



## **Industrial and Municipal Process Equipment**

***A Leader in Separation Process Solutions for over  
25 years***

***Established in 1995***

# THANK YOU Biogas World and India!

Launch > Global Biofuels Alliance (GBA)  
9<sup>th</sup> September 2023 – New Delhi

**DRYCAKE**  
Vanderbeken Enterprises Ltd.

## High-Level Support Countries

- Singapore
- Bangladesh
- Italy
- USA
- Brazil
- Argentina
- Mauritius, and UAE



# EQUIPMENT RANGE SEPARATION TECHNOLOGY



Screening  
Equipment

Grit Removal  
Equipment

Thickening  
Equipment

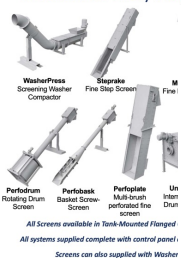
Dewatering  
Equipment

Drying Equipment

Depackaging  
Equipment

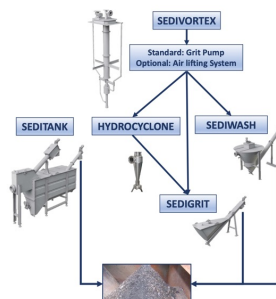
## DRYCAKE SCREENING PRODUCT RANGE

A Screen for Every Flow



## DRYCAKE PRETREATMENT GRIT REMOVAL

GRIT REMOVAL SOLUTIONS



## DRYCAKE DEWATERING

Mechanical Dewatering  
Capacity up to 484 GPM 110 m³/h

### BEST AVAILABLE TECHNOLOGY

#### DECANTER CENTRIFUGE

DRYCAKE high-performance decanter centrifuges are equipped with a hydraulic or electric back drive system for variable speed control of the differential between the bowl and the scroll. The performance efficiency of our system allows us to provide maximum scroll torque with smaller electric motors and much higher energy savings.

#### BELT PRESS

DRYCAKE Belt Filter Press can dehydrate organic and inorganic sludge.

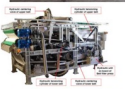
The progressive dehydration based on three levels: dripping area, wedge area, pressing area with 7 to 11 rollers.

#### SCREW PRESS

The DRYCAKE SCREW PRESS (DSP) provides a unique, cost effective solution for dewatering of municipal and industrial sludge. The equipment is designed to dewater the Primary Sludge and/or Secondary Sludge dewater sludge from a dry content of 0.8-4% to 15-20%.

#### DRAINMAD Dewatering Bags

The TERNOBAG®-DRAINMAD® system facilitates the dewatering of any sludge coming from wastewater treatment plants using disposable filter bags. This system is modular and is designed to optimize the filling and initial dewatering cycle of the bags.



## BY PROCESS

- Aggregates conveying
- Biomass drying
- Biomass gasification wastewater treatment
- Biosolids reduction
- Biosolids stabilization (Class A)
- BOD reduction
- Cogeneration
- Dewatering:
- Aerobic sludge
- Anaerobic sludge
- Lime & Alum sludge
- Mixed industry sludge
- WAS sludges
- Evaporation
- Enzymatic Inactivation
- Fish processing

