

New York State Redemption Centers

Automated Counting and Sorting Systems

September 2018

Redemption Centers

New York State has more than 600 redemption centers where the public can redeem empty bottles and cans.

In most cases counting and sorting is done manually by the staff in the redemption center. However, in order to eliminate manual *counting* and as much manual *sorting* as possible, Anker Andersen A/S has developed an automated counting and sorting system for redemption centers.

New York's Bottle Bill

- 5 cent deposit value each container
- 3½ cent handling fee each container
- Redemption through RVMs or redemption centers
- Redemption centers are not paid their deposit and handling fees until sorted and counted containers are returned to distributors

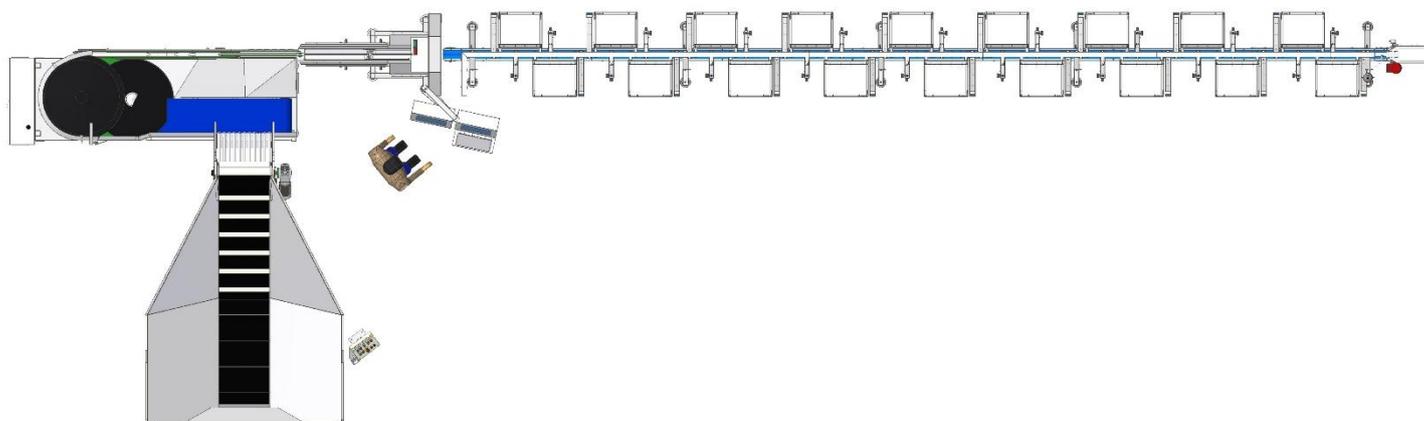
Beverage Containers with Deposit

The container types:

- Aluminum cans
- PET bottles
- Glass bottles



Anker Andersen A/S' Solution for Redemption Centers in New York State



Top view of a HLZ MD Ultra unit with 18 sorting stations. Total length 55 feet.

Scope of Supply

Anker Andersen A/S' scope of supply consists of:

- A batch scanner for reading of batch ID
- A bulk feeder, volume 80 ft³
- A Mono-Disc Ultra in-liner with integrated feeder conveyor
- A double booster conveyor for separation of containers
- A ring-type scanner unit with 8 cameras for barcode detection
- A sorting line with 18 sorting stations and an end of line overrun
- A start/stop panel with touch/info screen
- An info screen showing actual port count
- An electrical cabinet

Connections

- LAN for transmission of data files to customer PC/server
- LAN for HLZ Eazy/VPN for remote support and troubleshooting by Anker Andersen
- Power supply: 3 phase voltage + N + PE, consumption 2.2 kW
- Compressed air, 12 cft/min at 116 psi, recommended type rotary screw compressor with air dryer



Operation of the AA HLZ MD Ultra counting and sorting unit

- Start the machine on the touch panel.
- Fill empty unsorted beverage containers into the bulk feeder.
- The bulk feeder delivers the containers onto the feeding conveyor, which is integrated with the Mono-Disc Ultra inliner.
- From the feeding conveyor the containers pass to the two rotating discs.
- The rotating discs feed the containers to an arrangement of booster conveyors.
- By means of different speeds, the booster conveyors create space between the containers.
- From the last booster conveyor, the containers enter the scanner unit.
- In the scanner unit the container barcode is detected on-the-fly by means of 8 cameras.
- After the scanner unit the containers arrive at the sorting line.
- Based on the detected barcodes, the containers are sorted into 18 fractions with the use of a sorting table.
- The sorting line is equipped with 18 sorting stations and an end-of-line overrun.

