



Solumar

SOLUTIONS FOR OUR PLANET



Solumar

SOLUTIONS FOR MARITIME

CUT EMISSIONS BY 98-99%

COMPLY WITH IMO AGENDA 2050

New Air & Exhaust Gas Filtering Technology



Cut 98% of all
emissions
combined



— GHG (SO, NO, CO)

— VOCs and Ash

— PM, Black Carbon

By just being fit into one compact body

The Technology is



Any size scalable
Retrofittable to
100% of the



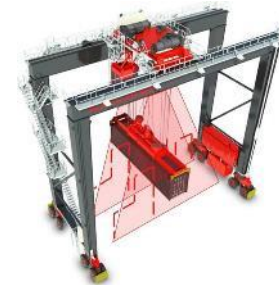
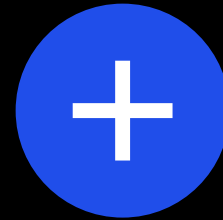
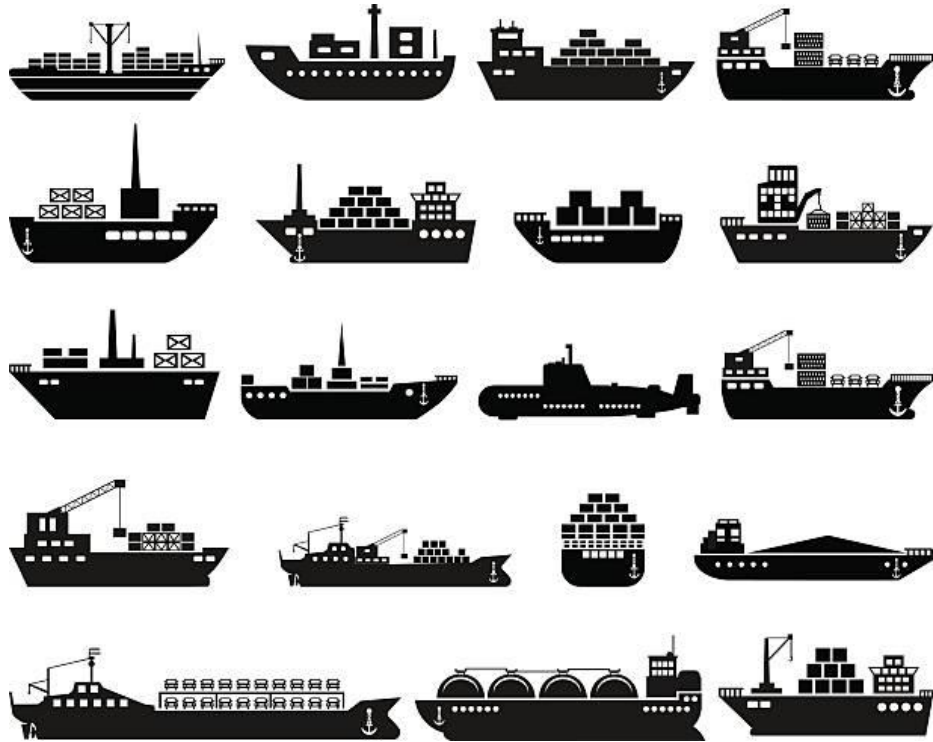
Vessels

Ports' equipment

Diesel generators

In vessels = Like Retrofitting Scrubbers

No matter size and type of Ship and Port's Equipment



In Ports:



Tugboats

Push boats

Emergency boats

Terminal trucks

Cranes

Onland machinery

Diesel generators

Value to Maritime Customers (Ships and Ports)

USP – COMPLY WITH THE AGENDA 2050

Captures
98% of all
pollutants
combined

Retrofits
to any size
100% of
market

With low
CAPEX
and ~Zero
OPEX

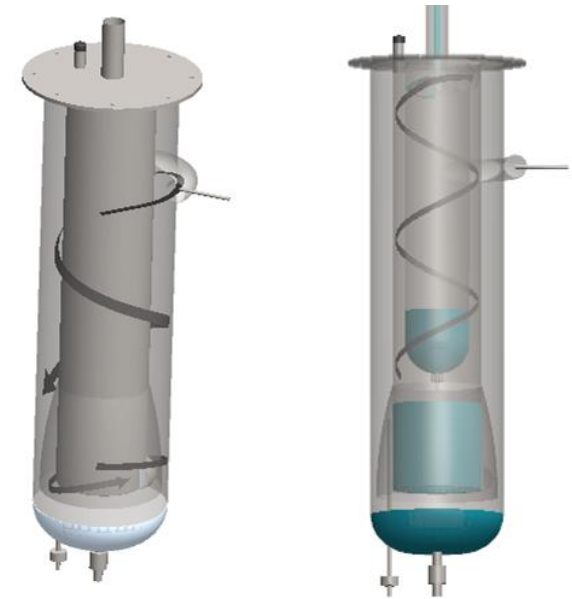
How did we get here? Our journey started in 2019:



