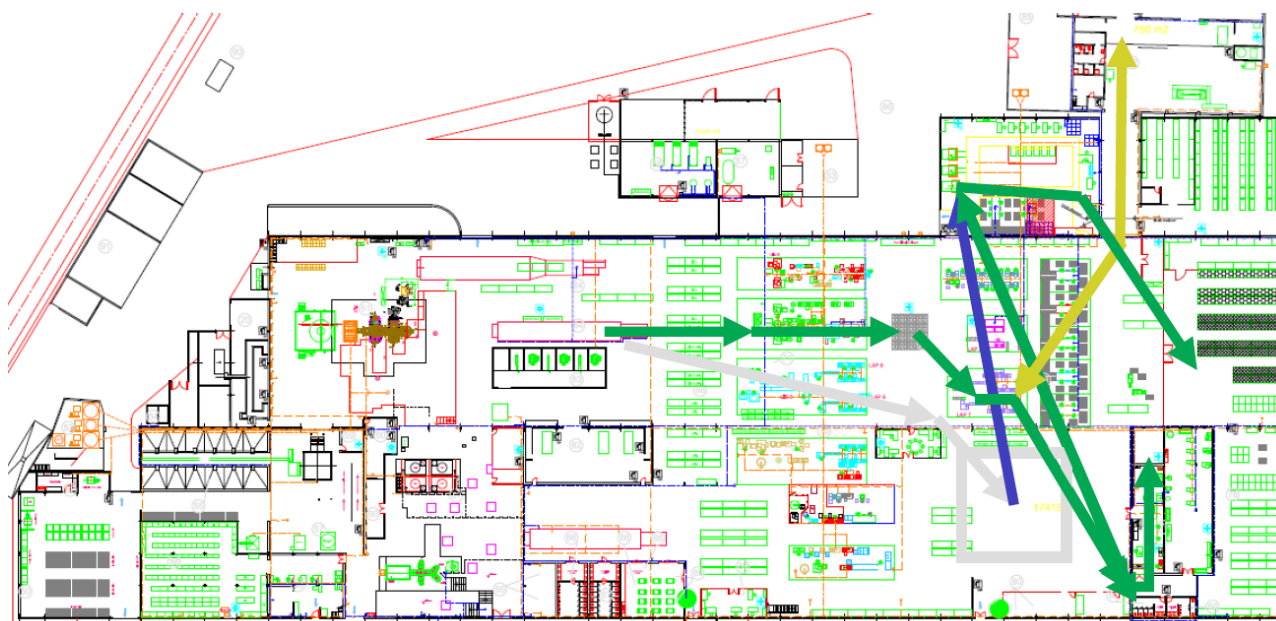


Lançamento de quebras

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## STANDARDISING THE ROUTE OF THE CRATES



## AUDIT AND INVENTORY (TU)

The operator/person in charge will be equipped with a tablet and an RFID reader and will be able to audit the factory floor by sampling.
The inventory can be taken at any time by the operator at the stations with a PC (reader/tablet/keyboard), making it possible to make adjustments to the transport units in terms of the quantities transported.



## IMPACTS

- Completely automated process;
- Collection of information in real time;
- Better data organisation;
- Easier data processing;

- Easier production control;
- Greater control over the reasons for breaks;
- Better overall process control;
- Improving decision support.