



Addressing Feedstock Challenges in Anaerobic Digestion

Unlocking the Potential of Organic Waste

Presented by: Jessica McWilliams and MacKenzie Bernhard

Moderated by: Joe Ayala

Quick Notes



You should be able to hear me talking now. If you can't, use the questions module to describe your issue.

Two Audio Options: Phone or Computer
Choose one and connect

Pro tip: Don't call in on our phone if your audio is set to "Mic and Speakers"

Ask questions using the Questions Panel on the right side of your screen at any time.

The recording of the webinar and the slides will be available after the event. We will post them online and send you a link.

A screenshot of the GoToWebinar interface. The top menu bar includes 'File', 'Options', 'View', and 'Help'. Below the menu, a yellow banner reads 'Attendees still on hold' with instructions to 'Press *1 to Start the Broadcast for all attendees.' and a checked box for 'Record on start'. A sidebar on the left contains icons for various functions. The main content area shows 'Audience view' at 100%, 'Sharing', 'Webcam', and 'Audio' options. The 'Audio' section has radio buttons for 'Computer audio' and 'Phone call', with 'Phone call' selected. Below this, it displays 'Dial: +1 (415) 655-0052', 'Access Code: 147-638-497 #', and 'Audio PIN: 79 #'. A 'Problem dialing in?' link is also present. The bottom section shows a 'Questions' panel with a table of questions and answers, and a 'Send Privately' button. The bottom of the screen displays 'Webinar Now', 'Webinar ID: 815-417-091', and the 'GoToWebinar' logo.

Audio

Questions

Feedstock Scarcity and Innovative Solutions

Key Challenges

- **Increasing Competition for Organic Materials:**
 - Stricter regulations on landfill use and rising recycling rates reduce availability of organic MSW for AD.
- **Processing Complexity:**
 - Effective separation of organic fractions from non-organic materials is crucial for quality feedstock.

Innovative Solutions Needed

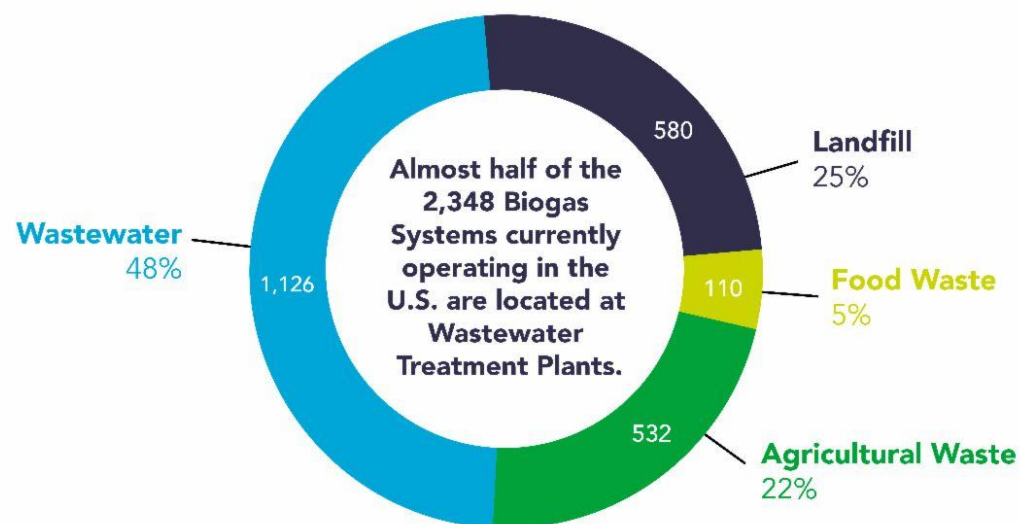
- **Advanced Sorting Technologies:**
 - Improve efficiency in separating biodegradable materials at MRFs to enhance feedstock quality.
- **Integrated Waste Management:**
 - Combine AD with composting and other recycling processes to optimize the use of organic materials and support a circular economy.

Conclusion:

- Addressing feedstock scarcity through innovation is essential for the sustainability and success of anaerobic digestion systems in meeting renewable energy demands.

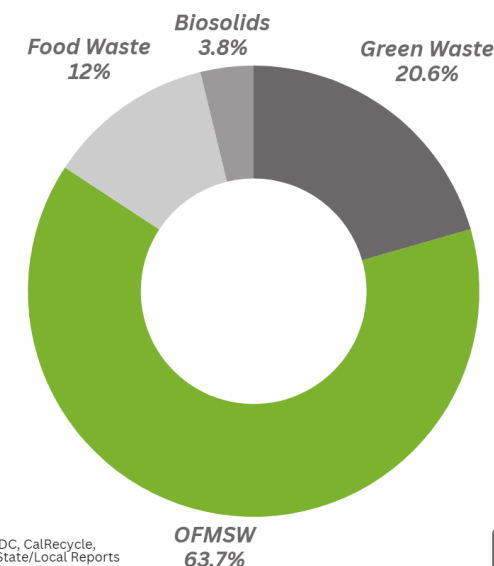
Increasing Feedstock Scarcity for AD Projects

U.S. BIOGAS CAPTURE SYSTEMS BY SOURCE OF FEEDSTOCK, 2024



Source: ABC Biogas Projects Database, 2024.

AVAILABILITY OF FEEDSTOCK FOR INFRASTRUCTURE



Sources: EPA, USDA, ReFED, WEF, NRDC, CalRecycle, FWRA, U.S. Census Bureau, Industry/State/Local Reports

OFMSW: The Largest Untapped AD Feedstock



Vast Scale of Waste:

- 63 million tons of food waste generated annually in the U.S.
- Globally, 1.3 billion tons of organic waste is disposed of, most of it untapped for energy recovery.



Untapped Potential:

- A significant portion of this organic fraction of MSW (OFMSW) ends up in landfills, missing out on AD opportunities.



Regulatory Push:

- Policies like California's SB1383 mandate the diversion of 75% of organic waste by 2025, increasing available feedstock when enforced.