PM +
Humidification

**Airbus
BizLab**

2019



CORPORATE JETS (ACJ) - CABIN AIR

Record high PM capturing efficiency:



Dust Feed concentration 700,000 mg / ml				
Class standards	Particle size (µm)		Filter Efficiency (%)	
	min	max	Per size	Cumulative
ePM1	0.30	0.50	99.9999936%	99.9999936%
	0.50	0.70	99.9999794%	99.9999730%
	0.70	1.00	99.9999452%	99.9999182%
In Average ePM 1 ONLY			99.9999727%	
ePM2.5	1.00	1.40	99.9998912%	99.9998094%
	1.40	1.90	99.9998250%	99.9996344%
	1.90	2.70	99.9996940%	99.9993284%
In Average ePM 2.5 ONLY			99.9998034%	
ePM10	2.70	3.80	99.9998728%	99.9992012%
	3.80	5.30	99.9999848%	99.9991860%
	5.30	7.40	99.9999980%	99.9991840%
	7.40	10.30	99.9999990%	99.9991830%
In Average ePM 10 ONLY			99.9999637%	
Coarse	10.30	14.50	99.9999992%	99.9991822%
	14.50	20.20	99.9999998%	99.9991820%
In Average Coarse ONLY			99.9999995%	



ePM1

99.9999727 %



ePM2.5

99.9998034 %



ePM10

99.9999637 %



Coarse

99.9999995 %

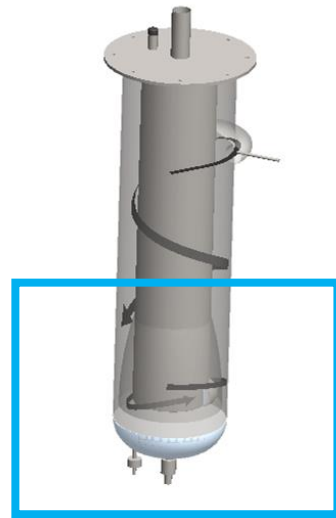
Koch Holding Lab test protocol:

Emission Test According to EN 60 312									
Test Identification		Sample No.		Test No.		Test Date		Test Time	
Koch Holding Lab		0000000000		00 00 00 13		00 00 00 04		00 00 00 04	
Date: 16.02.2004		Time: 11.45		Comment: TEST 1					
Test Device		Dust Bag		Dust Bag		Dust Bag		Dust Bag	
Description: SULU FILTERSTATION		Description: SULU		Description: SULU		Description: SULU		Description: SULU	
Manufacturer: BULGARISTAN		Manufacturer: BULGARISTAN		Manufacturer: BULGARISTAN		Manufacturer: BULGARISTAN		Manufacturer: BULGARISTAN	
Motor Protection Filter		Backup Filter		Backup Filter		Backup Filter		Backup Filter	
Description: YOK		Description: YOK		Description: YOK		Description: YOK		Description: YOK	
Manufacturer: YOK		Manufacturer: YOK		Manufacturer: YOK		Manufacturer: YOK		Manufacturer: YOK	
Testing Results									
Air Flow Rate: 24.86		Calculated Mean Emission (E)		4.08mg/m³		Standard Deviation of E:		0.00mg/m³	
Dust Type: SAE Fine		Upper Confidence Limit of E:		4.08mg/m³		Lower Confidence Limit of E:		4.08mg/m³	
Concentration: 300.00mg/m³		Background Correction:		No					
Single Test Results									
Start	Stop	Mean Air Flow Rate	Calculated Emission	Calculated Emission Equivalent PM10	PM10	PM2.5	PM10	PM2.5	PM10
11.50.19	12.00	23.86	4.08	4.08	4.08	4.08	4.08	4.08	4.08
Statistics									
Particle Counting		Mean Particle Size		Minimum Number of Particles		Maximum Number of Particles		Minimum of Count	
µm	µm	µm	µm	µm	µm	µm	µm	µm	µm
0.30	0.50	0.50	0.50	2000000	2000000	2.5	0.103	0.103	0.103
0.50	0.70	0.70	0.70	2000000	2000000	2.5	0.103	0.103	0.103
0.70	1.00	1.00	1.00	2000000	2000000	2.5	0.103	0.103	0.103
1.00	1.40	1.40	1.40	2000000	2000000	2.5	0.103	0.103	0.103
1.40	1.90	1.90	1.90	2000000	2000000	2.5	0.103	0.103	0.103
1.90	2.70	2.70	2.70	2000000	2000000	2.5	0.103	0.103	0.103
2.70	3.80	3.80	3.80	2000000	2000000	2.5	0.103	0.103	0.103
3.80	5.30	5.30	5.30	2000000	2000000	2.5	0.103	0.103	0.103
5.30	7.40	7.40	7.40	2000000	2000000	2.5	0.103	0.103	0.103
7.40	10.30	10.30	10.30	2000000	2000000	2.5	0.103	0.103	0.103
10.30	14.50	14.50	14.50	2000000	2000000	2.5	0.103	0.103	0.103
14.50	20.20	20.20	20.20	2000000	2000000	2.5	0.103	0.103	0.103

