

The E-Cube System

Refilling and Management

Refilling and managing the E-cubes

- **Scope**
- The *E-cube* is an in-room merchandising system. It provides the guest with a mini shop and gives the hotel a steady revenue stream.
- This training module is for staff who will refill *E-cubes* on a regular basis. As with any job you are also responsible to ensure that the system is running efficiently, and to that end this training module also touches on basic maintenance issues.

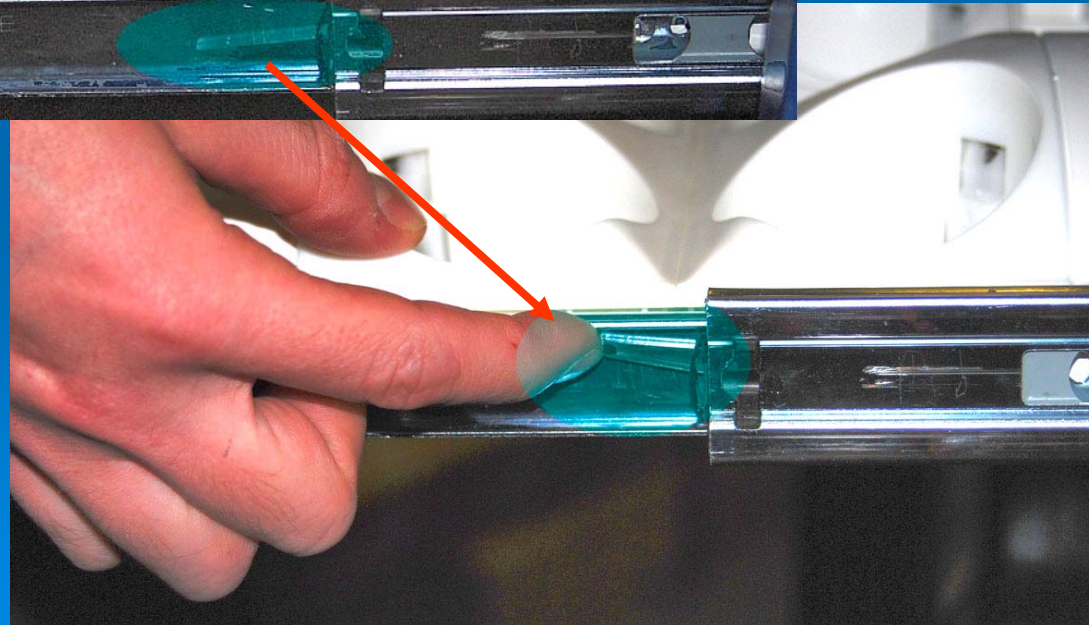
Introduction to the E-cube enclosure



Introduction to the E-Cube Enclosure

- The *E-cube* model installed is a thermoelectrically cooled cabinet containing two merchandising trays. The top tray is designed to hold 12 items for sale, and the bottom tray 6 items. Guests are free to use any spare space within the enclosure for their own use.
- The enclosure and its cooling equipment should not require maintenance apart from occasional cleaning. If an *E-cube* is not cool, check that its mains cable is plugged in: the tray electronics will continue to operate even if the cooling section is not operative. You should report to your manager if a particular *E-cube* consistently refuses to cool.
- The hotel is responsible to affix a notice close to or on the *E-cube* inviting guests to use the *E-cube* but warning them that if an item is removed (or possibly even disturbed) then it is deemed “sold” and their account will have automatically been debited. If an item is removed in error it can be taken to reception for full credit.