Economic and Environmental Benefits:

- Utilizing OFMSW in AD can reduce landfill costs, generate biogas, and provide nutrient-rich fertilizers.



Technology Solutions:

- Innovative systems like BIOMAK are enhancing OFMSW processing, making it feasible for more regions to adopt AD.

BIOMAK: A Solution to Feedstock Challenges

Rapid Thermal Hydrolysis for MSW, contaminated SSO & MRF fines

Thermal Hydrolysis acts as a pressure cooker by adding temperature and pressure through saturated water steam

Separation of hydrolysis from the anaerobic digestion process increases biomethane potential and reduces residence time

HYDROLYSIS



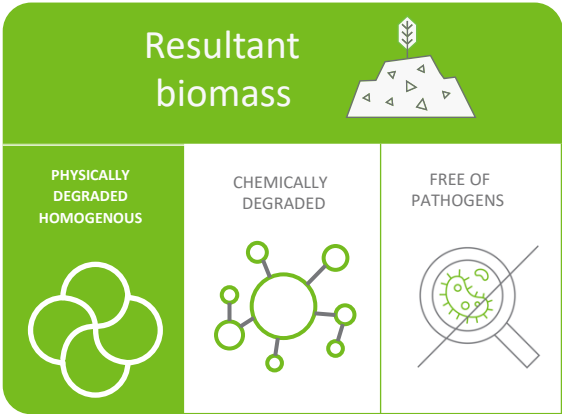
Waste in

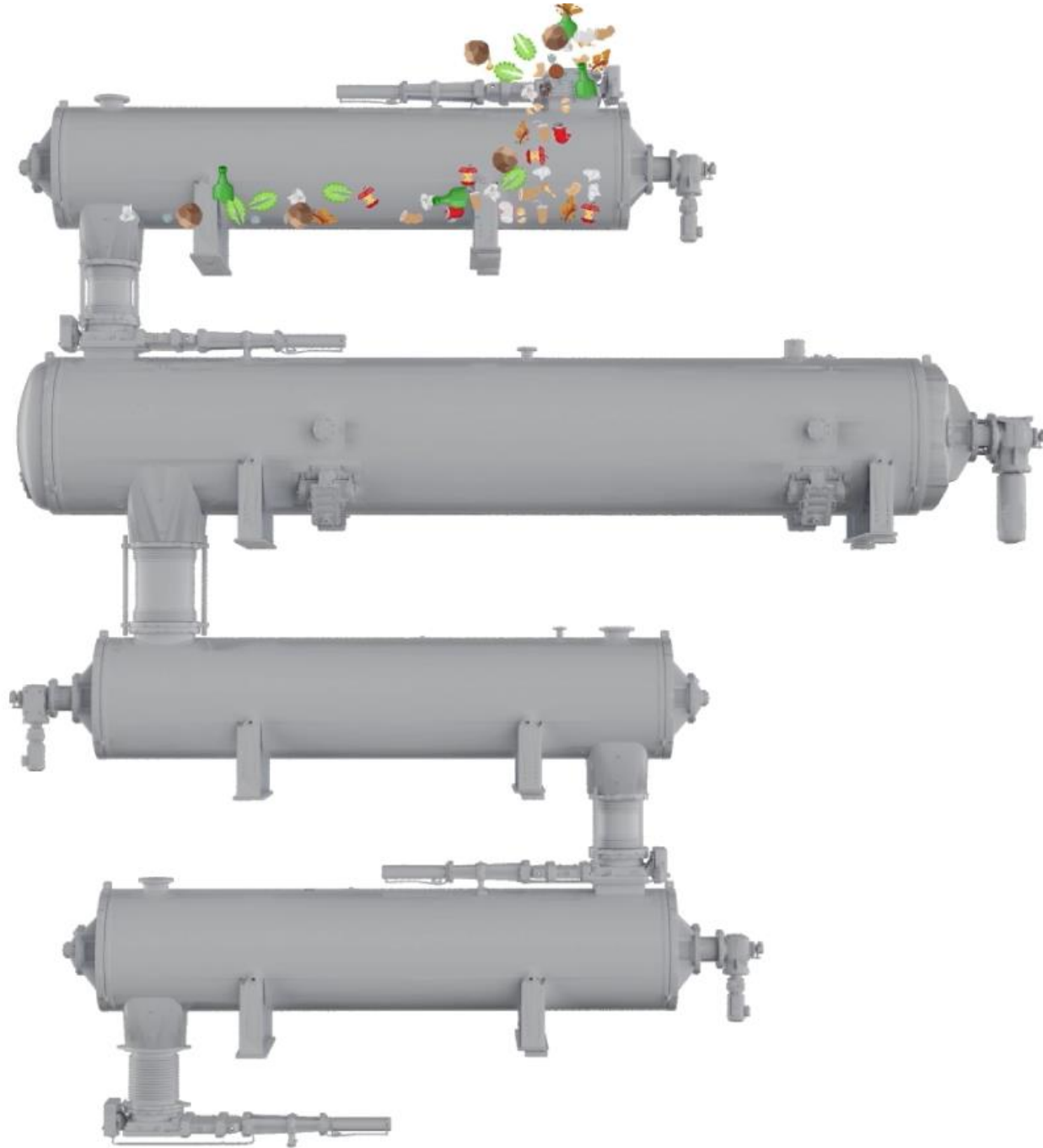


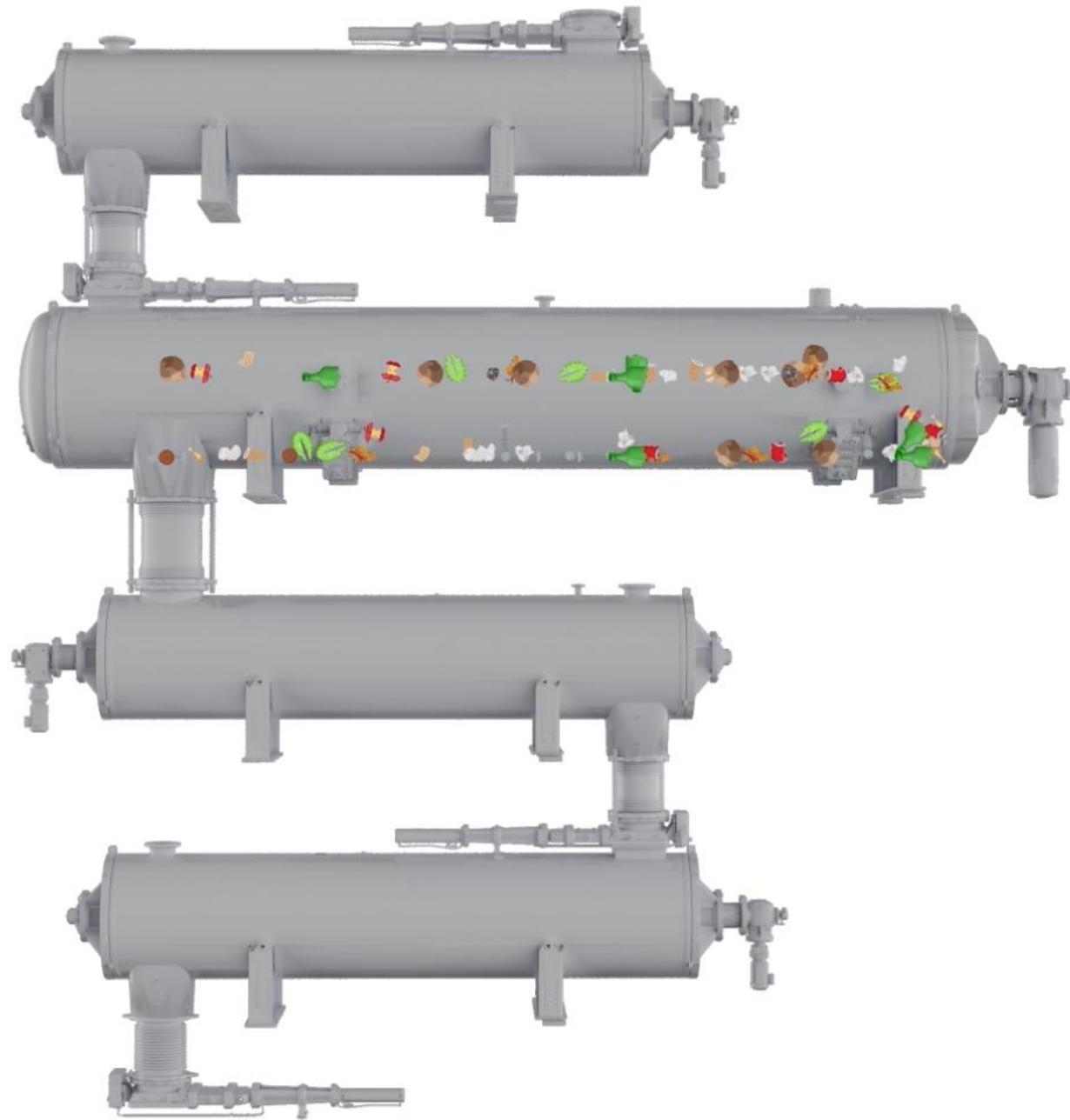
BIOMAK®

