



---

## AC4D Support Note: Recycling with AC4D

## Recycling Materials with AC4D

The packaging industry is at a pivotal moment as it transitions from a linear "take-make-dispose" model to a circular economy. Using Auto-Count, companies can capture packaging waste, recycle it efficiently, and reintegrate or resell materials to reduce environmental impact and create economic value. Currently, we have created a workflow targeting NGR regrinder machines which grind waste material from an extruder machine to create reusable pellets.

This feature is available in Auto-Count 19.1.1.1506 and higher.

### Basic Workflow

**Step 1:** Waste is produced and captured during production at Auto-Count 4D. Auto-Count records this waste and produces a unique ID for traceability on a Waste Ticket.



**Step 2:** Operators take the waste in the bin/Gaylor/pallet and bring it to the recycling machine to be ground, sorted and turned into usable material again. At the Auto-Count 4D Recycling machine, scan the unique ID on the ticket and weigh the waste before putting the waste material into the grinder machine.



**Step 3:** You now have a new product from the recycled material and Auto-Count will assign it a product ID. You can put it into inventory or sell it!



## Step 1: Enable Waste Output Tracking on AC4D Machines

You must enable waste output tracking in Plant Manager to use this recycling workflow. On your production machine, select **Enable waste output tracking** from your Auto-Count machine's **Options** tab.

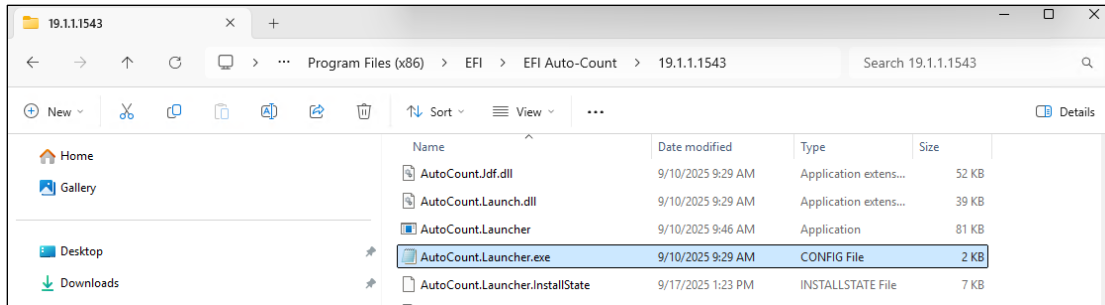
The screenshot shows the 'Define Machine' window for 'Plant-01 - Plant-01 - US'. The 'Options' tab is selected. The 'WASTE' section contains the 'Enable waste output tracking' toggle, which is turned on and highlighted with a red box. Other options include 'Allow non-chargeable stop codes in idle', 'Allow 'idle' during any machine state', 'Allow stop codes in makeready', 'Do not redefine Clean-Up code', 'Disable waste entry on main screen', 'Supervisor password required for negative waste', 'Ignore waste reason categories', 'Send Waste Blocks to MIS', 'Prevent unidentified idle time', 'Idle backfill threshold (Min)', 'Enable 'Rework' on this machine', 'Enable winder allocation', 'Hide job title/description', 'Enforce password expiration', and 'Hide Employee ID'.

## Step 2: Create an AC4D Recycling Machine in Plant Manager

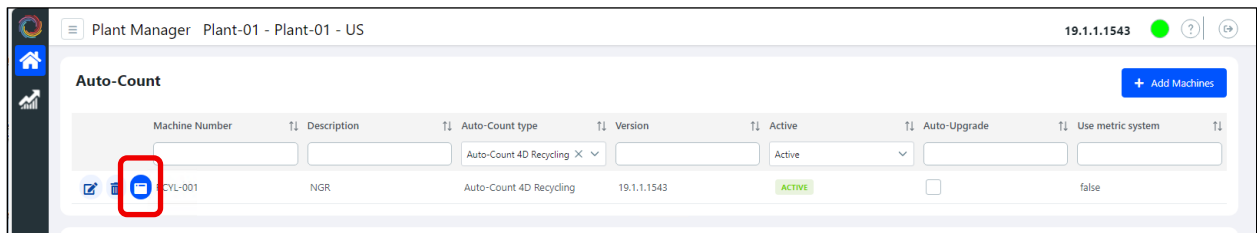
In Plant Manager, create a new machine with an Auto-Count type of **Auto-Count 4D Recycling**. This is the machine which will be at the recycling equipment that grinds the waste material. You'll scan the waste bin barcode as the input for this machine.

The screenshot shows the 'Define Machine' window for 'Plant-01 - US'. The 'Main' tab is selected. The 'Auto-Count type' dropdown is highlighted with a red box and set to 'Auto-Count 4D Recycling'. Other fields include 'Machine Number' (NGR-1000), 'Description' (NGR Recycling Machine), 'Equipment', 'Maximum Infeeds' (1), 'Maximum Outfeeds' (1), 'Maximum Rated Speed', 'Machine Shift Cycle', 'Web Socket Port' (4533), 'Auto Upgrade' (checked), 'Use metric system' (checked), 'Gross Count Unit' (Pieces), 'Net Count Unit' (Pieces), 'Secondary Net Count Unit' (Pieces), 'Infeed Type' (Stack or Pallet), 'Outfeed Type' (Stack or Pallet), and 'READ ONLY UNITS' (Primary net unit and Secondary net unit).