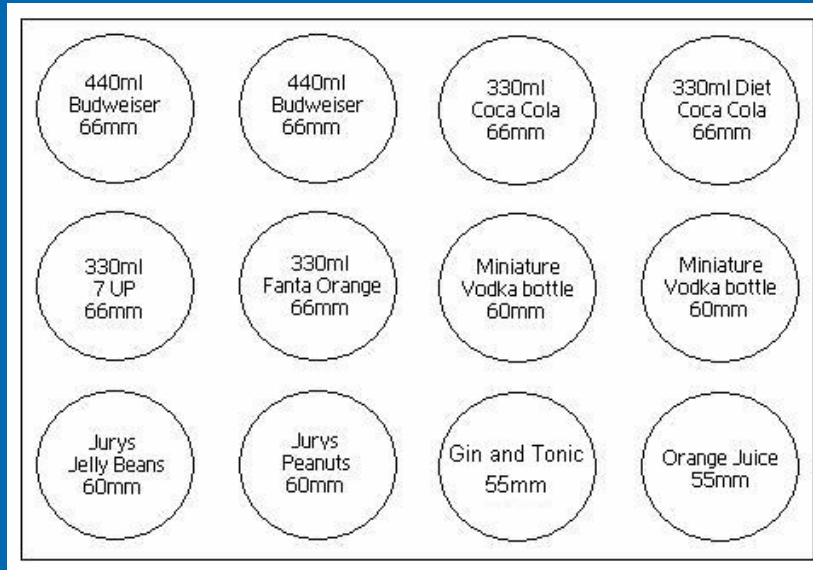
Merchandising Tray



Merchandising Tray

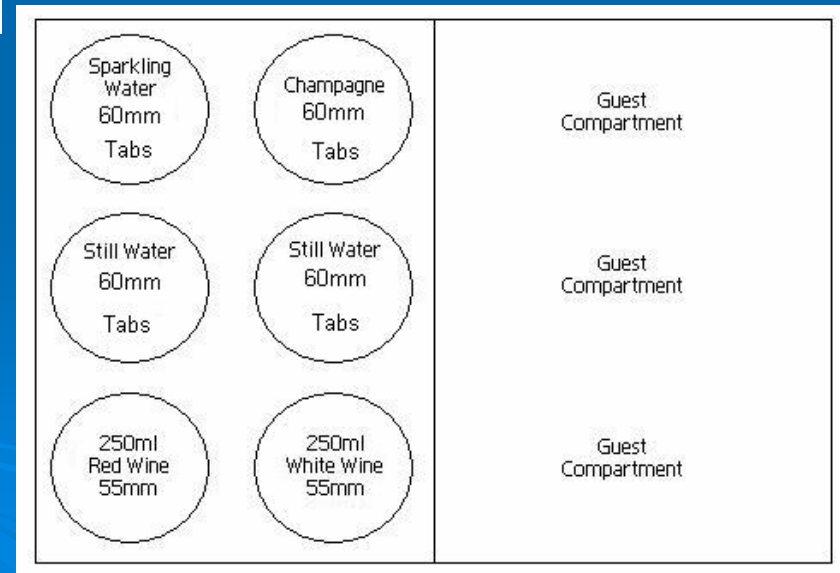
- The merchandising tray is the heart of the *E-cube* system. It presents items for sale in an appealing way, contains sensors and intelligence that detect removal of any item, and can be easily removed from the *E-cube* enclosure for maintenance [demonstration].
- The tray consists of a number of receptacles designed for particular sized product items. The receptacles are modular so can be changed for different sized ones. An *E-cube menu* will have been agreed for this hotel which determines the sizes and relative positions of receptacles that will be supplied initially,

Tray Layout



Top Tray

Bottom Tray



Merchandising Tray

- Each receptacle has a “non-return mechanism” which consists of a hard plastic slider which is sprung loaded against the product. When the item is removed, the slider moved down and inwards and prevents the product being returned.
- The falling slider also actuates an electrical switch. Electronics in the tray connects to each switch and continuously sends a signal via the tray runners to the “ERID” data collecting unit in a nearby riser and thus to the *E-cube Controller* computer. The computer database associates a product name and price to the actuator signal and posts this as a “vend” to the hotel PMS which appends it to the guest account.
- The *E-cube tray* is robust, but being electro-mechanical it is subject to wear and tear and, of course, vandalism. In normal operation the tray will give many years of service life but the mechanical parts may eventually wear out. Failure can also occur if there is excessive spillage, especially of a corrosive substance such as Cola which can eat into the interior metal parts. Such failure can result in one or more sensors not working which equates to lost revenue. For this reason the system has been designed so that trays can easily be replaced. It is thus vital that hotel staff quickly identify a failed tray and replace it. We will deal with this issue in more detail later, but there is a reason why it is highlighted at this stage!