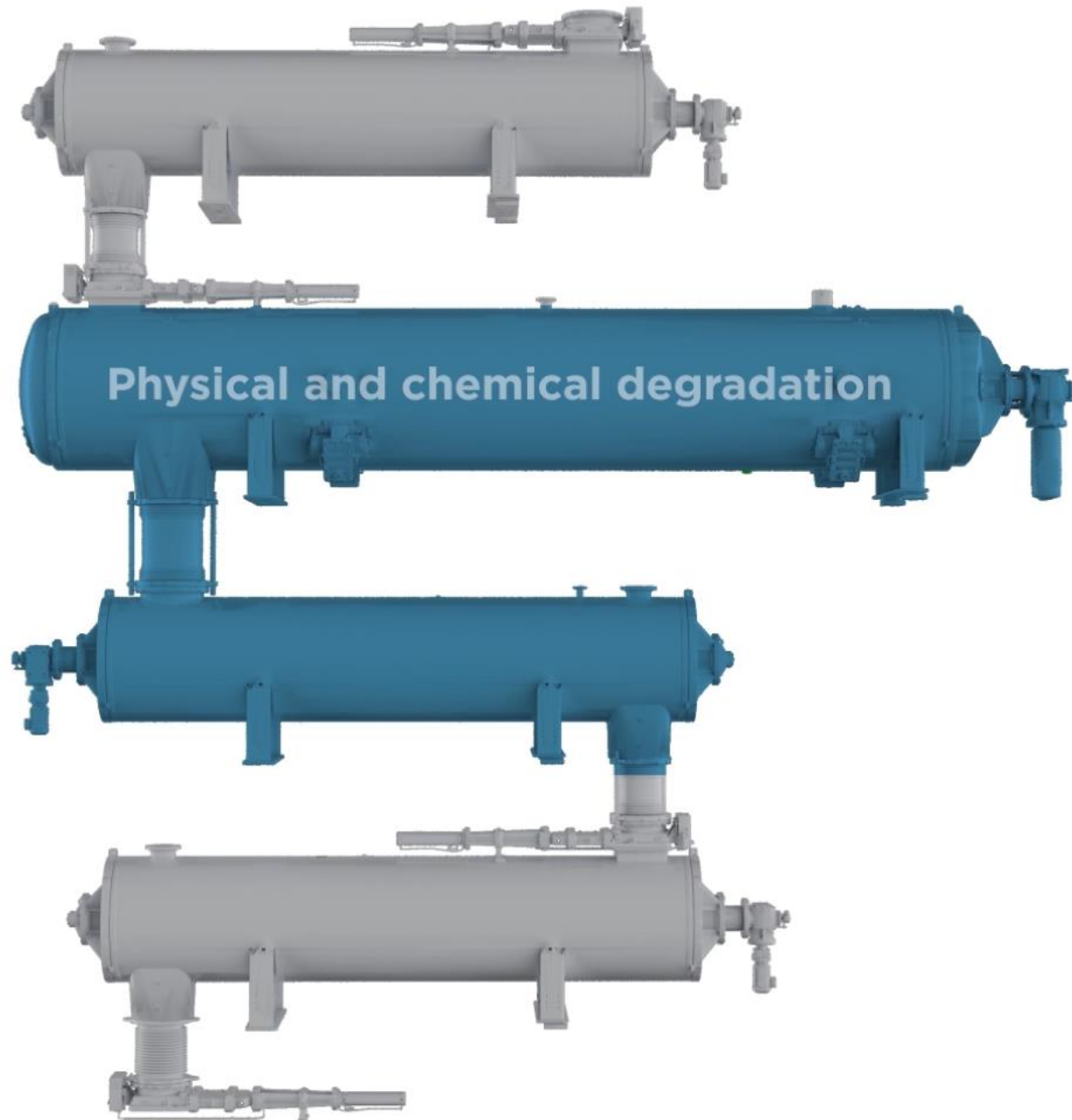


Biomass out

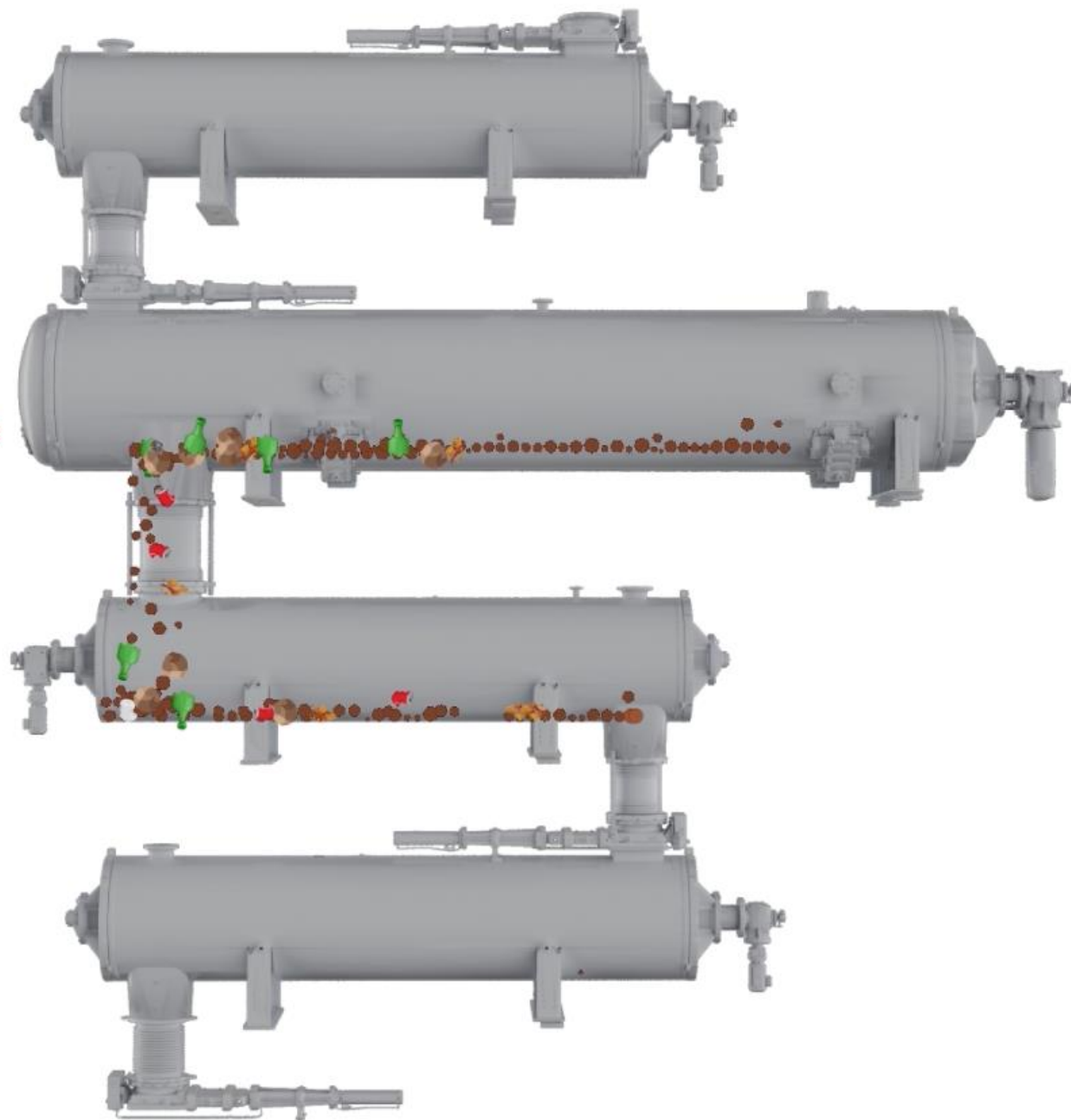


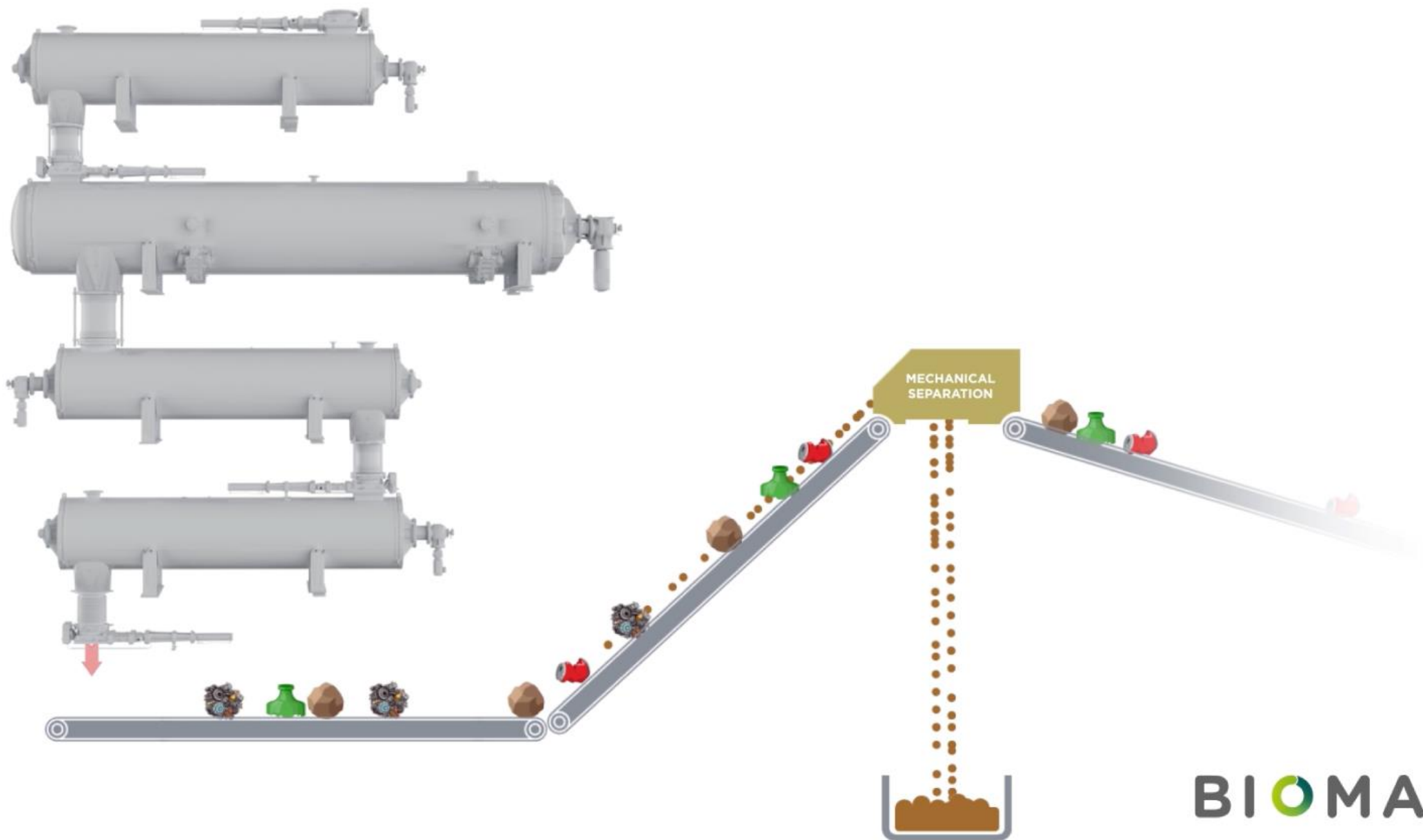




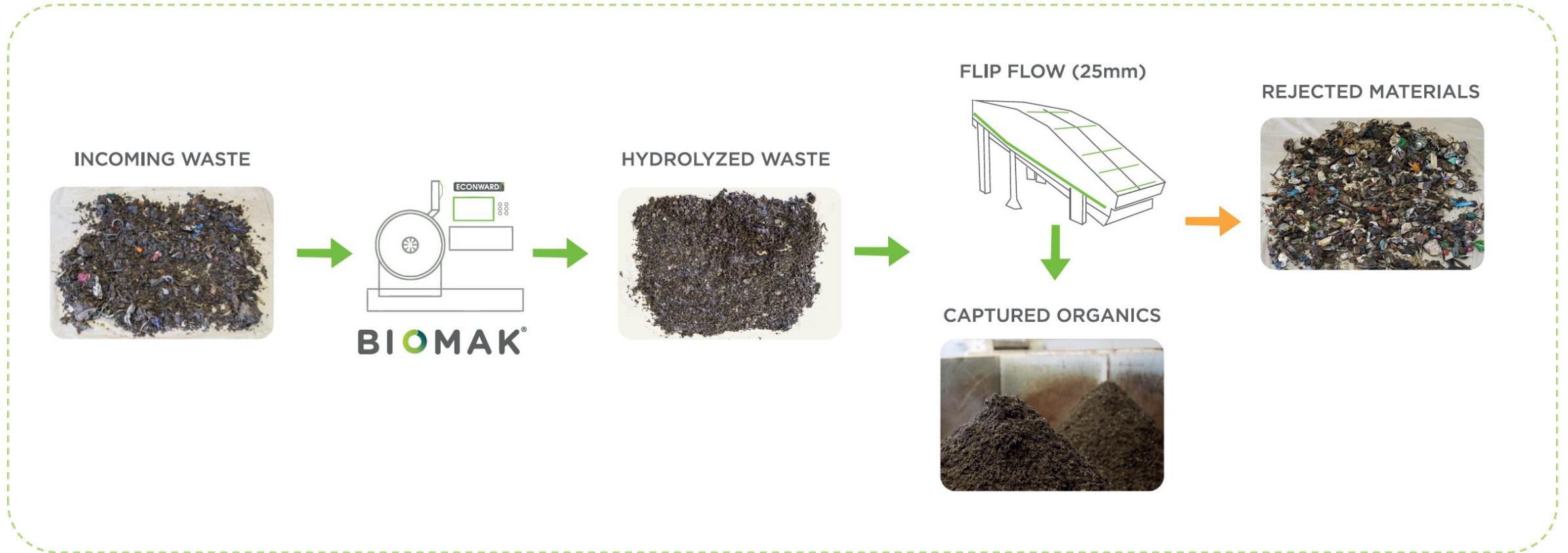


302°F and 58 psig
for 20 minutes





Simple two-step process to decontaminate organic-rich waste streams