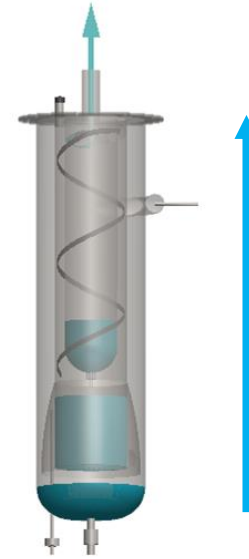
PM Module - Working Principle



Inertia
Cyclone



Water
Cyclones



High-speed
Air Cyclone

**HUMIDITY AT A
COMFORTABLE %**



FOR PRIVATE JETS OWNERS

In 2020:



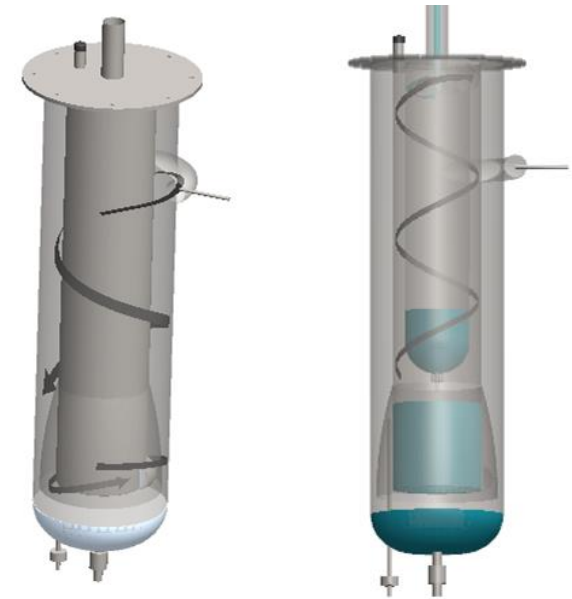
Aircraft ambient air
filtration PM + VOC

**Airbus
BizLab**

2019

LIEBHERR
Aerospace.

2020



STARTED A PILOT IN SCALE 1:1 FOR A320

2019



4/2018

10/2018

Customers in Bulgaria:



PM + VOCs



METAL PROCESSING

PM + VOCs



WOOD PROCESSING

PM

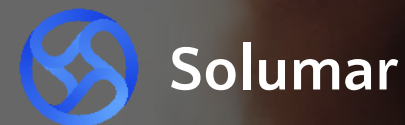


PHARMACEUTICAL

PM



Value to our Industrial Customers



99%
Pollutants
capturing
efficiency

**~ Zero
OPEX**

**Low
CAPEX**

Just water, no grid
systems, no other
consumables



EXPERIMENT

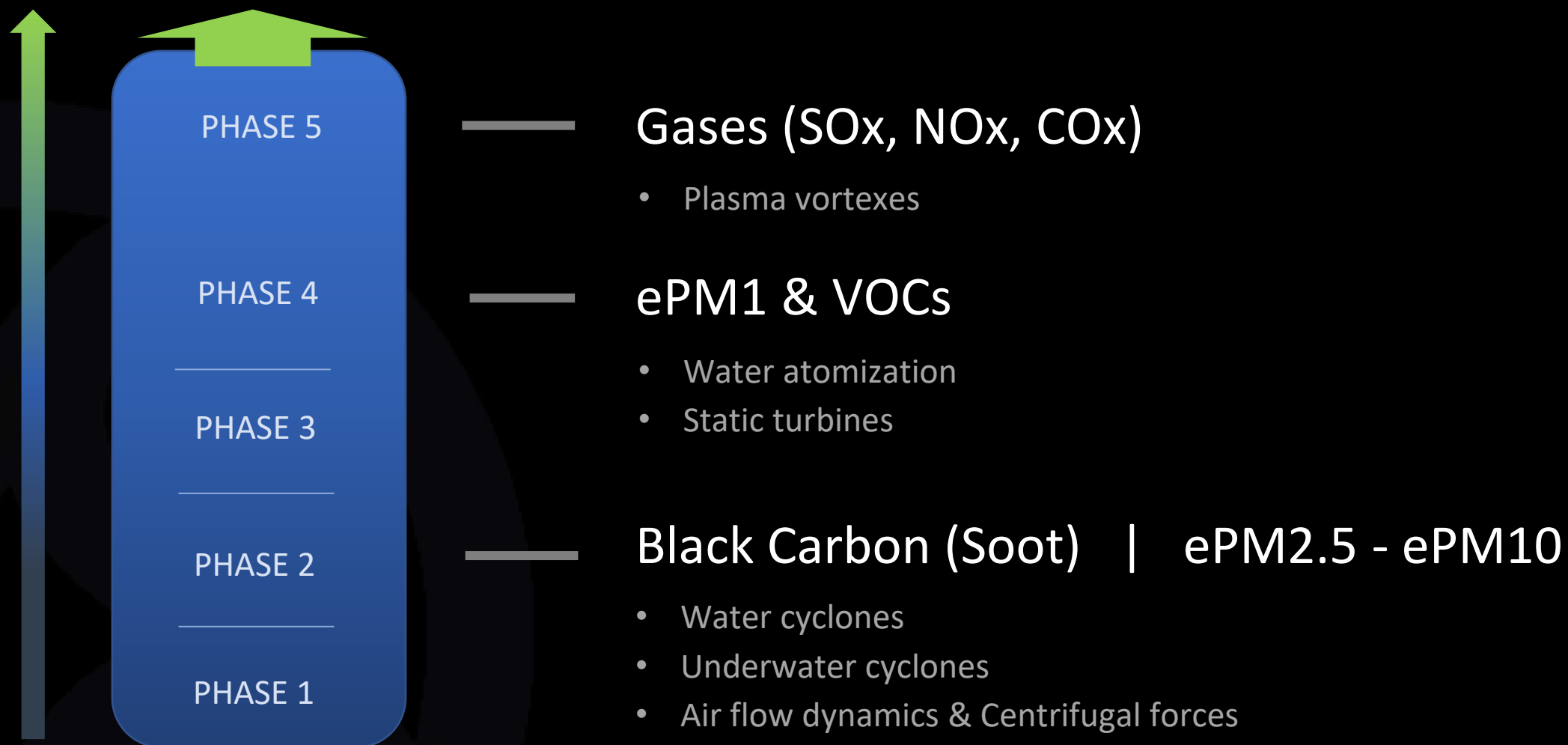
98% of the
Soot

**We proved the technology
in other sectors:**

