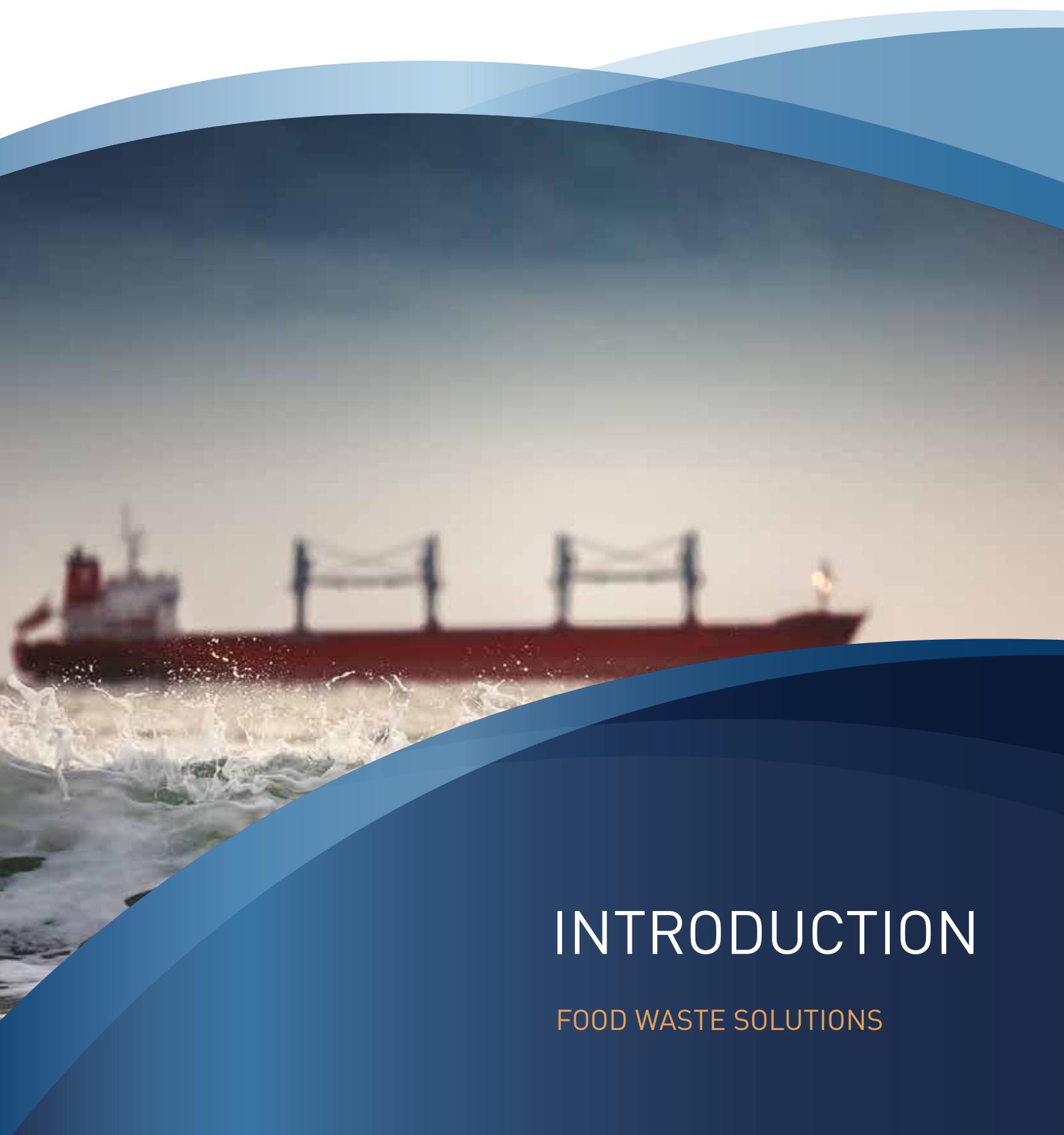


INTRODUCTION
FOOD WASTE



LOIPART

MARINE GALLEY, LAUNDRY
& WASTE AREA SOLUTIONS



INTRODUCTION

FOOD WASTE SOLUTIONS

FOOD WASTE

Food waste is one of the most difficult types of waste to handle on board as it biodegradable readily and contributes to odour. But by treating the fraction where it is produced, in the galley, minimum transport and work for the crew can be achieved as well as proper hygiene on board.

All vessels with crew and passengers will generate food waste -from 1.0 and up to 2.5kg/ person/day depending on type of vessel.

FOOD WASTE DISPOSER

Historically a simple disposer has been installed under the sink in the galley.

The disposer grinds food waste into small pieces (less than 25 mm in size) and, combined with water, creates a slurry. In a gravity system the ground food waste is transported in the piping system by water and the water consumption is approx. 20-30 litres/min.

Too often, no attention is paid to where the ground food waste from the disposer is piped.

There is a wide range of disposers available on the market and the units can be installed in several different ways, i.e. free-standing or mounted under the sink. The disposer can be either continuous feed or batch feed.