Waste Input

Contaminated SSO

MRF fines

MSW

Multi-unit residential





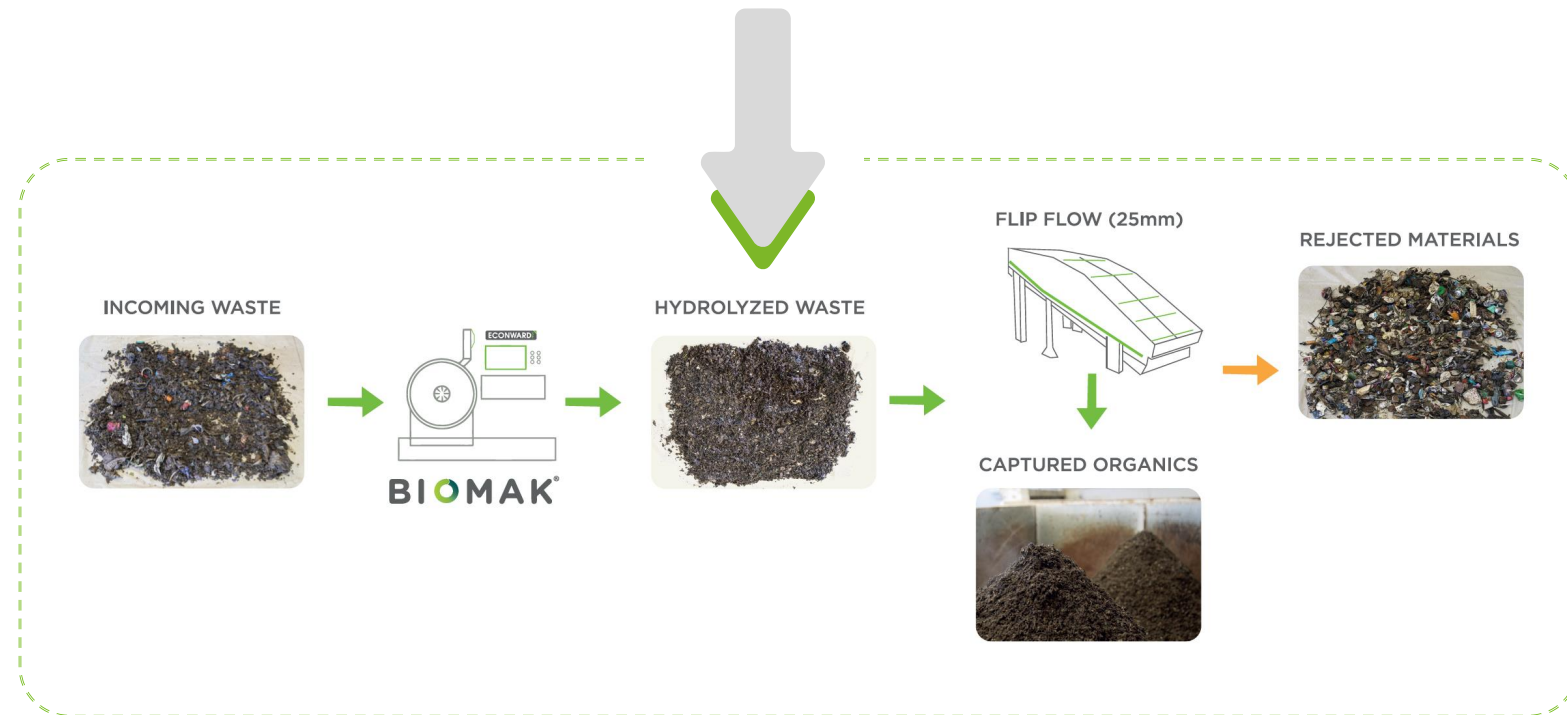
Organic-rich waste stream input







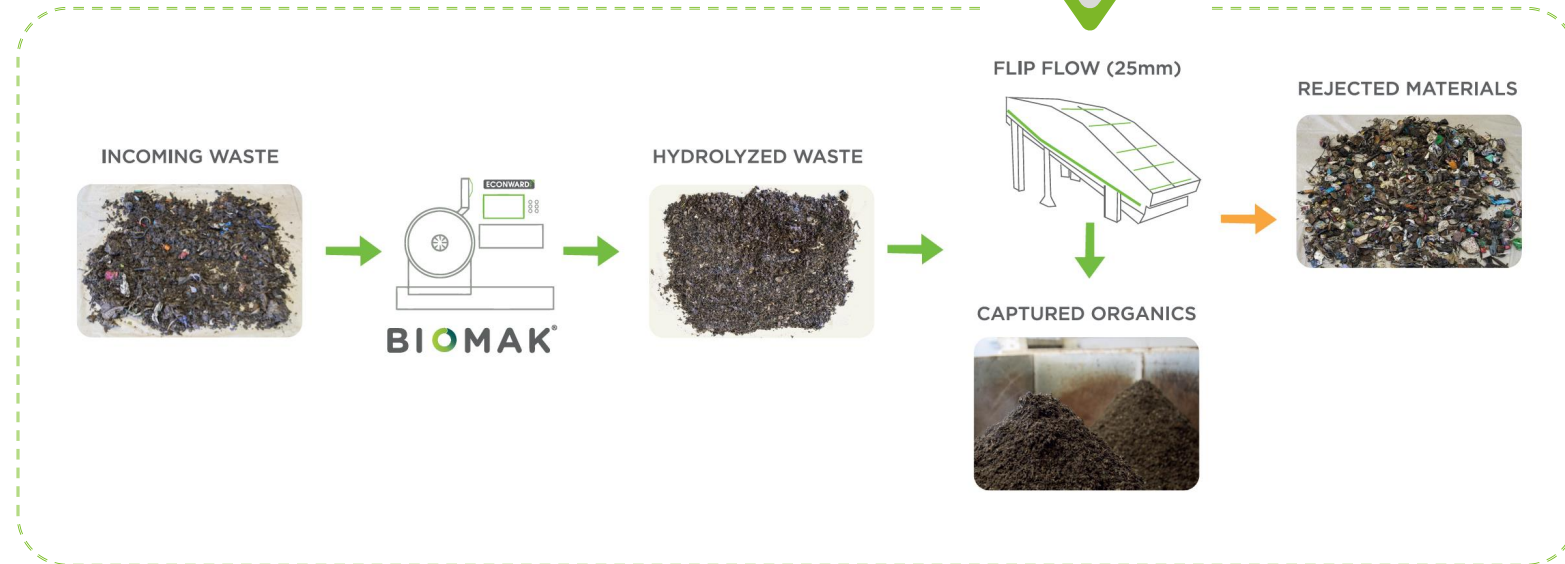
Organic-rich waste stream
fast hydrolysis (20 minutes)