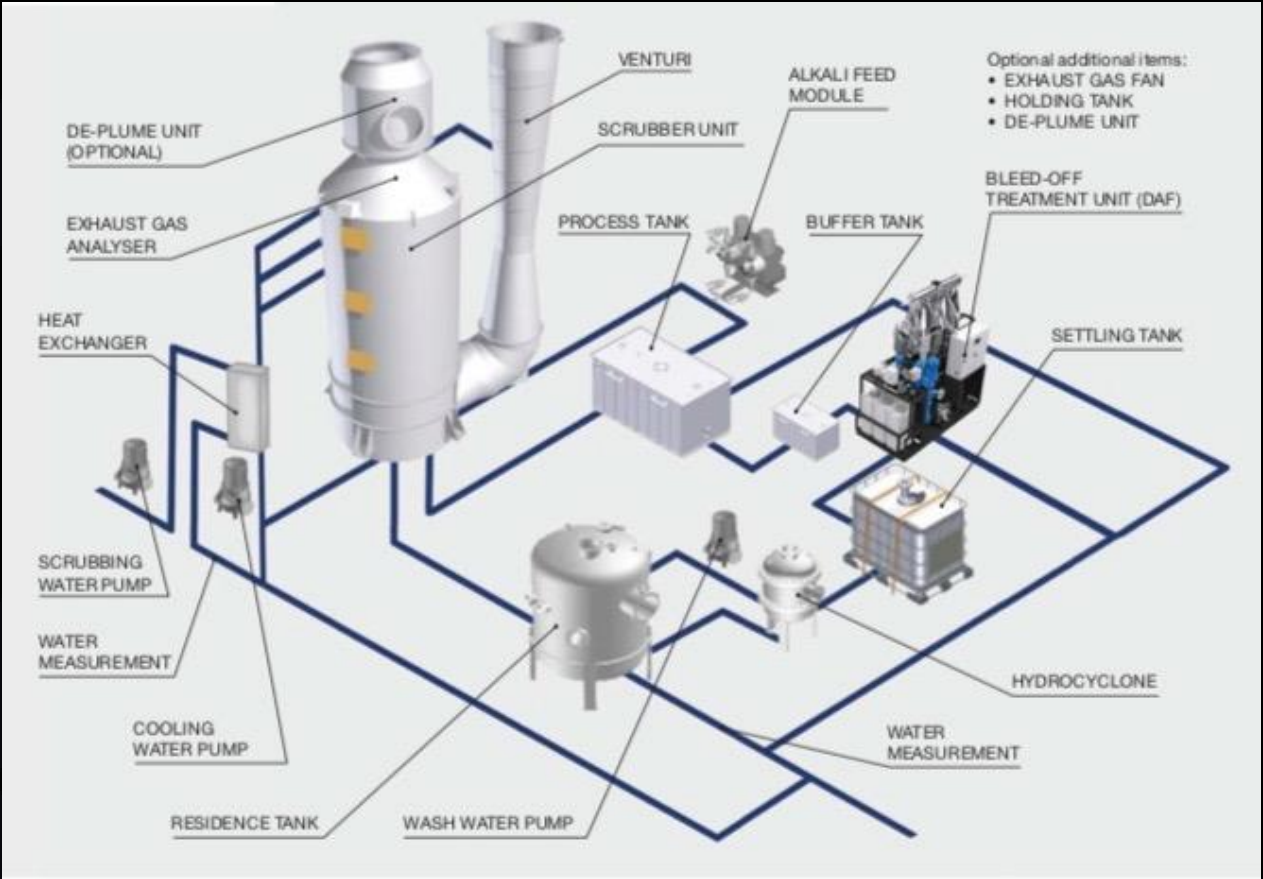


MARITIME MISSION

We Developed the Ideal Maritime Modular product:

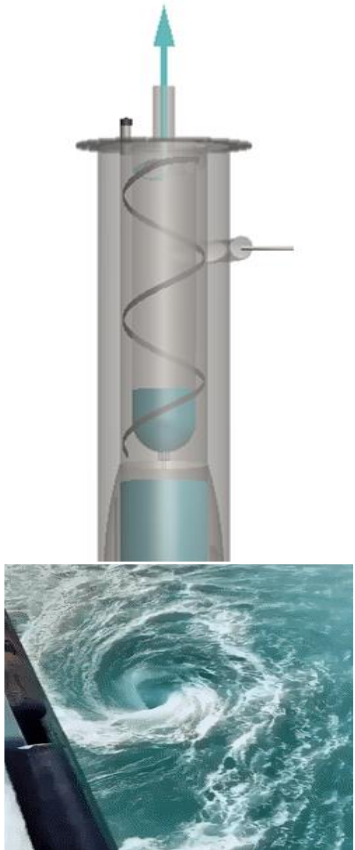


Compared to Scrubbers:



Limited	Retrofit	100% of the market
No	All pollutants combined	Yes
High	OPEX CAPEX	Low OPEX Low CAPEX
No	Recurring revenue from BC and CO ₂ sale as byproducts	Yes

Easy and Low cost to operate with



Fully Automated

Easy maintenance (self-cleaning)