Don't forget to add this new machine by running the **AutoCount.Launcher.exe** utility. Follow the onscreen prompts to add a machine.



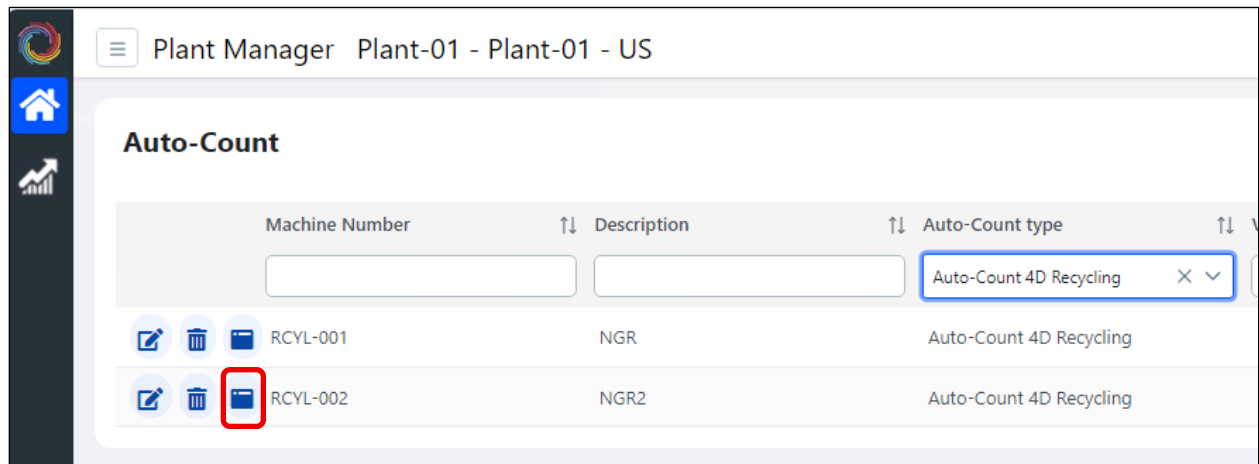
Once your machine is installed you can access the web link from your machine in Plant Manager.



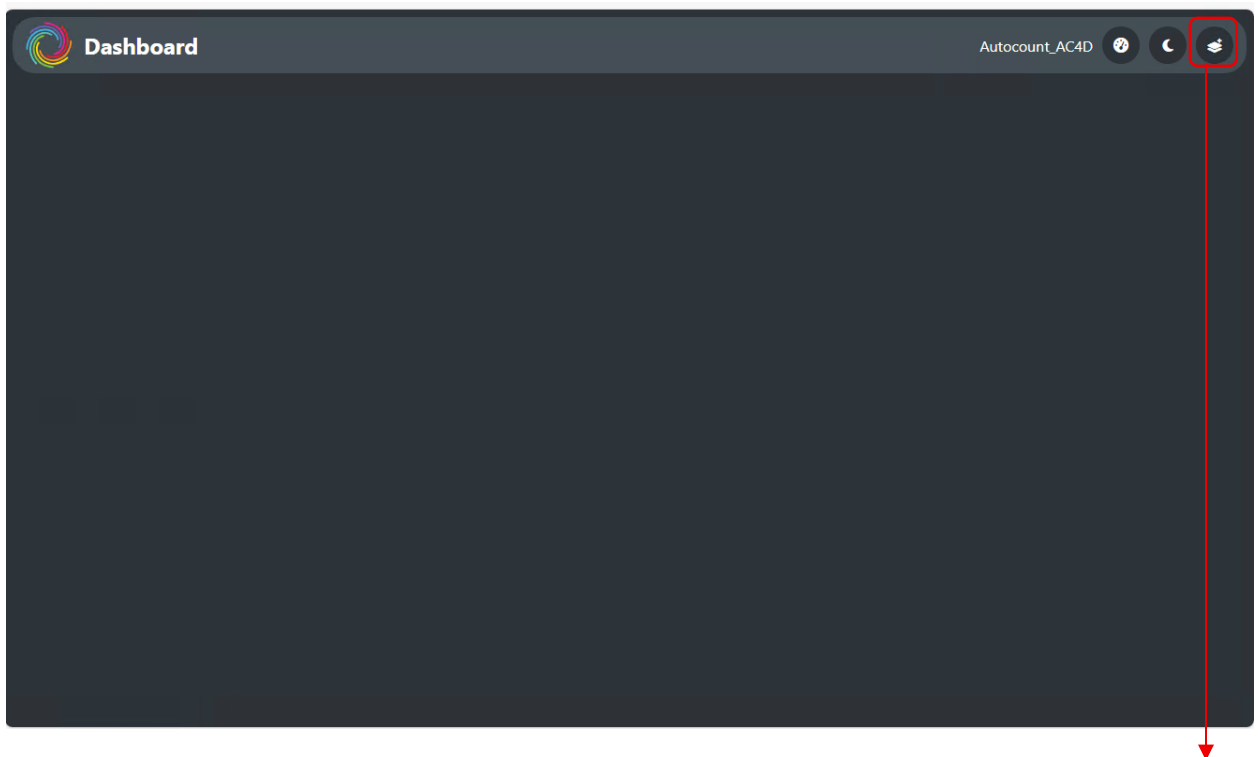
## Setting Up Recycling Machine Dashboard

The first time you access a newly installed Recycling AC4D machine, you must add the correct widgets.