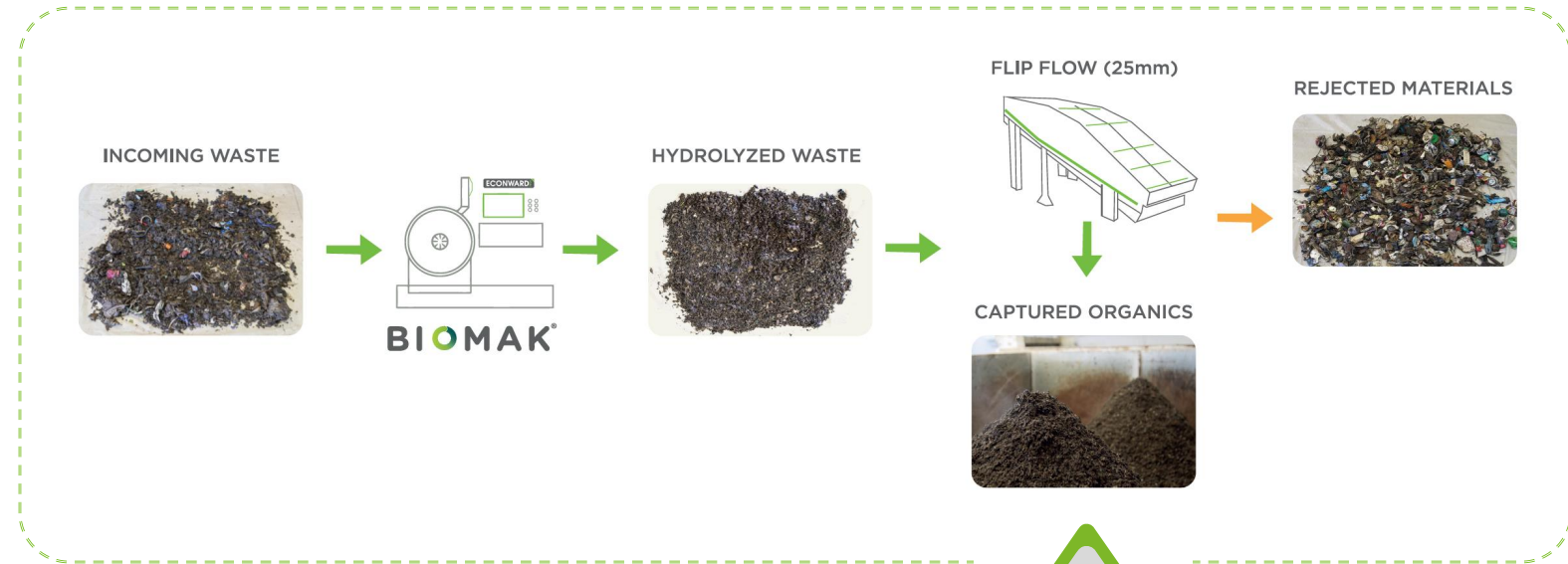






Hydrolyzed waste goes
through vibrating screen



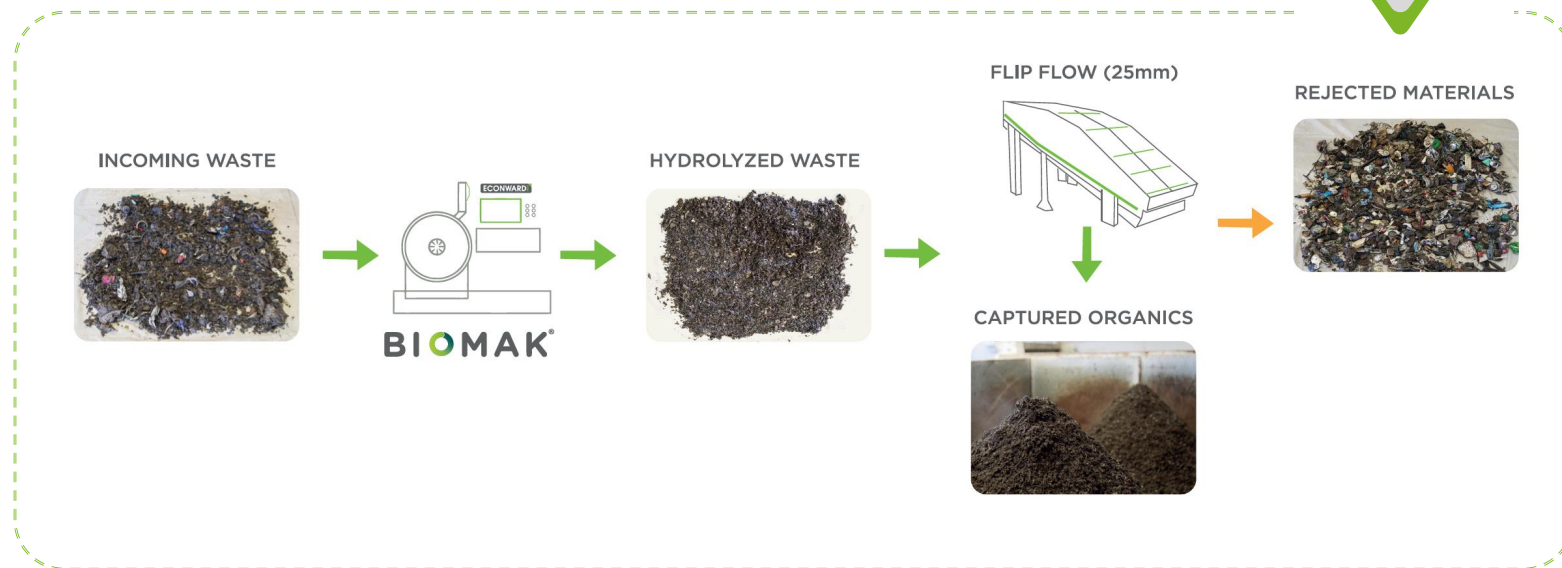


From waste to pathogen free,
hydrolyzed organics in less than 40
minutes





Rejected materials suitable for
further recycling





BIOMAK INPUT

Tons/year	65,224	-
Organic	38,391	58.9%
Non-Organic	26,833	41.1%
Humidity	54.0%	-

