



# Pushing the limits even further.


GEA marine Upgrade Kit for separators



**GEA** engineering for  
a better world

[gea.com](http://gea.com)



A full-page background image of a man surfing a large, powerful wave. The surfer is wearing a dark blue t-shirt and is captured in a dynamic pose, leaning forward with his head tilted back and eyes looking up. He is holding onto the rail of his white surfboard. The water is a vibrant turquoise color, and there is a massive splash of white water around the surfer's head and shoulders. The overall mood is one of intense action and challenge.

**“Pushing the limits is all about meeting new challenges and mastering them.”**

By constantly improving their skills and equipment, big wave surfers regularly break their own records. Every day they strive to improve – an attitude they share with our engineers. To combat the challenges of sludge accumulation, regulations on sustainability, fluctuating oil prices and wear caused by cat fines and other fine particles, our experts have developed the GEA marine Upgrade Kit. Adding considerably to the functionality of our marine separators, it makes them more efficient and environmentally friendly.

# The Upgrade Kit for added functionality

Designed to regulate different separator processes automatically, the GEA marine Upgrade Kit comprises additional software and a sophisticated easy-to-install hardware kit.



## FuelGuard

During bowl discharging, unnecessary oil loss may occur. FuelGuard reduces this to a minimum.



## BowlGuard

BowlGuard optimizes the ejection interval based on permanent bowl volume control. This reduces the sludge volume and saves disposal costs.



## FlowGuard

FlowGuard adjusts fuel processing to the actual demand of the main (ship's) engine. This leads to more efficient separation and makes the process more energy-efficient.



## CatfineGuard

CatfineGuard ensures maximum cat fine removal for highest fuel quality and main engine protection.



## EffiClean

EffiClean cleans the separator's disks stacks in only 20 minutes. This CIP (cleaning in place) saves precious maintenance time, increases centrifuge reliability, availability and efficiency.





# FuelGuard

The automated way to reduce fuel loss.



Fuel oil is a critical cost factor in the shipping industry. Marine separators play a significant role in onboard fuel treatment. Oil losses caused by the imprecise dosing of displacement water into the bowl are a downside of timer-controlled separation processes.

SAVE

686

TONS of fuel per year!  
(for a fleet of 50 vessels)

## More precision for more economy

FuelGuard resolves this problem by exactly dosing displacement water into the bowl according to volume. This process is fully automatic, does not require an interface and leads to significantly reduced oil loss during emptying.

### Required:

Hardware package

- Sensor and connection cable
- Integrated software



# BowlGuard

Smart cleaning solution.



Conventionally, oil separation takes place at pre-set intervals. The problem with timed ejection processes leads to increased sludge volume.

## Maximum precision

BowlGuard solves this problem by monitoring the bowl in real time, checking solid content at regular intervals, and ejecting solid deposits. It does by collecting values, calculating the current filling volume of the bowl, and monitoring the degree of disc contamination before triggering the cleaning process as required. In this way, BowlGuard minimizes disposal costs.

## Required:

- Activated FuelGuard package

UP TO  
**50** % less sludge!



# FlowGuard

Fuel processing on demand.



Many separators run permanently at full capacity even though the actual consumption of the main engine varies. Adjusting the running performance to the real demand would not only save energy but would also ensure less wear. This is where FlowGuard comes into play.

## Optimal running

FlowGuard software adjusts separator performance to main engine demand. This ensures very efficient running, saving energy and reducing CO<sub>2</sub> emissions. What is more, thanks to the adjusted nominal capacity, it also reduces wear and tear and enables a longer service life.

# 910

**TONS**

less CO<sub>2</sub>  
(for a fleet of 50 vessels)

## FlowGuard. Additional features:

FlowGuard only processes as much fuel as is needed. As a result, the day tank is only filled according to requirements. Separation efficiency is also improved.

## Required:

- Frequency controlled feed pump

# CatfineGuard

The finest fuel at your fingertips.



Not many years ago, impurities and irregularities in the consistency of bunker fuel were handled safely using standard on-board purification procedures and established separator technology. This changed with the growth in abrasive cat fines in marine fuels – something that poses a serious issue for today's marine risk management.