## BY INDUSTRY

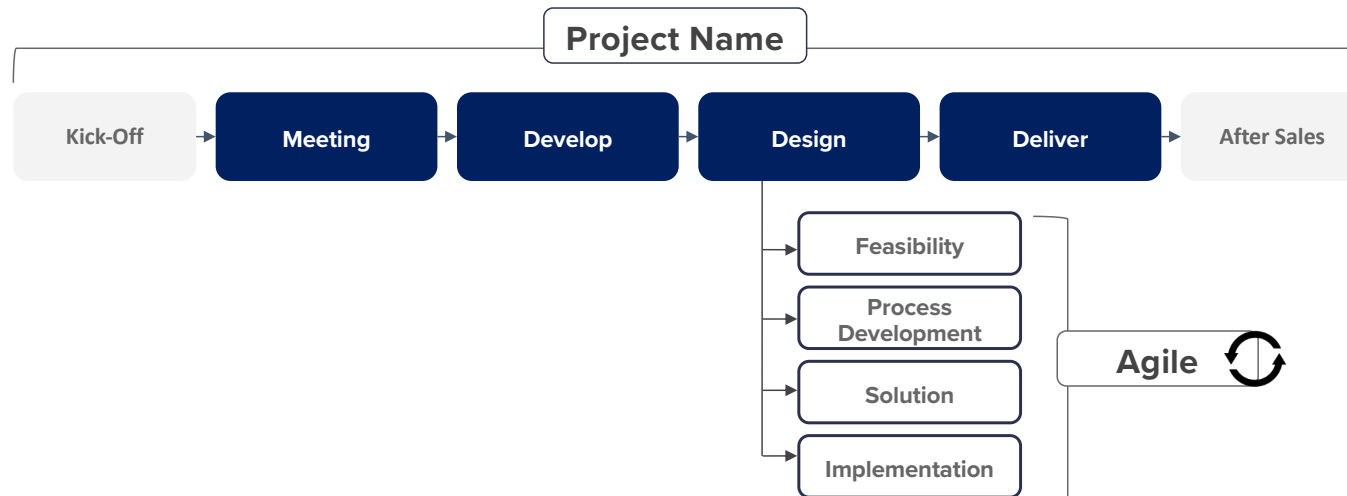
- Airports
- Biomass
- gasification
- Cement factory
- Dairy Industry
- Die Casting Industry
- Flour Mill
- Landfill
- Municipal WWTP
- Paint Factories
- Petro-chemical refinery
- Pulp & Paper industry
- Potato plant
- Rendering plant
- Slaughtering plant
- Tar Sands
- Quarries

# TWISTER FOOD

## WASTE DEPACKAGER



## Research And Development Methodology



### DESIGN

**Project-specific solutions** require the evaluation of new and existing processes.

# TWISTER FOOD WASTE

## DEPACKAGER AND SEPARATOR



Designed to be the most versatile  
food waste depackager solution  
available on the market.

**Our Secret:  
THE TWISTER  
EFFECT**

# TWISTER FOOD WASTE DEPACKAGER



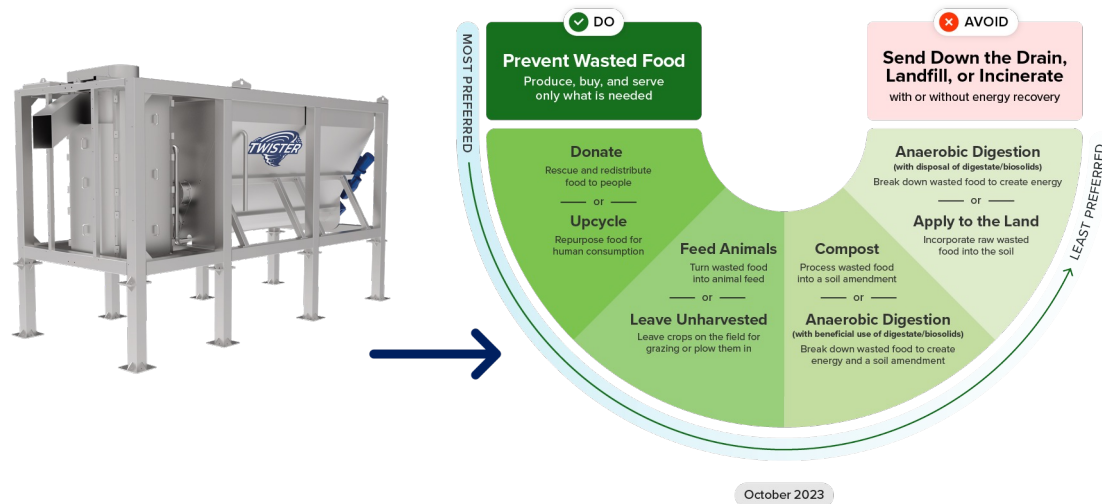
Where is the depackaging equipment placed in the process?

