



FUELSAVE

GREEN
TECHNOLOGY

OPEX & EMISSION REDUCTION FOR A SUSTAINABLE & VIABLE CLEAN-FUEL TRANSITION FOR MARITIME VESSELS.



Save energy.



Save money.



Save the planet.



MARINE

GREEN
TECHNOLOGY



FUELSAVE - MISSION

WE HELP OPERATORS OF COMBUSTION ENGINES

(MARITIME ASSETS / POWER PLANTS / MINING / TRAINS , ETC)

**TO BECOME MORE PROFITABLE
WHILE REDUCING THEIR EMISSIONS**

(FOR A SUSTAINABLE & ECONOMICALLY VIABLE CLEAN FUEL TRANSITION)

PRINCIPLES

- CUSTOMER SATISFACTION FIRST
- ROI WITHIN THE WARRANTY PERIOD
- „NO CURE NO PAY“ MENTALITY

Chosen by leading Accelerators of the world:



*3 Seals of excellence from the EU
+ 2 times funded by the EU*



"This project was funded from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 806083"



FIELD-PROVEN FOR 2,5 YEARS



DETAILING I.E. THE MEASUREMENT SERIES IN HAMBURG:
GROSS COST SAVINGS OF FUEL = 25,01% GROSS

- 0,60% E-POWER
- 7,60% METHANOL
- 0,70% COMPRESSED PRESS. AIR / FRESH WATER

NET COST SAVINGS = 16,11% NET



MV ANNETTE
EU's LARGEST HEAVY LIFT CRANE SHIP

OVER 16 % NET COST SAVINGS

IN FUEL CONSUMPTION ALONE

OVER 20% NET OPEX SAVINGS TOTAL



SOLUTION / UNIQUE BENEFITS

Thanks to the right mix injected into the engines and boiler, the pollutants emissions problem is addressed at its root making the **combustion process cleaner**. Through this, several benefits are achieved spanning from **pollutants' emissions reduction** to **economic benefits for the shipping companies**.

KEY ENABLER FOR **CO2 AND CO2-e** REDUCTION STRATEGIES + EMISSION TRADING (EU-ETS)

CA. **8-15%**

**CO2
REDUCTION**

CA. **40%**

**PM
REDUCTION**

CA. **10-20%**

**SOx
REDUCTION**

CA. **33%**

**BLACK CARBON
REDUCTION**

CA. **30-80%**

**NOx
REDUCTION**

OTHER SAVINGS?

- ✓ UP TO 50% REDUCED MAINTENANCE
- ✓ UP TO 33% REDUCED LUBE OIL
- ✓ EMISSION TAX SAVINGS (EU- ETS)
- ✓ REDUCED AIR INTAKE COOLING
- ✓ LESS TURBOCHARGER MAINTENANCE & CLEANING
- ✓ FURTHER OPEX SAVINGS WITH SCRUBBER / SCR COMBINATION



WHY CUSTOMERS WANT TO BUY ?

10%
NET OPEX
SAVINGS

<3
YEARS ROI

CONTRACTUALLY GUARANTEED

THESE FIGURES DO NOT INCLUDE EMISSION TAX SAVINGS / EMISSION TRADING OR BENEFITS FROM CARBON OFFSETTING, WHICH WILL FURTHER INCREASE OVERALL OPEX SAVINGS AND REDUCE THE CUSTOMER ROI