Features

- **Batch scanner**

The HLZ machine is equipped with a scanner to start up new batches by scanning a barcode. A new batch with a new data-file will be created. At the same time, the previous batch-file is closed.

The barcode can be part of a customer database in case the machine is used to count and sort for specific customers. If not, any barcode might be used to open a new batch.

In the case of bottle drives, it is possible to create a separate batch for each bottle drive.

In order to avoid creation of too large data files, it is necessary to start a new batch at least once per shift.

- **Barcode database for containers with deposit fee**

Basis for the sorting is a barcode data base which must contain the following information for each used beverage container:

- UPC barcode, 8 or 13 digits
- Sorting station number to be used
- Short product description

Unfortunately, there is no public barcode database available in New York State, and this means, that each redemption center has to create their own database in order to be able to sort the containers.

The data can be entered into an Excel spreadsheet. When ready for use, it has to be converted into a csv-file before it is loaded into the PC of the machine. This is a simple standard procedure.

It is possible to work with more than one database in order to increase the number of different sorts. See below under "Multiple sorting schemes"

- **No reads**

Containers without or with a non-readable barcode is called "no-reads". No-reads can be assigned a separate sorting station for possible further manual handling, or they can run over the end of the sorting line.

- **Unknowns**

Containers which have a readable barcode that is not in the database are defined as "unknowns". Unknowns might be containers that should have been in the database, or they might be containers without a deposit fee.

Unknown containers can be assigned a separate sorting station for further inspection/handling, or they can run over the end of the sorting line.

- Port count

In order to ensure correct sorting to each sorting station, the HLZ machine is delivered with a so-called port-count feature.

The port-count consists of a separate touch-panel showing actual count at each sorting station.

It is possible to enter a preset number per sorting station, for example 240, which will then be the number of containers, which will be sorted into a plastic sack at that specific sorting station.

When the preset number of containers into the sack has been reached, a clearly visible signal lamp at the sorting station will light up.

The operator will need to replace the full sack with an empty one as soon as possible, and activate the reset push button.

In the meantime there are the following possibilities:

- Stop the machine and wait for the new sack to be put in place. Due to reduction in production capacity, this option is rarely used.
- Let containers to the sorting station in question run over the end of the sorting line. The overrun will have to be run through the machine every now and then.
- Use two sorting stations for the same sort. The machine will switch to the alternative station, and will switch back again when the alternative station has been filled with the preset number of containers. This feature is called “port replication”. Port replication reduces the number of available sorts, and should only be considered for the sorts with the highest number of containers.

When the reset push button has been activated the machine will start sorting to that station again.

Port 13	16/130	Port 1	139/200
Port 14	6/60	Port 2	0/138
Port 15	5/270	Port 3	0/140
Port 16	189/270	Port 4	38/138
Port 17	48/60	Port 5	88/138
Port 18	52/60	Port 6	116/138
Port 19	50/140	Port 7	87/140
Port 20	1/180	Port 8	34/140
Port 21	125/138	Port 9	121/140
Port 22	54/60	Port 10	26/140
Port 23	34/60	Port 11	167/340

Screen showing actual port count. Yellow color means pre-warning : “Sack nearly full”.

- **Multiple Sorting Schemes**

The machine is delivered with a limited number of sorting stations, a typical number might be 18 stations. The actual number of required sorts are often higher than that, sometimes up to +50 sorts are needed.