Environmental Protection Agency US

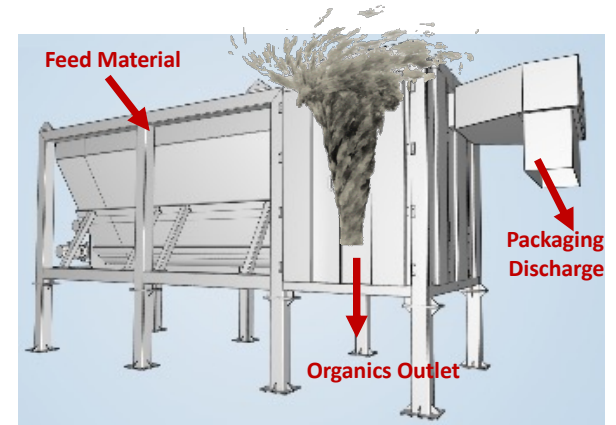


## Wasted Food Scale

How to reduce the environmental impacts of wasted food



October 2023

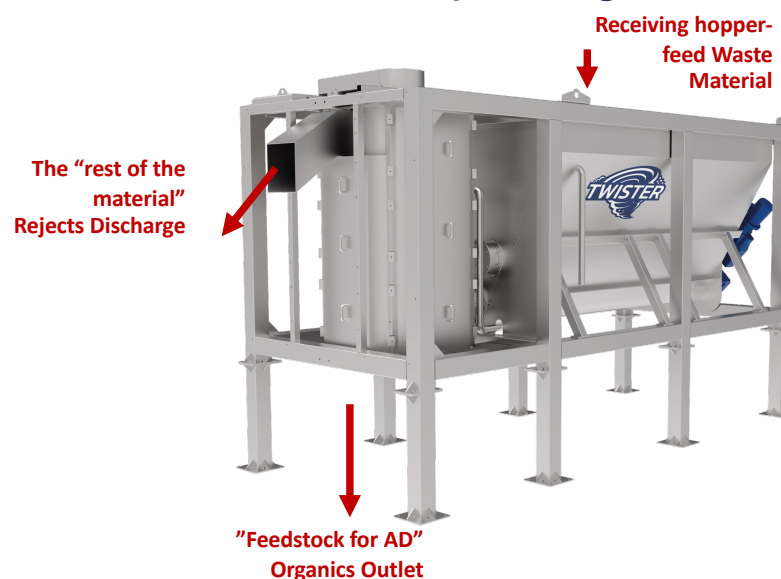


# TWISTER FOOD WASTE DEPACKAGER



TWISTER has **all the required features** for a depackager built-in:

- Ultra clean organics
- Ultra clean and dry packaging
- Bag opener
- Automatic cleaning – easy maintenance
- Reliability
- Low energy usage
- Small footprint



# TWISTER FOOD WASTE DEPACKAGER



## Characteristics and Challenges of Waste

Organic solid waste (source-separated organics or the organic fraction of MSW) is **inhomogeneous**. It contains **physical impurities** (e.g. film plastics, textiles, cardboard, stones, grit/sand, bones, shells, glass, utensils, metals, batteries) requiring pre-treatment prior to digestion.



## SOLUTION

**Application of a Pre-treatment Process** for effective removal of physical contaminants and homogenization. Organic recovery will depend on the downstream process.

- The Twister is a 3<sup>rd</sup> generation Vertical Cyclonic Separation Technology developed using Drycake's 25 years separation technology experience.
- ***The TWISTER separation is not done through size reduction, but by vortex effect.*** Like a twister or tornado, the light materials lift up in a spiral movement in turbulence.
- The TWISTER is the only depackager that can handle large plastics and textiles, even small carpets. There is no need for a shredder ahead.
- The proprietary filtration screens result in a clean organic soup without the need of a second pass.
- On introduction in the separation chamber the packaging is immediately separated of the organics by the vortex effect on the lighter materials. On entry the bags are opened by chains. The separation is strictly done by wind force, not by shredding as the packaging materials that are being removed remain larger in size and are lifted instantaneously by the twister movement rather than by being conveyed over a screen to a compacting zone. The organics drain freely from the bottom.
- Accumulation of heavier organic at the bottom of the separation chamber is prevented by chains that continuously grind and eliminate the cleaning at the end of the shift or need of any maintenance stops during operation.