→ **LEADING TO EVEN BETTER BUSINESS CASES OF FS MARINE+ IN THE FUTURE**



HOW WE ACHIEVE THAT

MARINE

GREEN
TECHNOLOGY

WITH **DYNAMIC & LOAD-BASED** **INJECTION** OF

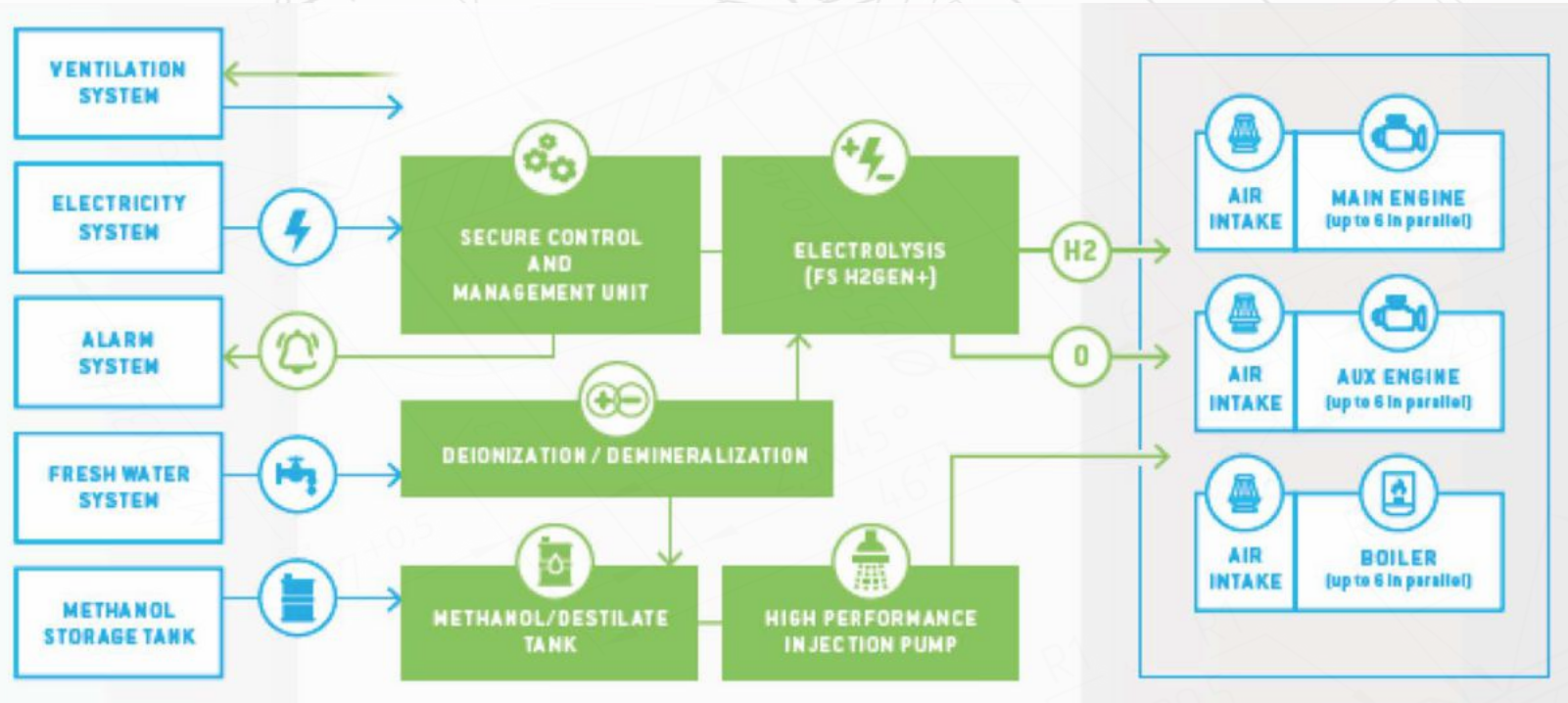
HYDROGEN

OXYGEN

**METHANOL
& WATER**

IN THE **AIR INTAKE IN THE **RIGHT WAY****

SCHEMA & FLOW DIAGRAM



OPERATING EXPENSES (OPEX)