First, use the link in Plant Manager to open the machine.

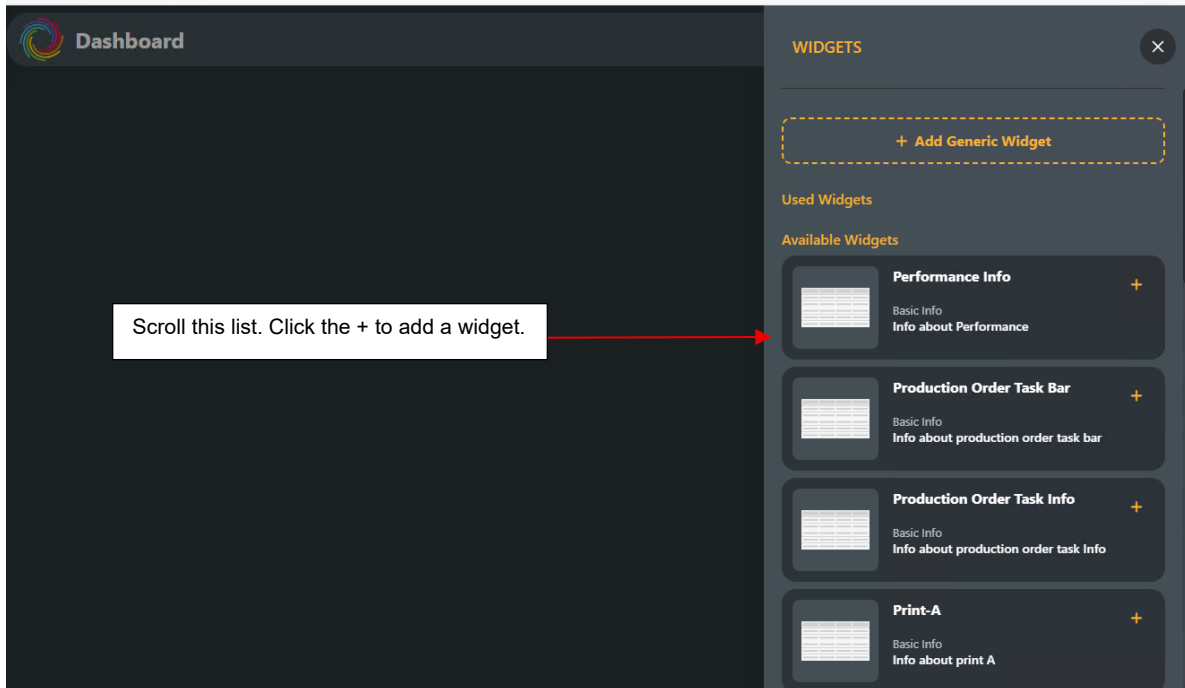


The very first time it may take a moment for this window to display. Once it has finished, click the Add Widget button.

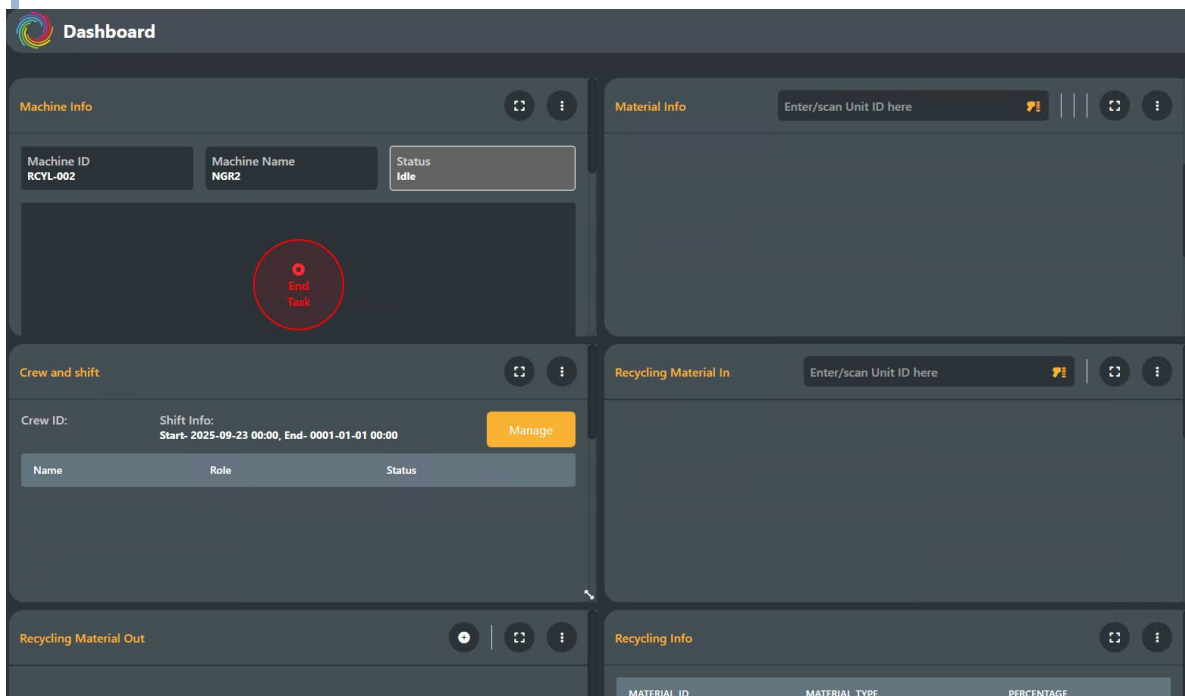


Scroll through the Available Widgets list and add the following:

- Machine Info
- Material Info
- Crew and shift
- Recycling Material In
- Recycling Material Out
- Recycling Info




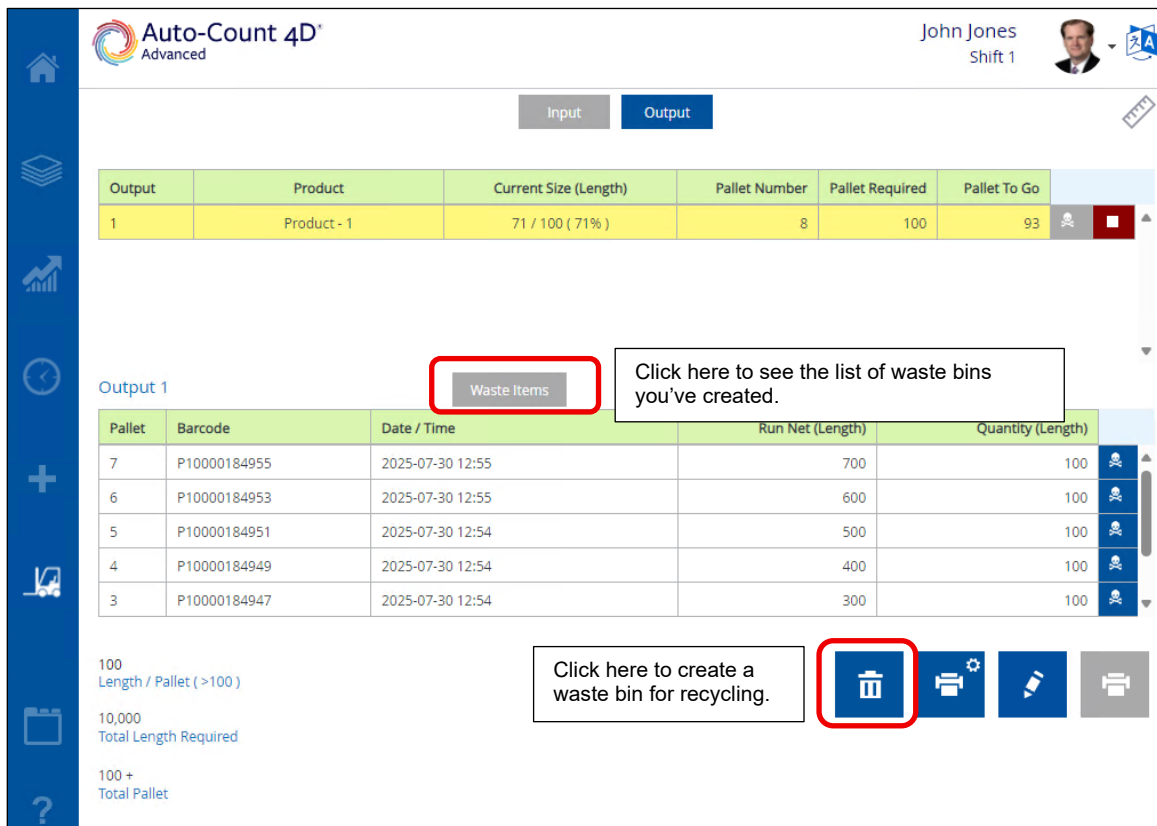
**Note** The first time you add a widget it may take a few minutes to load. You may need to refresh the screen after such time.



See Step 4 below for details on how to use the Dashboard in a workflow.

## Step 3: Create Recycling Waste Bins at the AC4D Production Machine

When this option is enabled, you'll see a new button called **Waste Items** and a new waste bin button  on the AC4D Output screen.



**Auto-Count 4D<sup>+</sup> Advanced** John Jones Shift 1

Input Output

| Output | Product     | Current Size (Length) | Pallet Number | Pallet Required | Pallet To Go |
|--------|-------------|-----------------------|---------------|-----------------|--------------|
| 1      | Product - 1 | 71 / 100 ( 71% )      | 8             | 100             | 93           |





Output 1

**Waste Items** Click here to see the list of waste bins you've created.

| Pallet | Barcode      | Date / Time      | Run Net (Length) | Quantity (Length) |
|--------|--------------|------------------|------------------|-------------------|
| 7      | P10000184955 | 2025-07-30 12:55 | 700              | 100               |
| 6      | P10000184953 | 2025-07-30 12:55 | 600              | 100               |
| 5      | P10000184951 | 2025-07-30 12:54 | 500              | 100               |
| 4      | P10000184949 | 2025-07-30 12:54 | 400              | 100               |
| 3      | P10000184947 | 2025-07-30 12:54 | 300              | 100               |

100 Length / Pallet ( >100 )  
10,000 Total Length Required  
100 + Total Pallet

Click here to create a waste bin for recycling.