Refilling an E-cube

- It has been explained how guests may remove items for sale and be billed automatically and this is indeed the primary advantage of such an automatic system. Obviously the hotel must ensure that the *E-cube trays* are replenished in a timely fashion.
- Ideally the E-cube should be full of product when a guest checks in. To guarantee this the E-cubes should be refilled once per day. It might suffice to refill once every two days, or to do half the hotel on alternate days: the actual frequency should be decided by the hotel management.
- Statistics suggest that on average about one item will be purchased per occupied room, but often several items will be sold if the *E-cube* is opened at all. Thus it is likely that some rooms will not need to be visited at all. The *E-cube system* not only automates sales, but makes the job of the refill staff easier because it can indicate exactly what product items are required in which rooms.
- An *E-cube* can be refilled at any time without any need to run software programs – this freedom allow the refill staff to respond instantly to a guest request to replenish the E-cube on an ad-hoc basis.
- However in most cases the *E-cubes* will be refilled as part of a daily process.

Ad-hoc refilling

- A guest might phone reception to ask for their *E-cube* to be refilled. As the person appointed to refill *E-cubes* you may or may not decide to run a *Refill Report* (see below). If not then you would have no idea what products were required so might come to the room with a full “refill pack”. Having opened the *E-cube* you would slide one tray forward, insert the hex key, and rotate anticlockwise fully (about $\frac{3}{4}$ turn) to raise or “cock” the non-return mechanism. Product items can now be inserted. You now rotate the hex key back as far as possible before sliding the tray back and repeating with the other tray.



Each tray must not be left “cocked” for more than a preset period, usually set at 5 minutes. If left cocked longer than this the system computer will interpret it as a missing tray and may generate an “Alert” (see section on *E-cube Alert software*). A tray must also be cocked for longer than about 5 seconds in order to guarantee that the system has recognised the refill event.

Daily refill process: Requirements Report

- The normal refill process starts with running a *Refill Requirements Report*. This is done from any hotel computer that has the *E-Cube Report Writer* software installed on it.
- In the “Report Generator” section on the left hand side of the screen, click on the “Refill Requirements” tab to bring up the “Requirements Report Filter” as shown in next slide.

Hotel database

Requesting... Was last updated please wait...

Report generator

Expired Product | e-Cube Inventory | Audit Trail

Room Status | Sales by Product | Sales by Room

Refill Requirements | Refill Reconciliation

Requirements Report Filter

Select zone(s) from list on the right...

Over all zones

Include rooms that are OK

Full refill, style A

Full refill, style B

Minimum refill, style A

Minimum refill, style B

Report Output

Open report in Excel auto-refresh

Leave data on clipboard

Save data to CSV file

Status viewer

Rooms | Vends | Events | Refills

Rooms	Occupancy	Zones
4 rooms in all	06-11-01	(all)
200 ok		
9000 ok	vacant	20
9001 ok	vacant	90
9002 ok	vacant	

Door:

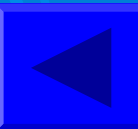
Mains:

Perk:

Tray:

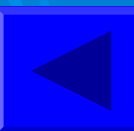
Daily refill process: Requirements Report