CONSUMABLES

- ✓ METHANOL (BASE COMMODITY)
- ✓ WATER (TECHNICAL WATER IS SUFFICIENT)
- ✓ ELECTRICAL POWER
- ✓ COMPRESSED AIR

OPERATIONS

- ✓ SYSTEM WILL BE INTEGRATED INTO CONTROL ROOM AND NEEDS VERY LOW LEVEL OF ATTENTION;
- ✓ NO EXTRA PERSONNEL REQUIRED

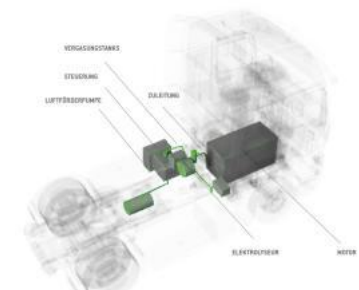
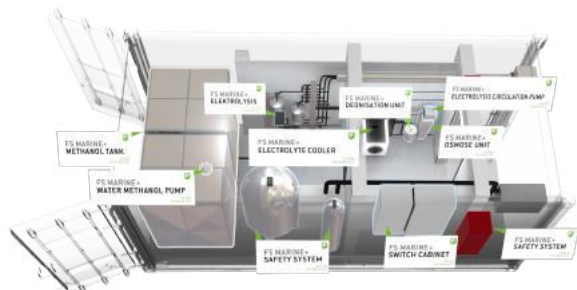
MAINTENANCE

- ✓ ONGOING (PREDICTIVE) MAINTENANCE AND SERVICE THROUGH LOCAL REPRESENTATIVE AS PART OF A LONG-TERM SERVICE AGREEMENT



MODULAR & SCALABLE – RETROFIT SOLUTION

MODULAR SYSTEM EASY TO RETROFIT & SCALE FROM **100 kW to 100 MW+**





LAB-PROVEN LEADING LAB IN EUROPE

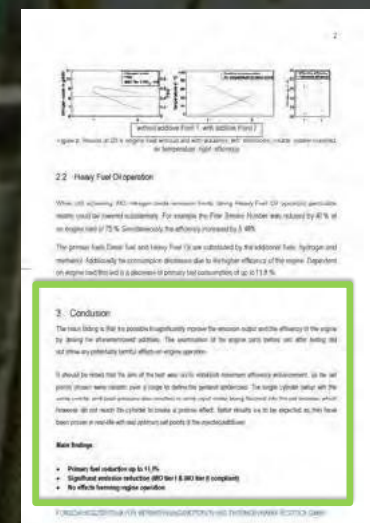


- 1) REDUCTION IN FUEL CONSUMPTION
- 2) REDUCTION IN EMISSIONS
(IMO TIER II+ COMPLIANT)
- 3) NO HARM TO THE OPERATING ENGINE

MAK



BOSCH
Invented for life





PRODUCT FS MARINE+

4 STROKE | 2 STROKE



WORLD'S 1ST
SOLUTION
OF SUCH TECHNOLOGY



1ST MOVER /
UNIQUE & PATENTED
IN 40 COUNTRIES



FUNDED BY THE EU
HIGHEST EVALUATION
SCORE BY EC
TOP SME OF EU

VOTED BY INDUSTRY "SOLUTION OF THE FUTURE"
AND WON IN Q1 2020 THE NEPTUNE AWARDS.

AWARDED "BEST CLEAN TECH COMPANY"
BOSTON MIT / MICROSOFT NERD CENTER" END OF 2018.



1st PROJECT – INCLUDING LARGEST 4 STROKE



1ST CONTRACT SIGNED

+5 M EURO

6 SHIPS (93 MW)

GO LIVE
END OF
Q2 2021!!



ecoTune MARINE

FUELSAVE

GREEN
TECHNOLOGY



COMPETITION

DIRECT COMPETITORS



NO DIRECT
COMPETITORS

CARBON WAR ROOM STATED:

**ONLY EMISSION REDUCTION SOLUTION
WITH SUCH POSITIVE ROI !!**



FURTHER, FASTER, TOGETHER

**INCREASED PROFITABILITY
WHILE
SAVING THE ENVIRONMENT**

INDIRECT COMPETITORS



UNIQUE COMBINATION
OF COST SAVINGS &
EMISSION REDUCTION

WE ARE NOT TREATING A SYMPTOM,

- LIKE A SCRUBBER or SCR WHICH IS USING CHEMICALS TO REMOVE CERTAIN EMISSIONS FROM THE EXHAUST BUT IS USING MORE ENERGY IN THE PROCESS AND EVEN INCREASING FUEL CONSUMPTION & THE CO2 EMISSIONS.
- OR WIND PROPULSION OR A BATTERY HYBRID, THAT ARE GREAT COMPLIMENTARY MEASURES BUT ARE NOT REPLACING THE NEED OF FOSSIL FUEL COMBUSTION,

**BUT WE ARE TACKLING THE ROOT OF THE PROBLEM,
WHICH IS DIRTY INEFFICIENT COMBUSTION OF FOSSIL FUELS.**



OUTPERFORMING ALTERNATIVE OPTIONS

FS MARINE+

10 %

FUEL SAVINGS

27.000

mt

HFO on MAIN

3.000

mt

MDO on AUX

WIND ROTOR

-374.438 tons
Co2-e!

OVER

400 %

HIGHER EMISSION REDUCTION
PER VESSEL

-87.814 tons
Co2-e!

CO2: 9.866 TONS
NOX: 838 TONS [GWP 298]
BC: 35,9 TONS [GWP 3200]

CO2: 8.912 TONS
NOX: 156 TONS [GWP 298]
BC: 10,1 TONS [GWP 3200]



ROI ~ 3 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout


-28.296 tons CO2-e!

PER SUPPLY VESSEL PER YEAR!

CO2: 1.052 TONS

NOX: 58 TONS [GWP 298]

BC: 3 TONS [GWP 3200]



ROI ~ 2,7 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout

-54.429 tons CO2-e!

PER JACKUP RIG PER YEAR!

CO2:	1.989 TONS	
NOX:	121 TONS	[GWP 298]
BC:	5 TONS	[GWP 3200]



ROI ~ 2,3 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout

-115.146 tons CO2-e!

PER RIG PER YEAR!