The disposer consists of a grinding chamber with a rotating disc and a motor. A higher motor rating of the disposer will increase the power of the unit and also increase the velocity of the ground food waste in the discharge pipe.

A disposer with a rating of 4 kW or higher can easily handle larger items, such as normal-sized bones. The smaller units (< 1 kW) are normally installed in households and tend to get jammed easily.



Food waste disposer. Image: InSinkErator

What to consider before installing a disposer:

- **Type of installation.**
- **The velocity of ground food waste in the piping system.**
- **Water consumption.**
- **Where the ground food waste is piped to.**
- **On board routines and training.**

FROM A REGULATORY POINT OF VIEW

DISCHARGE OVERBOARD

Discharge of food waste is regulated by MARPOL Annex V and discharge overboard is only permitted when the vessel is beyond 3 nm from the nearest land outside of Special areas and 12 nm within Special areas.

PORT RECEPTION FACILITIES

Food waste and food contaminated waste are strictly regulated ashore under health rules concerning 'animal-byproducts' and will be subject to quarantine requirements.

CATEGORIES	Outside Special Areas	Within Special Areas	Fixed or Floating platform (and all ships within 500m of such platforms)	IMO Polar Code
Cat. B-1 Food wastes	≥12 nm ¹	Prohibited!	Prohibited!	Prohibited!
Cat. B-2 Food wastes - Comminuted or ground Less than 25mm in size	≥3 nm ¹	≥12 nm ²⁺³	≥12 nm	≥12 nm ³⁺⁴⁺⁵⁺⁶

When garbage is mixed with, or contaminated by, other substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

¹ Distance from the 'nearest land' and discharge while the ship is en route.

² Distance from the 'nearest land' or the 'nearest ice shelf' and discharge while the ship is en route.

³ Discharge of introduced avian products in the Antarctic area is not permitted unless it has been treated to be made sterile.

⁴ Discharge as far as practicable from areas of ice concentration exceeding 1/10 while the ship is en route.

⁵ Distance from the 'nearest land', 'nearest ice-shelf', or 'nearest fast ice' while the ship is en route.

⁶ Food wastes shall not be discharged onto the ice.



FROM A PRACTICAL POINT OF VIEW

CLOGGED DRAIN PIPES

Clogged drain pipes downstream the disposer is a very common problem on board!

The main reason for this is that the velocity of the ground food waste in the piping system is too low.



Clogged drain pipe

DISPOSER IS JAMMED

The rotary grinder/shredder can jam if certain food waste or non-grindable objects become fastened. A piece of bone, fibrous material (artichokes, corn husks, onion skins), utensils, etc. are examples of what can jam the disposer.



Normal situation on board a vessel - "Do not use macerator"...

Why clogged drain pipes?

- Size of disposer and type of installation.
- Dimension of the drain pipe downstream the disposer.
- Pipe routing and design of the piping system.
- Not enough flushing of water in a gravity based system.
- On board routines, i.e. too much food waste into the disposer.
- Not enough vacuum level in the piping system (vacuum systems).

Ask your crew for their experience before installing a simple disposer!



OUR SOLUTIONS

VACUUM SYSTEM

We have, in close co-operation with on board crew members, developed a new generation of food waste system.

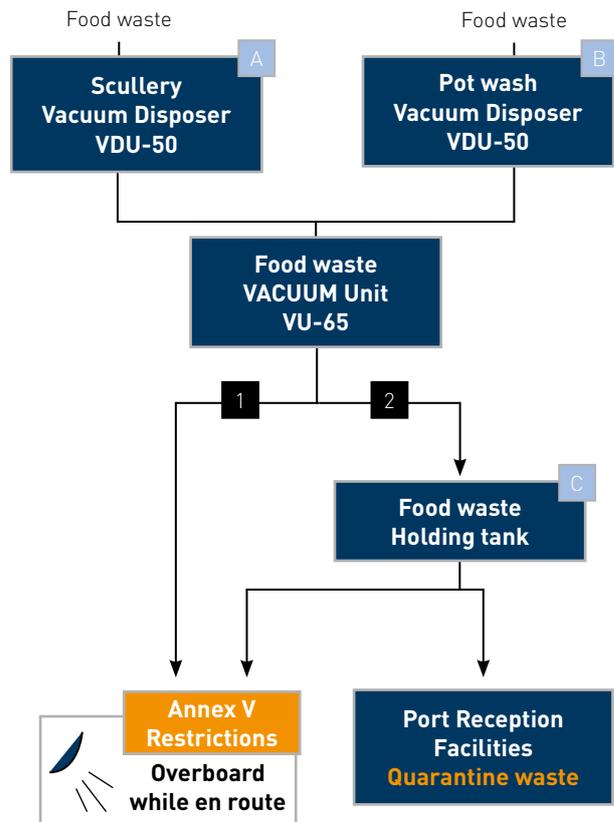
The system utilizes vacuum technology to minimize the risk of blockage in the piping system and is designed for automatic operation and batch feeding.

WORKING PRINCIPLE OF THE SYSTEM

The system is designed for treatment and transportation of food waste in compliance with MARPOL Annex V and other relevant regulations and standards. No other types of waste are allowed to enter the system.