# TWISTER FOOD

## WASTE DEPACKAGER



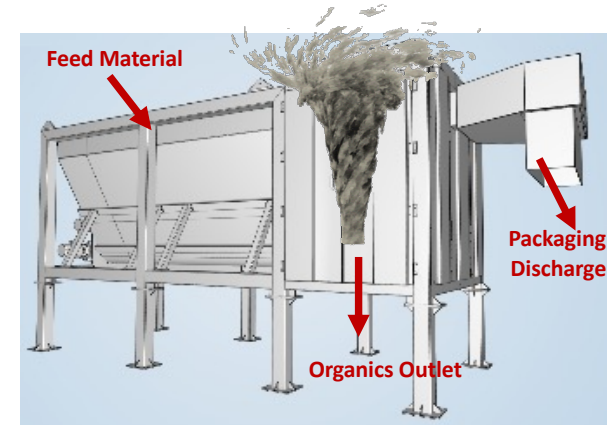
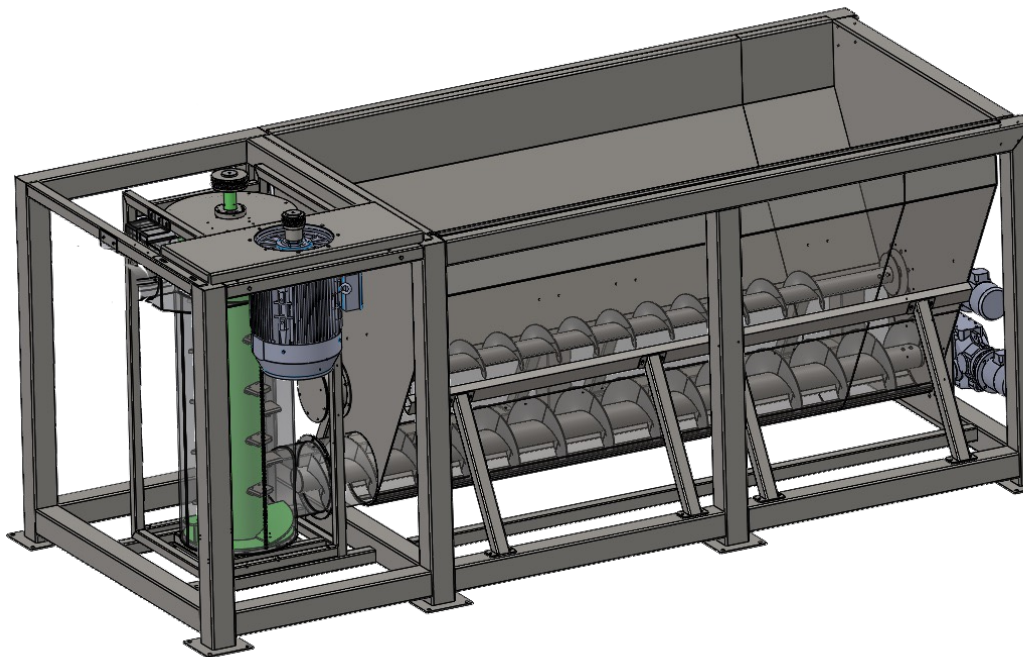
Front loader



Loading Pit



# TWISTER FOOD WASTE DEPACKAGER

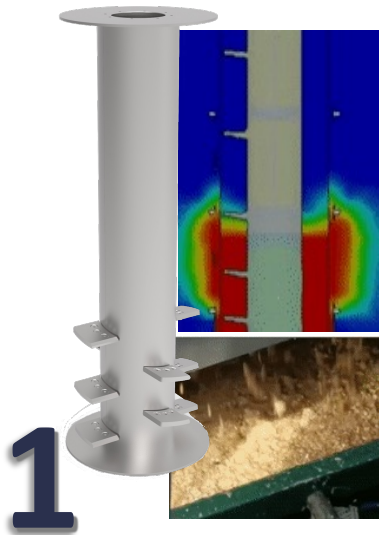


# OPERATION SEQUENCE



## FILTERING ZONE

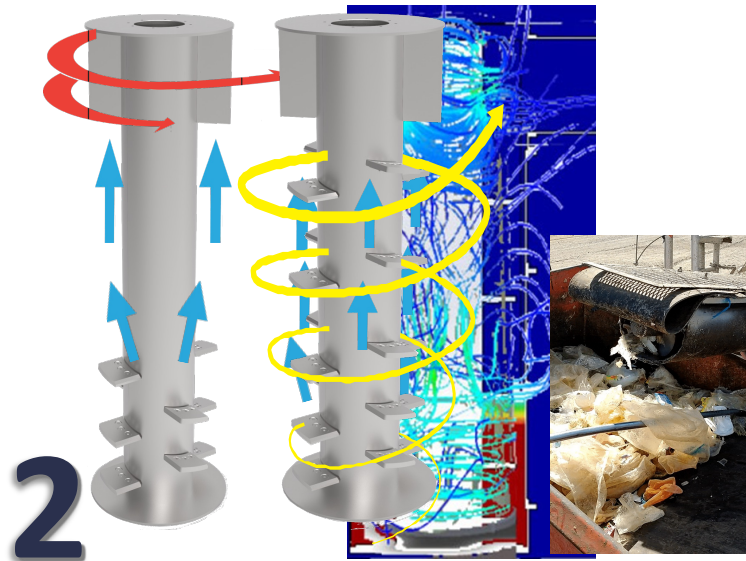
Create turbulence and push organics through the filter.