- A larger hotel may be divided into zones for refilling purposes, for example one zone per floor. You can restrict the filter to one or more zones via the “Status Viewer“, “Rooms“ tab on the right hand side of the screen, or use the default “all zones“. Typically the box “Include rooms that are OK” is left unchecked, and beneath this the radio button “Full refill, style B” is checked. Beneath this in the “Report Output” section the radio button “Open report in Excel” should typically be checked, and the “auto refresh” box left unchecked, before clicking on the “Generate Report” button.
- The *Requirements Report* should is now generated and displayed in Microsoft *Excel*. It consists of one sheet per *E-cube menu* plus a “Totals“ sheet.
- The “Totals“ sheet lists what quantities of each product are required to fill the specified range of *E-cubes* at the time of the report, and can be used to draw on the hotel stores.
- The remaining sheet(s) say what product(s) you should insert in what room. Assuming the “Full type B” and not to “Include rooms that are OK” options are selected, these sheets will consist of one row per room that needs to be visited. For example, Report shows that room number 200 is calling for a “Chardonnay 250ml” to be inserted in location code L.



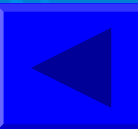
Daily refill process: Requirements Report

- The report also shows a lot more:
- For example, this particular *E-cube* has been opened since the last refill (**applies only to E-cubes with door-open sensors**). The bottom (second) tray is not operating so that none of the product states in that tray can be determined.
- Finally the product in location code **G** has been removed and then replaced but not by a refill person. It is thus shown with a question mark “?” because it is not clear whether the unopened product was replaced, or an empty bottle, or that this state has been caused by a faulty tray.



Daily refill process: visiting rooms

- Armed with the products listed in the “Totals” sheet, a printout of the “Menu” sheet(s), and a hex key, you visit the rooms and insert the products listed as explained in the “Ad-hoc Refilling” section above.
- As a matter of course you clean any superficial spillage from the E-cube interior or trays, and check that the guest warning notice is in place.
- Guided by the *Requirements Report*, and memory of the last time you visited this room, you determine whether there might be any “rogue” products in the trays. For example it is possible that a guest has broken the safety seal on a bottle or pack and interfered with goods without actually removing them from the tray. Also it may sometimes be possible for a bottle to be forced back into the tray. The *Requirements Report* should identify this product as a “return” with a question mark “?”. It is important therefore to always check for damaged goods.



Daily refill process: visiting rooms

- Returns might also indicate a faulty tray – one in which a sensor fires for no reason. Memory of the fact that this sensor showed a return on the last refill would make a faulty tray more likely than a guest re-insertion. A faulty tray should be replaced as soon as possible to reduce loss of revenue.
- If such a fault cannot be fixed there and then, a note should be made on the printed report which should then be turned in to your manager at the end of the session.
- There will be some rooms that cannot be accessed e.g. “DND” which will result in unused products.
- There might be other rooms in which the *Requirements Report* indicates that location “X” needs to be refilled, but on inspection location “X” is full and does not appear to be rogue, or the product from this location is in the room but untouched. On the latter case this item can be returned to stock as an “over” but only if the room is unoccupied.

Daily refill process: Reconciliation Report

- At the end of a refill session the *Reconciliation Report* can optionally be generated. This report summarises the refill activity detected by the system since a specified *Requirements Report*. It would be up to your manager to decide on whether to generate this report and how to deal with *overs* and unused products that you return with.
- An unused product is without question the property of the hotel. With an *over*, on the other hand, the guest may have checked out without questioning the bill which included its purchase in which case the hotel has gained by returning it to stock. Alternatively the guest may have queried the bill and been given a discretionary credit.
- In any event you must pass any notes you made about *E-cubes* that require maintenance to your manager so that he or she can take swift action to ensure that the system is kept at full functionality. One or two faulty trays might not have much impact on the overall revenue generated by the system. But each fault will continue to flag warnings as described above and failure to deal with two faults in a timely fashion will soon deteriorate into many faults accumulating with the result that the system becomes increasingly unworkable.