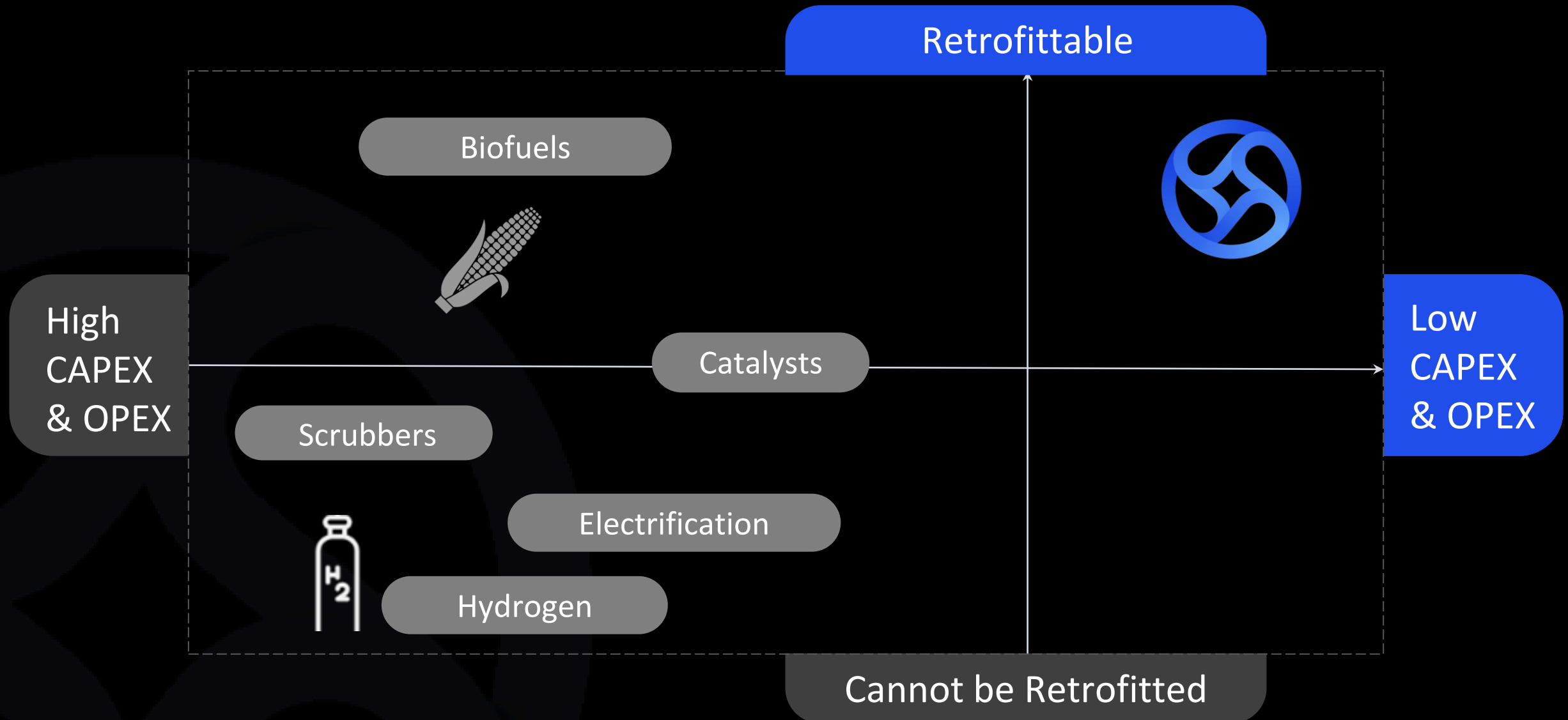
Works with Seawater only.

No need of Potable water.