When you click the waste bin button, Auto-Count generates new waste output with its own unique ID and tracks the full recipe on the job along with the input materials so when you scan the bin at the recycling machine, Auto-Count will produce a new product based on the recipe items in the waste bin. Also, creating a recycling waste bin will not affect the normal production quantity values of net, gross, or production waste.

### Material Recipes

Ensure that the production job sent to Auto-Count from the MIS contains a material recipe (s) with the following fields. Otherwise the recycling machine will not accept the waste.

- MaterialType (Must be set to Resin)
- Percentage
- LayerNumber
- HopperNumber
- ItemMeasure (Weight)

The Recycling machine must keep track of the material recipes, so you know the composition of the recycled inventory product it produces. In this way you can grade the inventory as high value or low value and make the appropriate decision to sell it or consume it on another job.

In this example, let's create a waste bin. **Click Waste Items** to display the list of bins. Then click the waste bin button to create a waste bin.

The screenshot shows the Auto-Count 4D Advanced interface. At the top, the user is logged in as John Jones, Shift 1. Below the header, there are 'Input' and 'Output' tabs. The 'Output' tab is active, displaying a table with the following data:

| Output | Product     | Current Size (Length) | Pallet Number | Pallet Required | Pallet To Go |
|--------|-------------|-----------------------|---------------|-----------------|--------------|
| 1      | Product - 1 | 71 / 100 ( 71% )      | 8             | 100             | 93           |

Below this table, there is a section labeled 'Output 1' with a 'Waste Items' button highlighted in a red box. Below the button is a table with the following data:

| Pallet | Barcode      | Date / Time      | Run Net (Length) | Quantity (Length) |
|--------|--------------|------------------|------------------|-------------------|
| 1      | P10000184960 | 2025-07-30 13:24 | 0                | 0                 |

At the bottom right, there are four icons: a trash can, a printer, a pencil, and a document. A red arrow points from the trash can icon to the 'Note' section below.

Create another bin.

**Note** It may take up to a minute for Auto-Count to generate the waste bin barcode.



Auto-Count 4D<sup>®</sup> Advanced

John Jones  
Shift 1

Input Output

| Output | Product     | Current Size (Length) | Pallet Number | Pallet Required | Pallet To Go |
|--------|-------------|-----------------------|---------------|-----------------|--------------|
| 1      | Product - 1 | 71 / 100 ( 71% )      | 8             | 100             | 93           |

Output 1 Waste Items

| Pallet | Barcode      | Date / Time      | Run Net (Length) | Quantity (Length) |
|--------|--------------|------------------|------------------|-------------------|
| 2      | P10000184962 | 2025-07-30 13:28 | 0                | 0                 |
| 1      | P10000184960 | 2025-07-30 13:24 | 0                | 0                 |

100  
Length / Pallet ( >100 )

10,000  
Total Length Required

100 +  
Total Pallet

## Notes

- In the future, we will remove the Run Net and Quantity columns from the waste bin list. These are not relevant to the waste bins as we only record the weight of the material in the bin when it is weighed at the AC4D Recycling machine.
- You cannot create a waste bin if the gross count has not increased. This prevents duplicate waste bin creation.
- In the future, we will disable the Edit Output button for waste bins as this feature is not necessary for waste bins. To ensure precise weight measurement for recycling, we will not allow manual waste entry.
- This section assumes you have set up an infeed scale for this AC4D production machine to weigh the waste.



## Information Collected by Auto-Count

When a recycling waste output is created, Auto-Count, via Plant Manager Connector, creates a MachinePalletCommand message with a **PalletType** of 2 (Waste Output for Recycling/ Reprocessing).

Within the MaterialPalletDetail node, you'll find the recipe used and all materials used on the production job. This ensures that when the barcode for this bin is scanned at the AC4D Recycling machine, you'll know the content of the newly recycled material.

## Waste Recycling Ticket

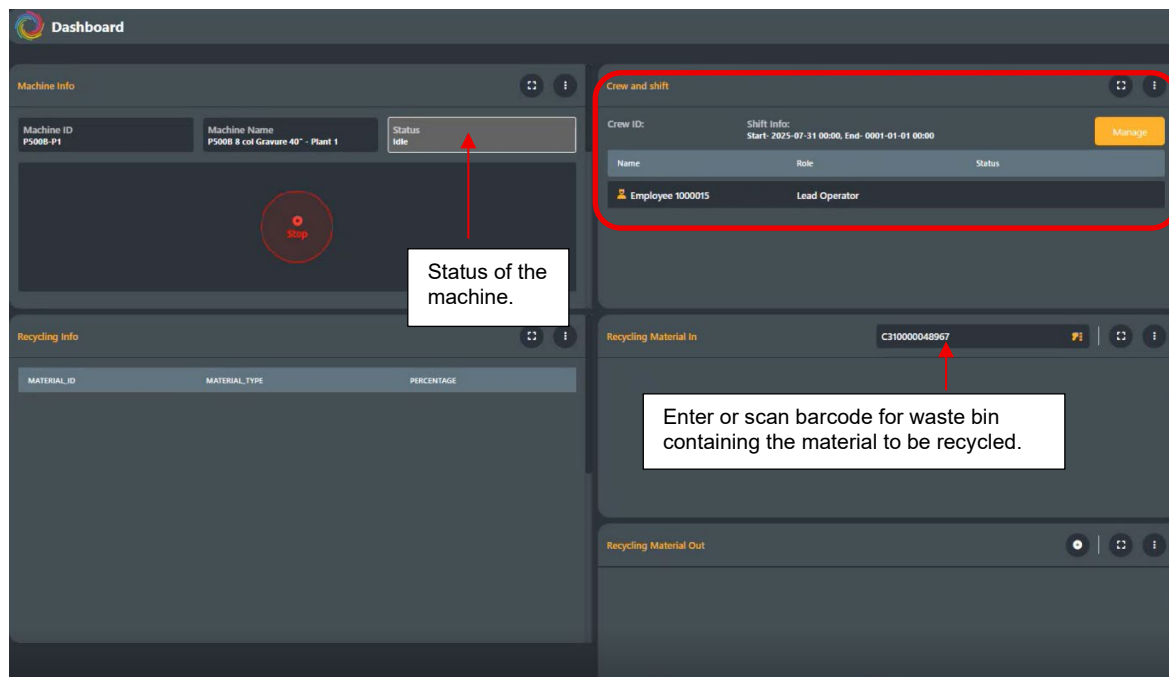
This is the ticket which will automatically print when you create a recycling waste bin. We've also added this to the list of standard reports and tickets so you can easily reprint as needed.