E-cube maintenance

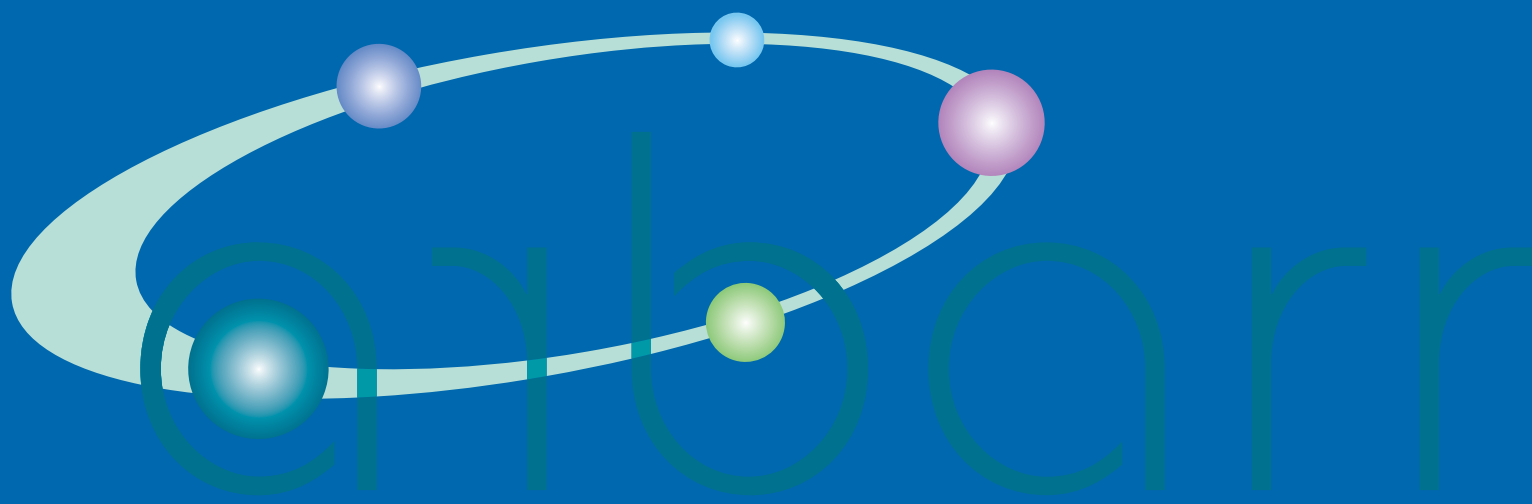
- *E-cube* maintenance mainly consists of replacing faulty tray. Apart from that you are responsible to occasionally clean the *E-cube* enclosure and report any units that consistently fail to cool after you have first checked they are plugged into a good mains supply and that the plug-top fuse has been replaced.
- With your hotels maintenance package you will be kept supplied with a number of spare *E-cube* trays and other spare parts. As soon as you have several “bad” trays, return them to Arbarr (the hotel pays shipping this way). Arbarr will immediately ship you replacement refurbished trays (shipping paid by Arbarr).
- You will suspect a tray as being faulty if either it has obviously suffered excessive spillage or one or more sensors are consistently generating “returns” or “flutter” (see *E-cube Alert* software section below). Remove such a tray and replace with a good one from stock.

E-cube Alert software

- This software module is an option that, if installed, would normally run on a computer at reception. It normally runs in the background allowing the computer to be used for other tasks, but is continuing monitoring the health of your *E-cube* system.
- It can be configured to generate an “alert” on various stimuli. For example it might be configured to detect when a tray is removed from an *E-cube*. After waiting for the time allowed to refill a tray (typically 5 minutes) plus an additional time to filter out false triggering caused by dirty tray runner contacts, this software will display a brightly coloured box announcing “Tray mismatch” accompanied by an audible sound.

E-cube Alert software

- The software can also be configured to Alert when a single return is detected, or when a series of returns are detected. The latter is a known tray fault condition known as a “fluttering sensor” which continuously switches state over a period of time. This rare event may of course generate a false sale event when it starts, but a product cannot be sold more than once between refills. The rest of the time it will be generating “unexpected return” and “unexpected sale” events which are harmless although do tend to fill up the computer’s event log. A tray with a fluttering sensor should be replaced and sent back to Arbarr with a note stating the code of the sensor which was fluttering, as very often the process of shipping can temporarily correct the phenomenon making repair more difficult.



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