## VORTEX CLEANING ZONE

Turbine on top sucks the light materials up.

Paddles stop updraft and create turbulence and cleaning on impact



## EXTRACTION ZONE

The ramp throws heavies upward that bounce paddle to paddle before exiting



# APPLICATIONS



## FEED MATERIAL

SSO  
Supermarket  
Groceries  
Tetra pack  
Plastic Bottles

Organic Fraction of  
MSW  
Bakery waste  
Canned goods



## PACKAGING DISCHARGE



Packaging Outlet 2-4% / Contamination 65% Dry

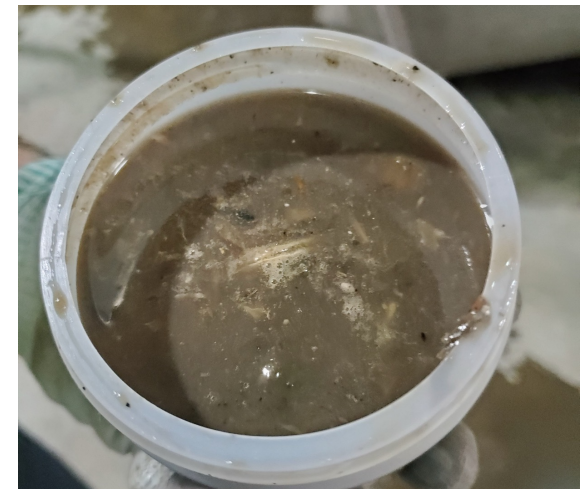
### Benefits

Aluminum Recovery  
Plastic Recovery  
Dry or Wet Composting  
Anaerobic Digestion  
Puree

### End-Users

Waste Processors  
Waste Producers  
Biogas Facilities  
Composting Facilities  
Municipalities

## ORGANIC OUTLET



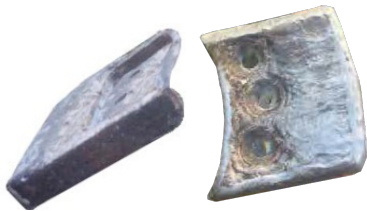
<0.5% Contamination

*\*The speed of the TWISTER is adjustable to different feedstock*

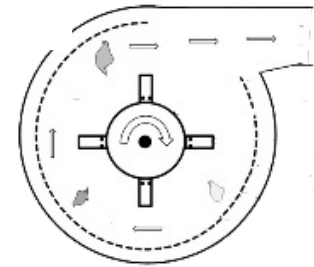
# TWISTER FOOD WASTE DEPACKAGER



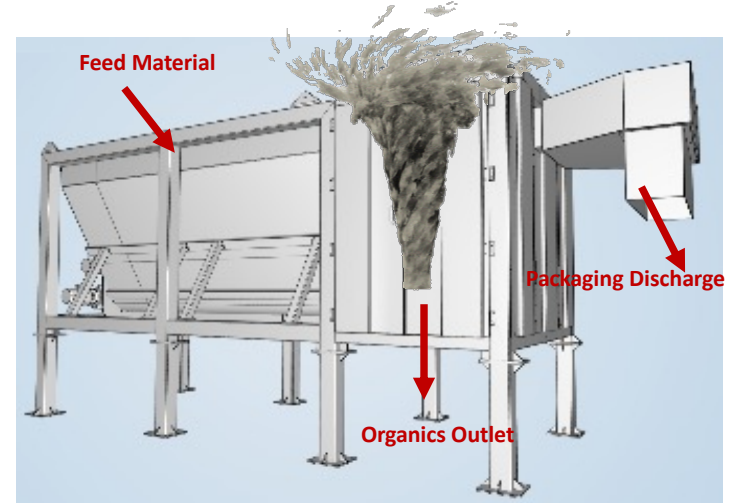
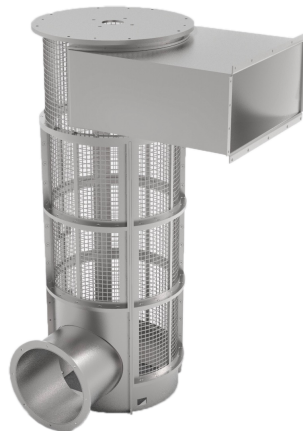
**TUNGSTEN CARBIDE PADDLES**