|  |  |                             |                               |
|--|--|-----------------------------|-------------------------------|
|     |  | <h1>Waste Output</h1>       |                               |
| Date:  | 29-07-2025   | Time:                       | 10:47                         |
| Operator:  | Employee 1000016   | Shift:                      |                               |
| Machine:   | 300A-P1 L300 Extruder Plant 1  | Del:                        | 2                             |
| Form/Version No:   |  |                             |                               |
| <h1>1350</h1>  |  |                             |                               |
| Title:   | C100 Bobst 142 ER - Plant 1  |                             |                               |
| Job number:  | <div style="border: 1px solid black; padding: 10px; display: inline-block;"> <h1>2</h1> </div> |                             |                               |
| <h1>92761</h1>   |  |                             |                               |
| Job:   | AC4D-Radius Test Case #1 One Sheet to  |                             |                               |
| Customer:  | BUR001 - Burton Brewery  |                             |                               |
|  | <u>Form Net</u><br>0.00  | <u>Pallet Count</u><br>0.00 | <u>Basis Weight</u><br>450.00 |
|  | Last Pallet  |                             |                               |
| Gross Weight:  | 0.00   |                             |                               |
| Special Instructions:  |  |                             |                               |
| Routing:   |  |                             |                               |
|  |  |                             |                               |
| *C410000172034*  |  |                             |                               |

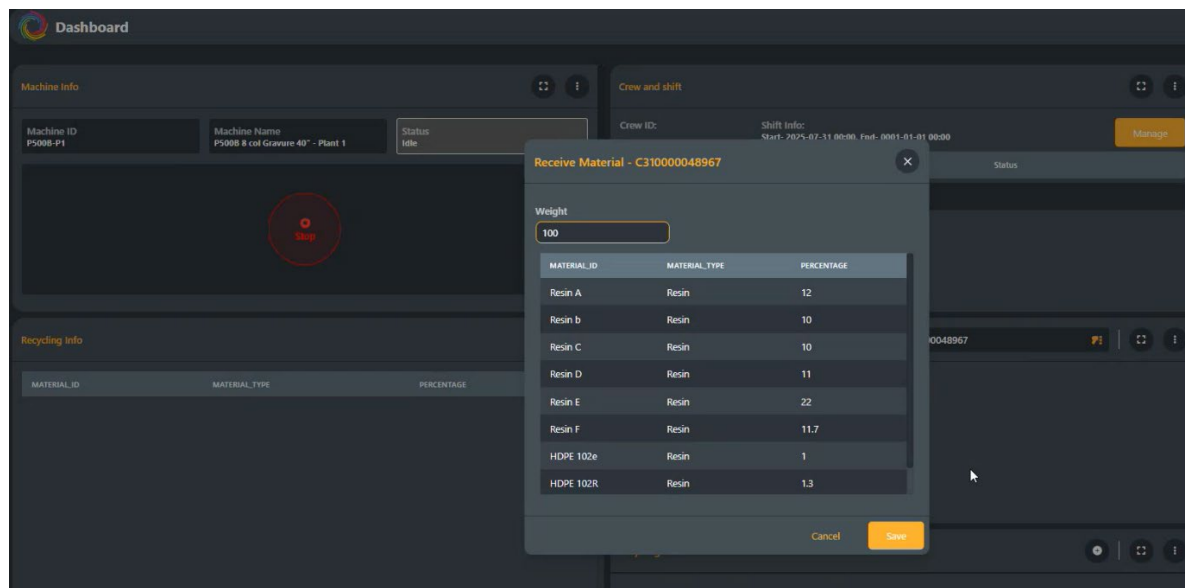
## Step 4: Create New Product from Waste at the Recycling Machine

The Recycling AC4D machine is a widget-based user interface. To access this from your browser, the AC4D Recycling Service must be running just like traditional AC4D machines. There are only two states of this machine – Idle and Production. This section assumes you have set up an infeed scale for this AC4D recycling machine to weigh the waste.