HYDROLIZED

Tons/year	74,024	-
Organic	47,191	63.8%
Non-Organic	26,833	36.25%
Humidity	59.5%	-

REJECT FRACTION

Tons/year	19,551	-
Organic	1,862	9.5%
Non-Organic	17,688	90.5%
Humidity	26.7%	-

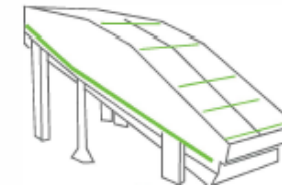
INCOMING WASTE



HYDROLIZED WASTE



FLIP FLOW



REJECTED MATERIALS



CAPTURED ORGANICS



$45,238/47,191=0.96$
 96% organics capture

UNDERS 40 mm

Tons/year	54,473	-
Organic	45,328	83.2%
Non-Organic	9,145	16.8%
Humidity	74.6%	-

BIOMAK™

- ▼ High Capacity
- ▼ Compact
- ▼ Reliable



System Specifications

8.8 short tons per hour/70,000 tons per year

Treats high solid organic fraction of MSW (20% - 70% TS)

Full facility footprint: 3,000 sq. ft.



Operating Parameters

150 °C / 305 °F

4 bar/ 58 psi / 400 kPa

4 autoclaves, total of 20 minutes residence time

Economic and Environmental Benefits of BIOMAK

JURISDICTIONS

Cost Savings:

- Reduces the financial burden of managing municipal solid waste (MSW) by diverting organic waste from landfills.
- Decreases landfill tipping fees and transportation costs by processing waste locally.
- Helps jurisdictions meet regulatory mandates (e.g., organic diversion laws), avoiding fines and penalties.

Reduced Landfill Dependency:

- Less organic waste sent to landfills leads to reduced methane emissions and environmental impact.
- Extends the lifespan of landfills, delaying the need for costly expansions.

DEVELOPERS

Revenue Generation:

- Monetize untapped organic waste streams like the Organic Fraction of MSW (OFMSW) through biogas production.
- Sell by-products such as nutrient-rich digestate for use in agriculture as a sustainable fertilizer.
- Capitalize on increasing demand for renewable energy and sustainability-driven projects.

Recap: BIOMAK's Role in Solving Feedstock Scarcity and Promoting Sustainability

- BIOMAK is a key solution for addressing feedstock scarcity in anaerobic digestion (AD) projects. It promotes sustainability by efficiently processing organic waste, reducing landfill dependency, and generating renewable energy.

- **Call to Action:**

- Leverage BIOMAK to optimize your AD and waste processing projects.
- Maximize feedstock utilization, reduce costs, and contribute to a sustainable future through innovative waste management.

Let's lead the change!

The logo consists of the word "ECONWARD" in white capital letters on a dark rectangular background, with a small green square icon to the right.

401 Wilshire Blvd.
Santa Monica, CA 90401
USA

Joe Ayala
Chief Operating Officer
j.ayala@econward.com

The logo consists of the word "ECONWARD" in white capital letters on a dark rectangular background, with a small green square icon to the right.

C/ Alcalá, 21
28014 – Madrid
Spain

www.econward.com
info@econward.com

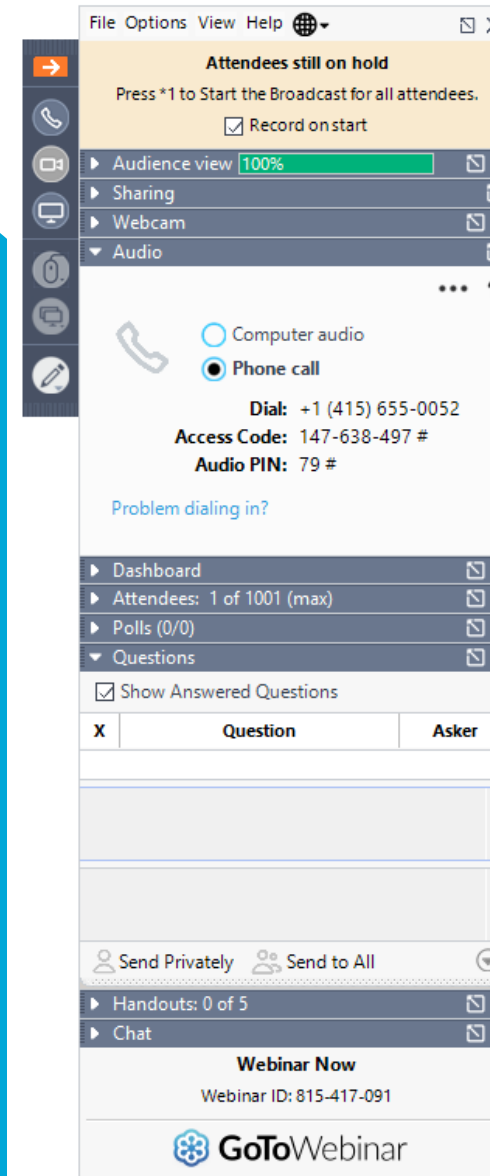
Q&A



Type in your questions under “Questions” in the toolbar.

Make sure to answer the survey at the close of this webinar.

Thank you!



Audio

Questions