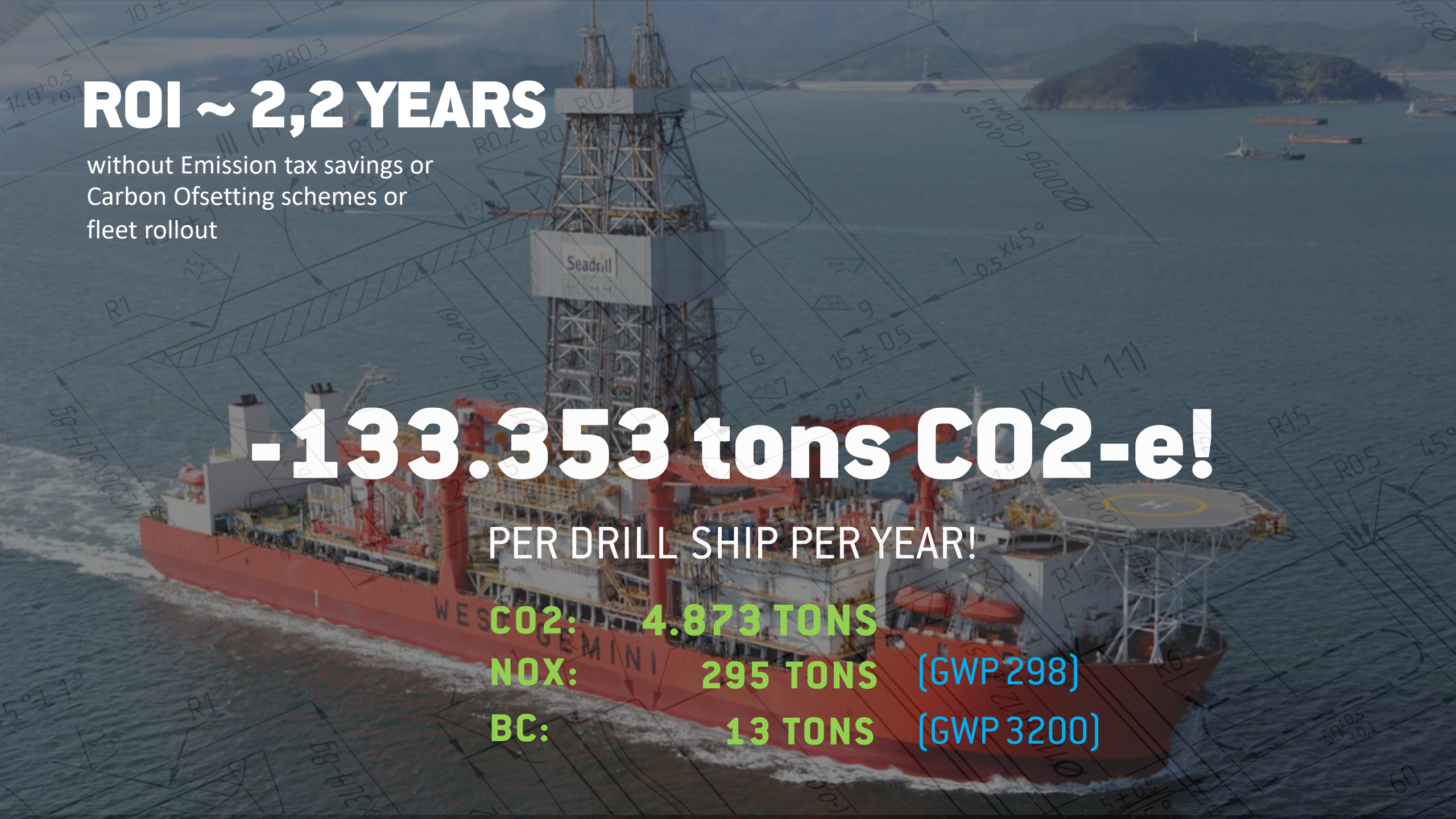
CO2: 4.208 TONS

NOX: 231 TONS

BC: 9 TONS

[GWP 298]

[GWP 3200]



ROI ~ 2,2 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout

-133.353 tons CO2-e!

PER DRILL SHIP PER YEAR!

CO2: 4.873 TONS

NOX: 295 TONS [GWP 298]

BC: 13 TONS [GWP 3200]



ROI ~ 1,9 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout

-265.342 tons CO2-e!

PER CRUISE SHIP PER YEAR!

CO2: 7.208 TONS

NOX: 593 TONS [GWP 298]

BC: 25 TONS [GWP 3200]



ROI ~ 1,5 YEARS

without Emission tax savings or
Carbon Offsetting schemes or
fleet rollout

-442.401 tons CO2-e!

PER CONTAINER VESSEL PER YEAR!

CO2: 12.438 TONS

NOX: 958 TONS [GWP 298]

BC: 45,2 TONS [GWP 3200]