It is possible to operate the machine with different sorting schemes and different barcode databases. It works like this :

First run : Data base 1 with 18 sorts is loaded together with a sorting scheme defining number of containers per sack per sorting station. All containers are passed through the machine. All containers that are not among the 18 sorts are passed over the end of the sorting line.

Second run : Database 2 with the next 18 sorts is loaded together with sorting scheme number 2 defining number of containers per sack per sorting station. All containers remaining from the first run, are passed through the machine. All containers that are not amongst the 18 sorts are passed over the end of the sorting line.

The above procedure can be repeated as many times as necessary.

It is possible to preload combinations of sorting databases and sorting schemes and then choose them on the touch screen.

- **Number of sorting stations**

The HLZ machines can be delivered with any number of sorting stations, up to a maximum of 24. The actual choice depends on actual number of sorts, capacity, available space and investment level.

The most popular model is with 18 sorting stations, but Anker Andersen has also delivered units with 16, 22 and 24 sorting stations.

It is also possible to invest in a machine with only 6 sorting stations, and by running all containers through the machine twice, it is possible to do 42 different sorts. Please request separate leaflet "Automatic Counting and Sorting System with 6 sorting stations and 42 sorts."

- **Oversize and out-of-shape containers**

Containers that are oversized (diameter over 5.1") and out-of-shape containers, like for example partly flattened large PET-bottles, will not be able to pass through the MD Ultra in-liner. They will stay in circulation until they are manually removed. If there are several of these containers, they will disturb the normal flow of containers. The result will be reduced system performance.

It is necessary to try to avoid feeding these containers onto the MD Ultra in-liner as much as possible, and if this cannot be avoided, then remove them from the in-liner soonest possible.

- **Protection against overfilling of the MD Ultra disc**

The MD Ultra is equipped with a sensor that detects if there are too many containers on the discs. If this sensor is activated the built-in feeder conveyor will stop temporarily. The signal will also stop the bulk feeder.

As soon as the overfilling is cleared, the machine will return to normal operation.

- **Glass bottles**

In most sorting applications the glass bottles are not taken through the counting and sorting machine. Some customers have even chosen to have separate machines for counting and sorting of glass bottles.

The HLZ MD Ultra is, however, fully capable of handling glass bottles. It will require the following measures:

- To sort out the relatively heavy glass bottles it is necessary to use special air nozzles. This again means that dedicated glass sorting stations are needed. It is possible to equip sorting stations with both a glass nozzle and a PET/can nozzle.
- In order to avoid breaking of glass bottles at the sorting station, it will be necessary to establish some kind of soft-drop solution.
- If there is a large number of glass bottles in the infeed, and some of them might be broken, we recommend to install a “broken glass removal unit” at the infeed.

- **Capacity**

The expected capacities of the machine are:

- Smaller PET-bottles : 160-200 per minute
- Large PET bottles: 80-100 per minute
- Aluminum cans : 300 per minute
- Mixed cans and small PET bottles: 200-220 per minute

With mixed cans and small PET bottles and 300 operation days per year, it will be possible to handle about 24 million containers in 1-shift operation.

The machine is designed for running in multiple shifts, if this is required.

- **Output data and billing**

For each batch the machine creates a data file listing all the identified containers.

These files can be loaded into for example an Excel spreadsheet, and can be used for supervising of the production, or they might form the basis of billing the distributors, if such agreements can be made.

To keep the output data files in reasonable sizes, it is strongly recommended to start a new batch at least once per shift.

- **Sack holders**

Anker Andersen does not deliver holders for the plastic sacks placed at the sorting stations. However, we have contact to qualified US suppliers, where our customers can source this type of equipment.



Sack holder



Air compressor unit ATLAS COPCO GX4-150T-AFF

- **Air compressor**

Anker Andersen does not deliver air compressors. Due to service and maintenance on this type of equipment, it is advisable to source them locally.

Anker Andersen recommends this air compressor unit:

ATLAS COPCO GX4-150T-AFF

Similar units from other suppliers might also be suitable.

- **More information**

For more specific information regarding any of the above features, please contact Anker Andersen A/S.

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