**FREE DISCHARGE**



**STAINLESS STEEL CONSTRUCTION**



# TWISTER FOOD

## WASTE DEPACKAGER



FREE  
DISCHARGE



# TRAJECTORY CORRECTION CHAIN



The proprietary system changes the trajectory of packaging, long plastics and large plastic bags by directing them on entry in the separation chamber directly towards the outer circle of the twister. This chain is not grinding the packages but is changing the trajectory gently.

## Benefits

- ✓ Eliminates Plastic Wrapping around shaft
- ✓ No shredder required: no size reduction
- ✓ Reduces wear on Paddles



Plastic Wrapping  
Without Chain



After 80mm  
shredder



Plastic Bags  
With Chain



# TWISTER FOOD WASTE DEPACKAGER



## ULTRA CLEAN AND DRY PACKAGING



 **YouTube** @drycaketwister

# TWISTER FOOD WASTE DEPACKAGER



- Removal of textiles (even small carpet)
- Large bags
- Gentle operation (golf balls)



# TWISTER FOOD WASTE DEPACKAGER



- Exchangeable screens allow different materials inputs to be handled.

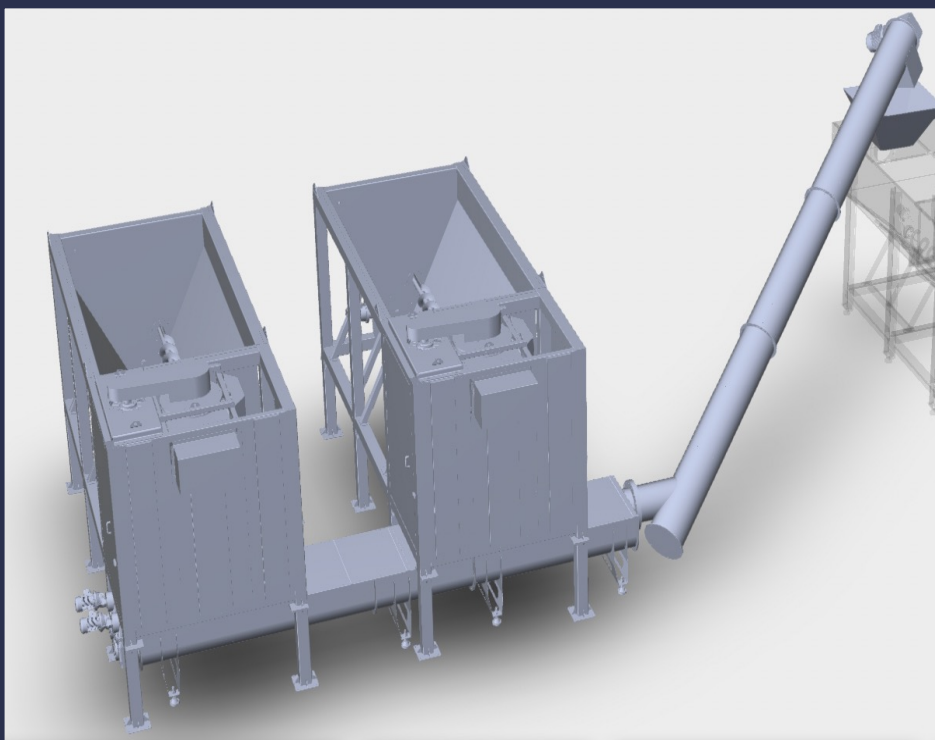


# TWISTER FOOD

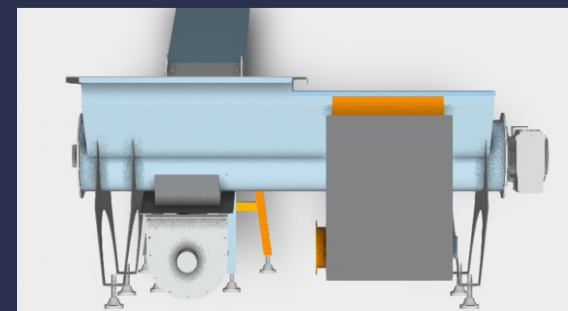
## WASTE DEPACKAGER



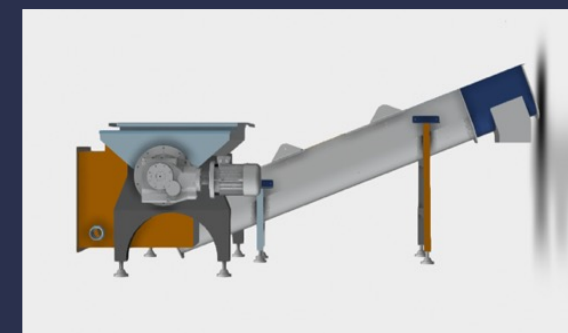
### CUSTOM DESIGNED LAY OUTS



### DRY DISCHARGE



### WET & DRY DISCHARGE



# Organic Waste Process Line



Drycake is first and foremost a separation company. Beyond the Twister, Drycake is in the position to offer a complete range of products and accessories for the operations of an organics waste diversion, biogas, or composting facility