**Step 1: Start a Job** An Employee logs into the machine and scans the barcode of the waste bin/gaylord.



**Step 2: Weight the waste material** Auto-Count displays the material recipe components of the material from the original production job after you enter the waste bin barcode. From this window, Auto-Count records the weight of the waste material sent from your scale. Click **Save**.



Once saved, the machine automatically goes into Production, and an 'input' bin is created. In the Recycling Info widget, the operator can see the recipe being used to produce the new item.

**Dashboard**

**Machine Info**

Machine ID: P500B-P1

Machine Name: P500B 8 col Gravure 40" - Plant 1

Status: **Production**

**Crew and shift**

Crew ID: Shift Info: Start- 2025-07-31 00:00, End- 0001-01-01 00:00

Name: Employee 1000015 Role: Lead Operator Status:

**Recycling Info**

| MATERIAL_ID | MATERIAL_TYPE | PERCENTAGE |
|-------------|---------------|------------|
| Resin A     | Resin         | 12         |
| Resin b     | Resin         | 10         |
| Resin C     | Resin         | 10         |
| Resin D     | Resin         | 11         |
| Resin E     | Resin         | 22         |
| Resin F     | Resin         | 11.7       |
| HDPE 102e   | Resin         | 1          |
| HDPE 102R   | Resin         | 1.3        |

**Recycling Material In**

Unit ID: C310000048967

Unit ID: C310000048967

**Recycling Material Out**

Continue to add more waste bin inputs. The Recycling Info widget will update as you add additional inputs.

**Dashboard**

**Machine Info**

Machine ID: P500B-P1

Machine Name: P500B 8 col Gravure 40" - Plant 1

Status: **Production**

**Crew and shift**

Crew ID: Shift Info: Start- 2025-07-31 00:00, End- 0001-01-01 00:00

Name: Employee 1000015 Role: Lead Operator Status:

**Recycling Info**


| MATERIAL_ID | MATERIAL_TYPE | PERCENTAGE |
|-------------|---------------|------------|
| Resin A     | Resin         | 12         |
| Resin b     | Resin         | 10         |
| Resin C     | Resin         | 10         |
| Resin D     | Resin         | 11         |
| Resin E     | Resin         | 22         |
| Resin F     | Resin         | 11.7       |
| HDPE 102e   | Resin         | 1          |
| HDPE 102R   | Resin         | 1.3        |