CatfineGuard mitigates this risk by carefully filtering out cat fines contained in the fuel, ensuring maximum fuel quality and reduced component wear. Depending on fuel type, it does this by separating out even smaller particles, which would normally remain in the fuel, using hot separation at temperatures up to 110°C.

#### CatfineGuard. Additional features:

The software works hand in hand with the FlowGuard extension and adapts to the real demand of the main engine.

The entire software package interacts resulting in energy-saving and cost-efficient separator and motor performance.

#### Required:

- Frequency controlled feed pump
- Heat-resistant sealings for hot separation

**CAT FINES REDUCED FROM  
AN AVERAGE OF**

**3**  $\mu\text{m}$   
TO UNDER **5** ppm!

# Benefits

Example calculations:

Savings/Year*	GEA marine FuelGuard	GEA marine BowlGuard	GEA marine FlowGuard	GEA marine CatfineGuard
Cash \$	4,116**	3,080***	1,796****	
Fuel (T)	13.7	-	-	main engine protection and safe operation
Sludge (%)	-	50%	-	
CO <sub>2</sub> (T)	-	-	18.2	
Cat fines	-	-	-	< 5 ppm

\* based on GEA Separator OSE 40

\*\* 300\$/t fuel, 7,000 operation hours, up to 2l fuel waste per ejection

\*\*\* ejection time 2h, up to 2l fuel waste per immature ejection, 100\$/t sludge disposal costs to the shore

\*\*\*\* 7,000 operation hours, energy costs 0.07\$/kW, 30% feed reduction

## Savings across the entire fleet (50 vessels)

Savings/Year*	GEA marine FuelGuard	GEA marine BowlGuard	GEA marine FlowGuard	GEA marine CatfineGuard
Cash \$	343,000**	182,900***	89,800****	
Fuel (T)	686	-	-	main engine protection and safe operation
Sludge (%)	-	50%	-	
LO (T)	171.5	-	-	
CO <sub>2</sub> (T)	-	-	910	

\* based on 2 x GEA Separator OSE 40 for fuel oil and 2 x GEA Separator OSE 10 for lube oil

\*\* 300\$/t fuel, 3,500 operation hours (2 OSE 40 FO & 2 OSE 10 LO), up to 2l fuel waste per ejection OSE 40 & 0.5l for OSE 10

\*\*\* ejection time 2h, 100\$/t sludge disposal costs to the shore, up to 2l fuel loss per ejection for OSE 40 & 0.3l for OSE 10

\*\*\*\* 3,500 operating hours, energy costs 0.07\$/kW, 30% feed reduction



# Pushing the limits

Your benefits of the GEA marine Upgrade Kit at a glance:

## FuelGuard

- With a fleet of 50 vessels with four separators each, you save 686 tons a year!

## BowlGuard

- Up to 50% less sludge!

## FlowGuard

- On average 910 tons less CO<sub>2</sub> (for a fleet of 50 ships)

## CatfineGuard

- Maximum cat fine removal: cat fine content under 5ppm for operation safety

The new GEA marine Separator already includes the GEA marine Upgrade Kit.

It is also available as retrofit for your installed base.



### GEA Separator OSC, OSD and OSE

GEA marine Upgrade Kit for retrofit.

### GEA marine Separator

The latest generation comes optionally with a sensor and software kit.

## Summary:

**Clever:** unmanned, optimized and safeguarded 24/7 operation

**Efficient:** saves energy and reduces CO<sub>2</sub> emissions

**Economical:** reduces fuel and operating costs

**Future-proof:** MTP ready

**Ready to push the limits with us? We are. Contact us now.**

## We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

“Engineering for a better world” is the driving and energizing principle connecting GEA’s workforce. As one of the largest systems suppliers, GEA makes an important contribution to a sustainable future with its solutions and services, particularly in the food, beverage and pharmaceutical sectors. Across the globe, GEA’s plants, processes and components contribute significantly to the reduction of CO<sub>2</sub> emissions, plastic use as well as food waste in production.

GEA is listed on the German MDAX and the STOXX® Europe 600 Index and also included in the DAX 50 ESG and MSCI Global Sustainability indexes.