The system has the possibility to isolate and lock the overboard discharge during operation within an area where discharge is prohibited. The ground food waste can then be directed to a holding tank designed for food waste.

SYSTEM DESCRIPTION VDU-50



A VDU-50 - Vacuum Disposer Unit

This free-standing unit is tailor-made for the system. Including

- Food waste disposer VDU-50 with actuator valves
- Control system
- Automatic antiscalant dosing system

B VU-65 - Vacuum unit

C HTS - Holding Tank System

Key features:

- High level of efficiency with consistently high vacuum performance.
- Vacuum pump with non-contact compression without operating fluid.
- Avoid clogged pipes.
- Automatic dosing control for antiscalant chemicals.
- Low water consumption.
- Small and flexible piping.
- Compact system, skid mounted units.
- Control system indicates leakage and clogged pipes.
- Proven low level of maintenance!
- For retrofit and new-buildings.
- Easy installation!



On board installation of Vacuum unit VU-65.

GRAVITY SYSTEM

We have developed a new generation food waste system for smaller vessels which is based on gravity.

WORKING PRINCIPLE OF THE SYSTEM

The system includes a disposer integrated with a control system and an automatic dosing system for antiscalant chemicals to minimize the risk of blockage in the piping system. The disposer grinds food waste into small pieces and, combined with water creates, a slurry.

The batch feeding process takes place locally where the disposer station(s) is located and the system is designed for automatic operation. The ground food waste is discharged directly overboard or directed to a holding tank.

This means that the system can be in operation even if the vessel is operating within an area where discharge is prohibited.

GDU-50 CONTROL SYSTEM

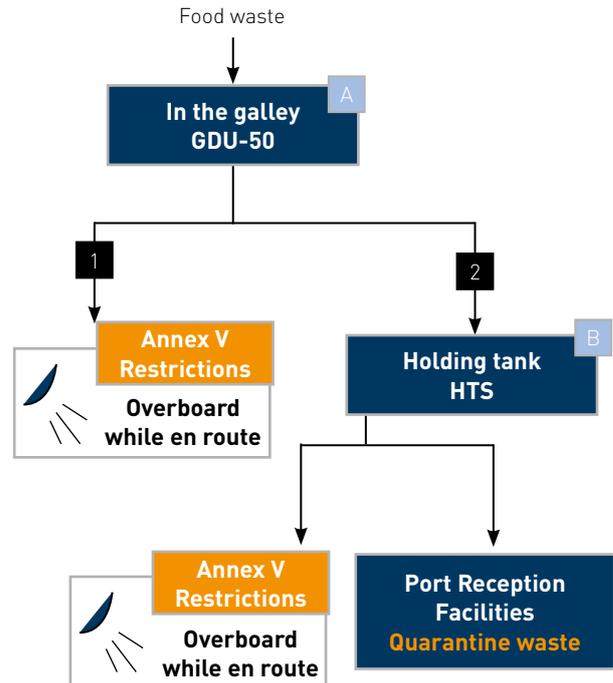
The GDU-50 Control system is designed to minimize the risks for clogged pipes and reduce the water consumption.

The system introduces a new and multifunctional way to operate a food waste disposer and is designed to operate with several different system configurations.

Key features:

- Avoid clogged pipes.
- Controlled velocity in the piping system.
- Wide range of options for water consumption savings.
- Simple touchscreen operation panel.
- Automatic dosing control for antiscalant chemicals.
- For retrofit and new-buildings.
- Easy installation!
- Flexible connections for installation on existing units.

SYSTEM DESCRIPTION GDS-50



A GDU-50 - Gravity Disposer Unit

Free-standing unit is tailor-made for the system.

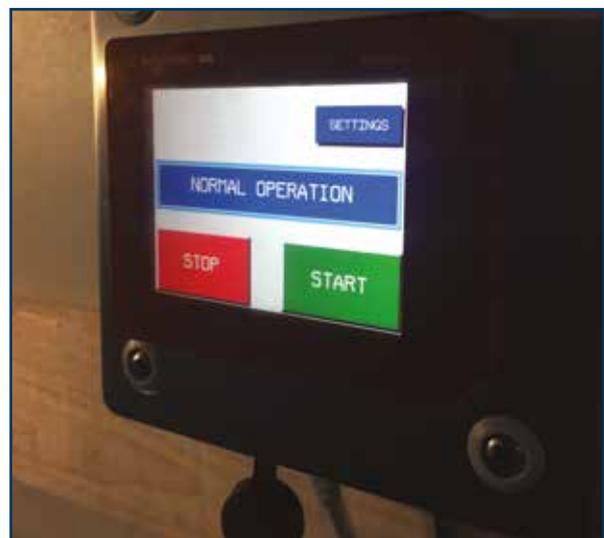
Including:

- Food waste disposer GDU-50
- Control system with 'touch-screen display'
- Automatic antiscalant dosing system

B HTS - Holding Tank System

Including:

- Food waste holding tank
- Discharge pump unit DPU-50
- Tank washing system
- Control system



GDU-50 Operating panel

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