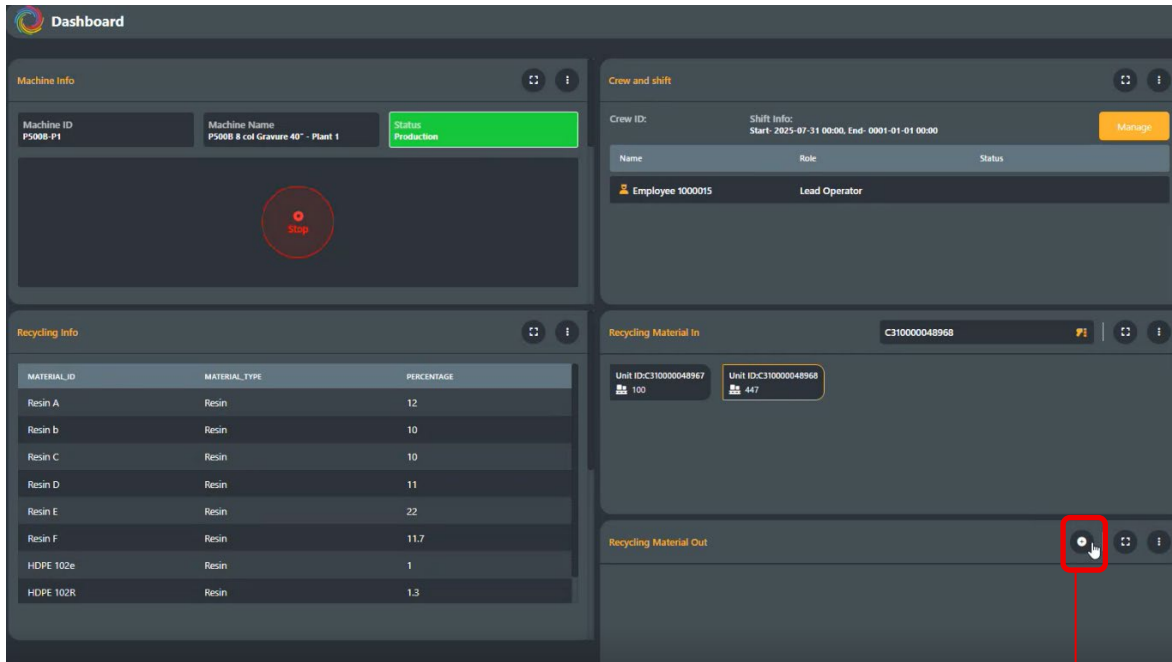
**Recycling Material In**

Unit ID: C310000048967

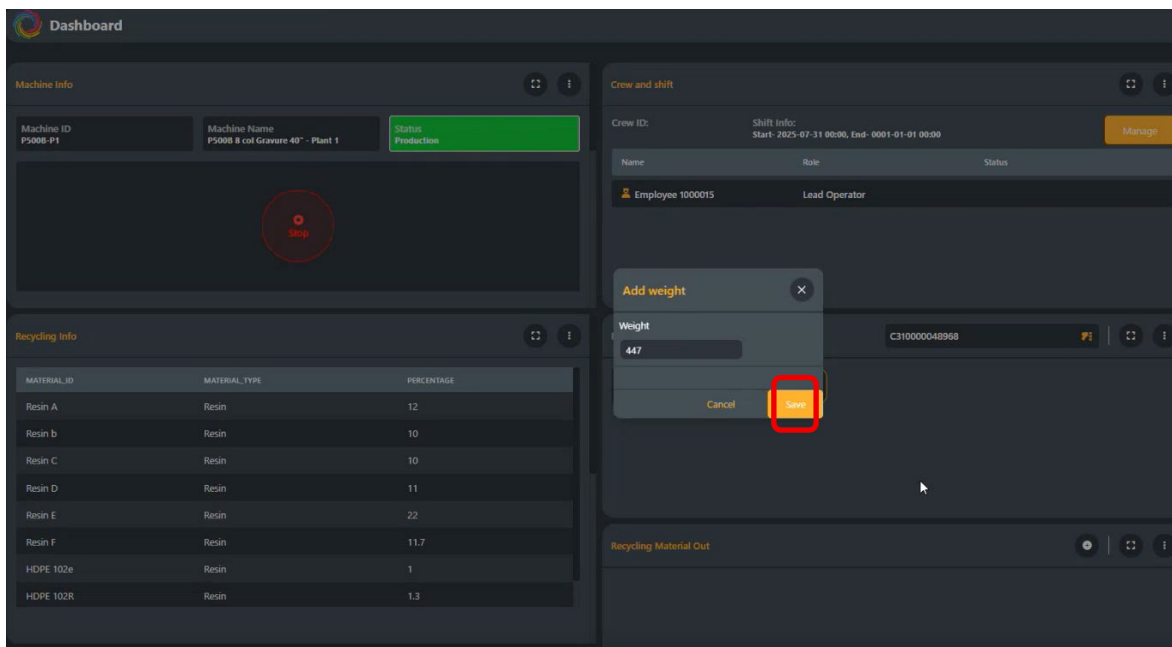
Unit ID: C310000048968

**Recycling Material Out**

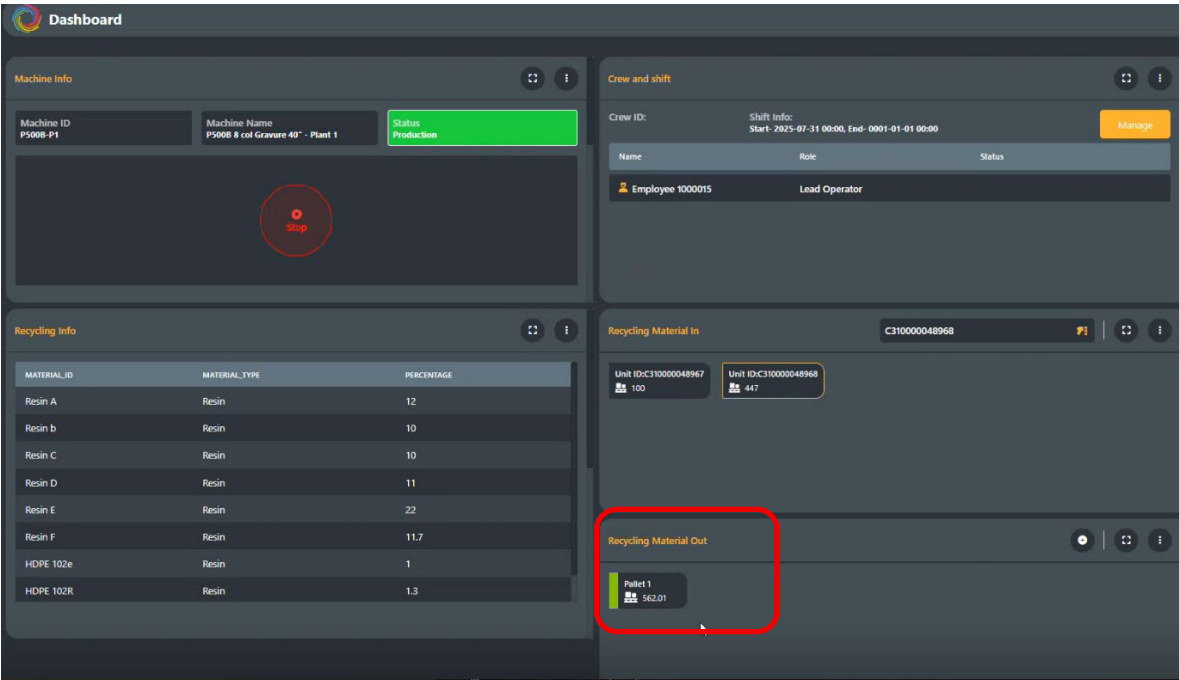
**Step 3: Create New Product** Once you have entered enough material into the recycling machine, you can start creating outputs. In the Recycling Material Out widget click the plus button  to create an output. T



he weight from you scale will automatically be used. Click **Save**.



Now you have an output.



**Step 4: End Job** Once you have the outputs created for this job, simply press **Stop** in the Machine Info widget to end the job.