REAL-TIME CONSUMPTION RECORDING



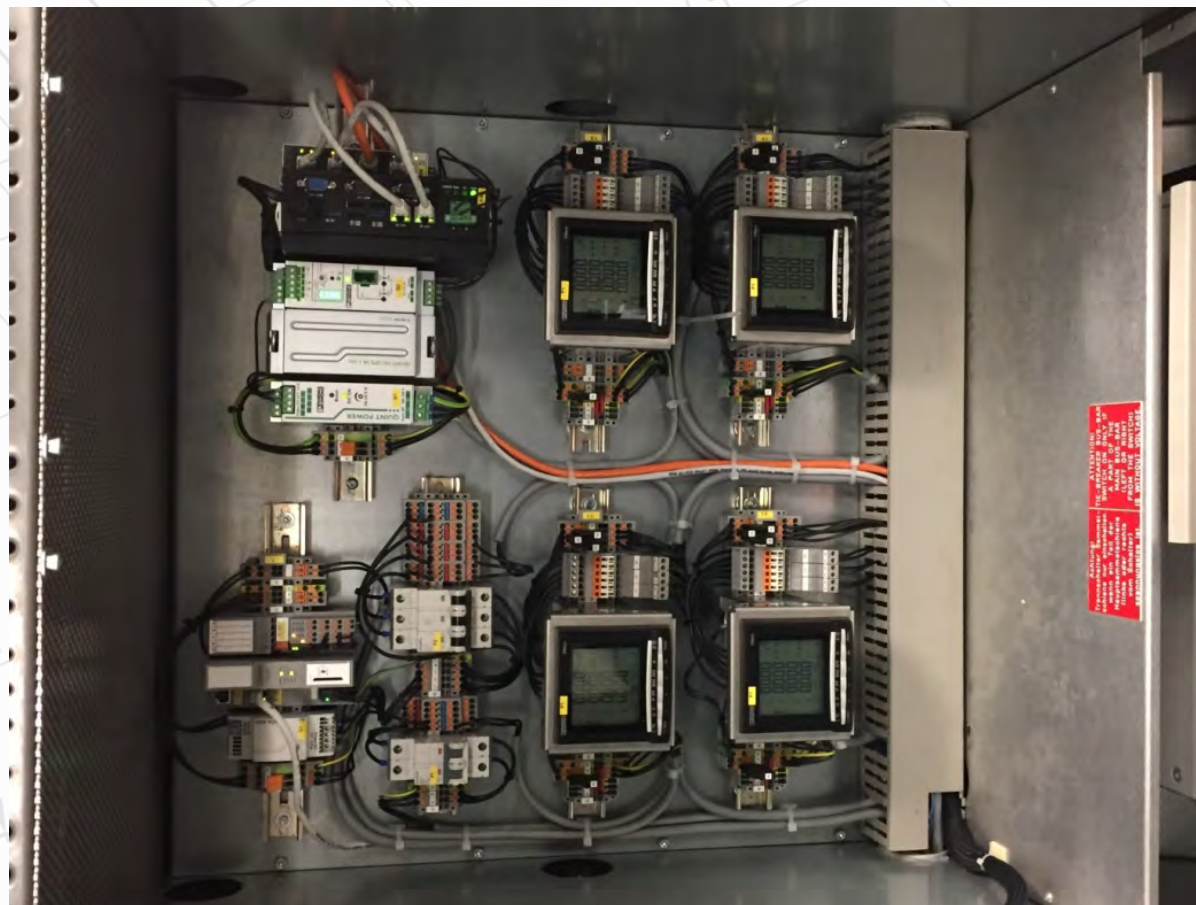
FUEL OIL CONSUMPTION RECORDING
COR-NET CORIOLIS MASS FLOW METER



SPM-NET SHAFT POWER METER



ENGINE LOAD RECORDING
CONTROL & MANAGEMENT LOGIC / SPS

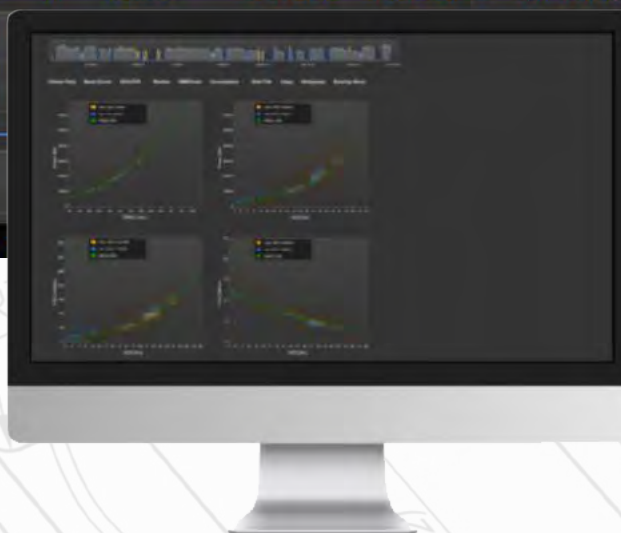
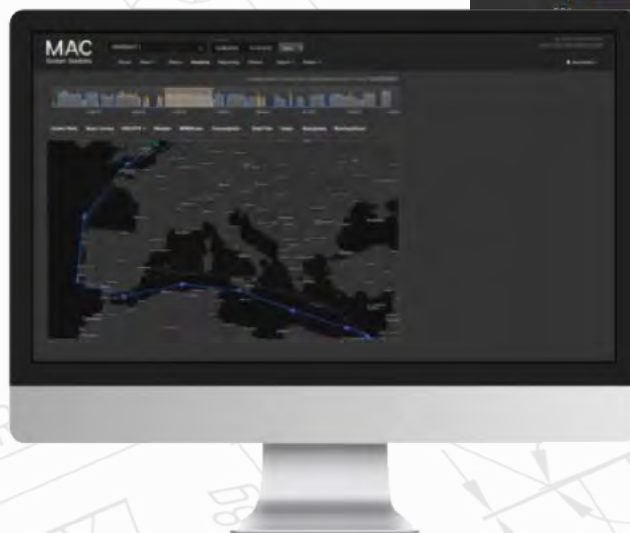
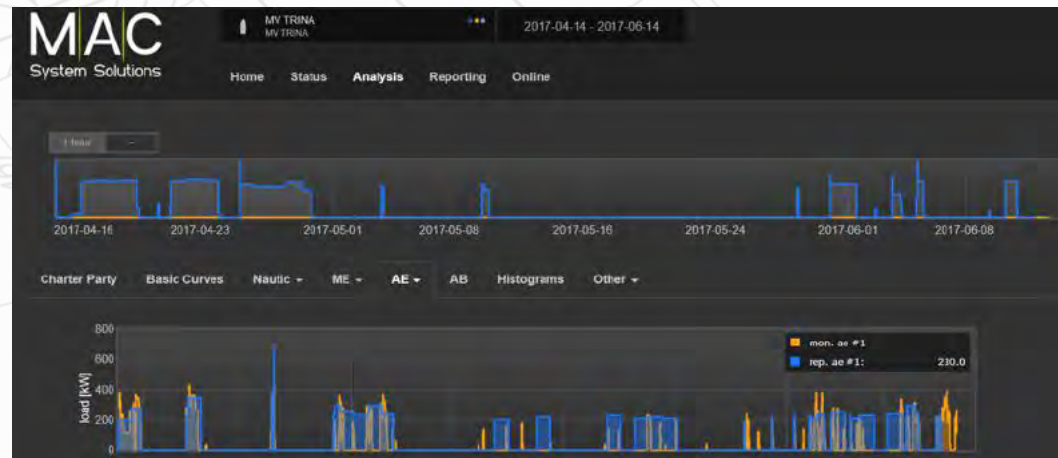




REAL-TIME PERFORMANCE MONITORING



MAC SYSTEM SOLUTIONS – CERTIFIED END-TO-END MONITORING



OFFICIAL DNV GL PARTNER FOR PERFORMANCE MONITORING

- ✓ SUSTAINABLE CLEAN FUEL TRANSITION.
- ✓ REDUCE OPEX & INCREASE PROFITS.
- ✓ CO2 & CO2-e REDUCTION. TODAY!

THANK YOU VERY MUCH !

Marc Sima
CEO/ Co-Founder
sima@fuelsave.de

www.fuelsave.de



RAINMAKING
PORTXL

World's 1st Port & Maritime Accelerator



IN PARTNERSHIP WITH



equinor



PIER71



MARINE

GREEN
TECHNOLOGY