

Marine applications

For small LFC biodigesters



About

The LFC-25 and LFC-50 marine biodigesters are specifically designed for applications on yachts, tankers, container ships, and FSRU vessels.

These LFC biodigesters complement their larger versions that are widely deployed on cruise ships and larger yachts.

Power Knot installed its first small biodigester on a tanker in 2015. Based on our extensive experience in the field, Power Knot acted as SME for the world's largest cruise line operator in 2019 which resulted in the deployment of more than 100 biodigesters spread across the world's most prestigious cruise lines.

Power Knot has built on years of experience in the marine industry to perfect the current products. These are designed, developed, and manufactured by Power Knot LLC in Silicon Valley, California. Products are sold and serviced globally through Power Knot Ocean which has staff dedicated to marine customers.

Features

- Digests food waste on board the ship
- Process is continuous — load at any time
- All waste is converted to water — machine never needs emptying
- Discharge from machine is safe to enter sewage system
- Aerobic digestion ensures no smells
- Can be installed in kitchen or work area
- Simple operation — can be used by existing staff
- Color touch screen interface
- Weight of waste is continuously monitored and recorded
- Screen displays statistics on usage and amount of waste
- Incorporates comprehensive diagnostics and service schedules
- Connects to the LFC Cloud so statistics and diagnostics can be monitored remotely
- All stainless steel construction
- One year warranty (subject to terms)



Benefits

- Greatly reduces costs to dispose of food waste
- Significantly reduces carbon footprint
- Eliminates refrigerated storage of food waste
- Eliminates tenders to take food waste ashore
- Reduces size, quantity, and smells of trash bins
- Improves operations and saves time
- Weigh and dispose of waste food in one machine
- Multiple models available ensures correct size for any vessel
- Whole food waste is not discharged overboard
- LFC Cloud ensures Power Knot can support you easily
- Payback is typically 3 to 12 months

Daily capacities

The LFC-25 and LFC-50 biodigesters have nominal daily capacities of 25 kg and 50 kg of food waste respectively (55 lb and 110 lb). These are typically suitable for vessels having a crew and passengers of 10 to 30 persons and 20 to 60 persons.

There are 10 different models of LFC biodigesters available with capacities up to 3000 kg (6600 lb) per day for larger applications.

Marine features

The marine versions of the LFC biodigesters have been designed to operate without disruption on the open seas. The improvements include:

- Universal AC input to permit one model of LFC biodigester to be deployed globally

- Strengthened chassis to withstand the constant vibration on some ships
- Enhanced plumbing to accommodate various water pressures
- Custom implementation of load cell mechanical design to accommodate rough seas
- Unique algorithm to account for the rocking of the ship when weighing the waste in the biodigester
- Brushless dc (BLDC) motors lengthen the time between the expected service intervals

Marine customers

Power Knot Ocean has earned a reputation of quality amongst marine customers that is unmatched. Some of our customers include OSG, Golar, Bernhard Schulte Shipmanagement (BSM), Lloyd Werft, Disney Cruise Line, Seabourn Cruise Line, Cunard, P&O Cruises, Princess Cruises, Costa Crociere, Holland America Line, Carnival Cruise Line, Lürssen Yachts, M/Y Just B, and other yachts.

Power Knot Ocean's marine support engineers are able to seamlessly communicate with their customers, and are comfortable working on board vessels of all sizes globally both in port and at sea.

Effluent testing

During initial deployment of our LFC biodigesters on cruise ships in early 2019, operators conducted over 20 independent tests on the waste water from our LFC biodigesters. These tests were conducted by SGS laboratories; other independent companies carried out tests for cruise ships that were visiting the pristine waters in Alaska. All of these samples were conducted by third parties without Power Knot in attendance and all discharges were found to be acceptable.

MARPOL regulations

The MARPOL regulations (International Convention for the Prevention of Pollution From Ships) governs the rules for the discharge of waste at sea.

The use of biodigesters has been proven to be fully compliant with MARPOL Annex V and is welcomed as a modern, environmentally friendly alternative to pulpers and macerators.

The effluent produced by LFC biodigesters has exceptionally low biological oxygen demand (BOD)

and total suspended solids (TSS).

Some vessels direct the waste water from the LFC biodigester to the ship's black water system to undergo secondary processing through the STP plant. This permits the vessel to discharge within 3 nm of the shore. The unmatched quality of the discharge from Power Knot's LFC biodigesters is one more reason it remains the industry leader.

Connection to the LFC Cloud

The LFC Ethernet port connects the LFC biodigester automatically to a cloud server. The LFC biodigester securely sends data about its operation and that data is retained for five years.

The data includes the amount of food waste digested hourly, daily, weekly, monthly, and yearly and also all operational status. The usage of bandwidth is minimal, allowing ship operators to easily monitor analytics no matter where on the ocean the vessel may be.



Service and Support

We have marine engineers available globally to assist you with any specific applications. Once installed, Power Knot is able to monitor the status of your machine through the LFC Cloud and assist you remotely with any issues wherever your ship is located.

Locally sold, serviced, and supported by:



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