**Twister**  
Depackager



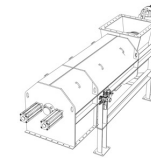
**Seditank**  
Grit and/or Plastic Removal and  
Glass Washing



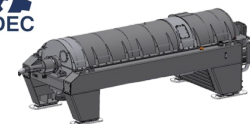
**Sediwash**  
Grit/Sand Washer



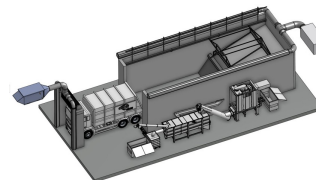
**CleanPress**  
Digestate Cleaner



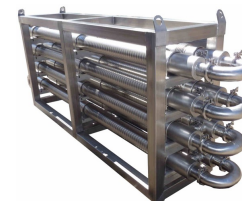
**Packpress**  
Packaging Screw Press



**Hybrid Drive**  
Decanter Centrifuge



**MODUPLANT**  
Modular Organic Waste  
Pretreatment Plant



**HEATUBE**  
Tube in Tube  
Heat Exchanger



**SEPTAMAX**  
Septage Screen

# TWISTER FOOD WASTE DEPACKAGER



**Location:** Olowa, Poland

**Start-up:** 20 Sept 2023

**Capacity:** 10 tons/hour

**Waste input:** SSO



Clean packaging from source separated organics



Clean packaging from source separated organics



Clean soup

# TWISTER FOOD WASTE DEPACKAGER



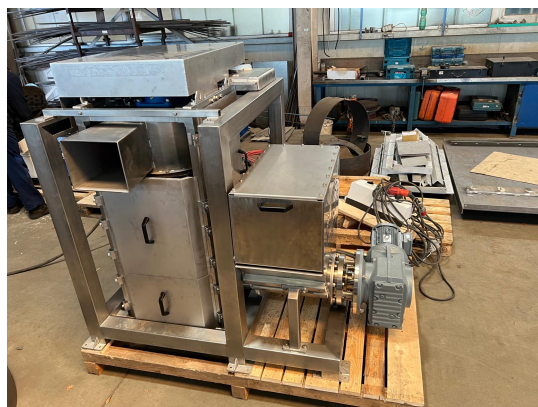
**Location:** Varennes, Quebec  
**Start-up:** 2023  
**Capacity:** 10 tons/hour  
**Waste input:** SSO



# TWISTER FOOD WASTE DEPACKAGER



**Location:** Client Site  
**Start-up:** 2024  
**Capacity:** Mini Twister  
**Waste input:** Gypsum



# ANY QUESTIONS?



[www.drycake.com](http://www.drycake.com)

[www.twisterdepackager.com](http://www.twisterdepackager.com)

[twister@drycake.com](mailto:twister@drycake.com)

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**THANK YOU**



## **Industrial and Municipal Process Equipment**

*A Leader in Separation Process  
Solutions for over 25 years*