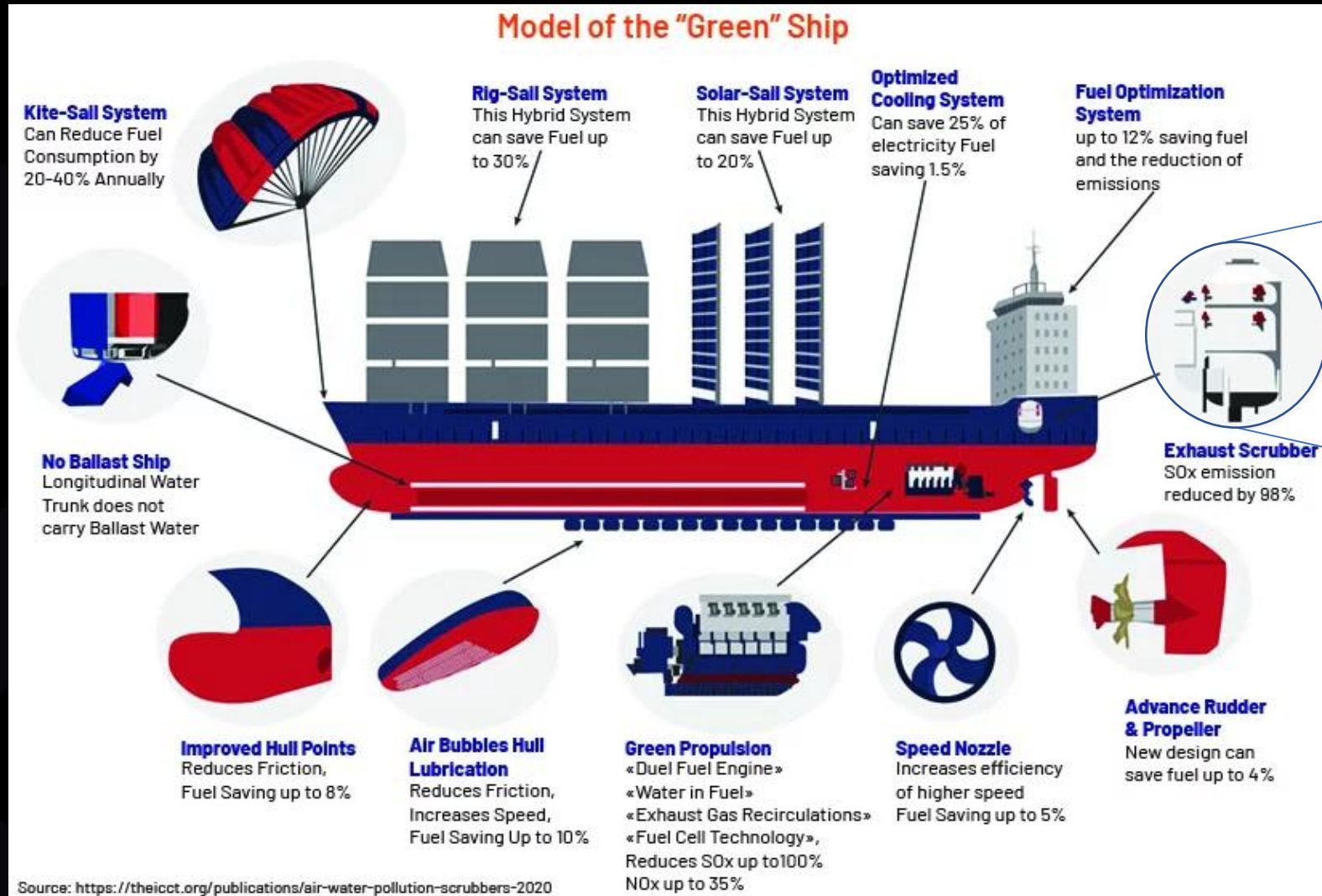
No chemicals onboard.

Uses the speed of the exhaust gases

Compared to other solutions



IMO Green Ship Concept - Exhaust Gases Filtration



1:1 Pilot



6 - 8 months

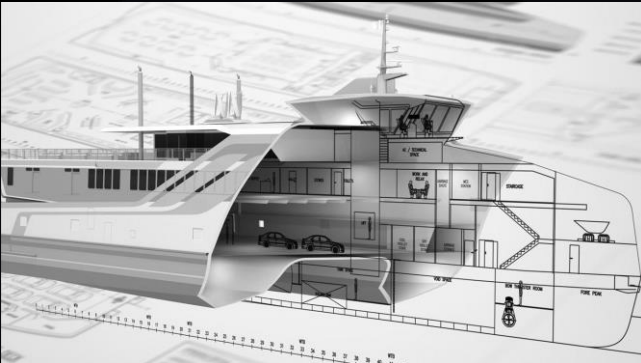
Agreement
& Admin

Tech
Designs
Integratio
n CAD

Manufacturing
& Assembly

Delivery &
Installation

Performance Tests
& Assessment (tech +
financial model)



Mo 1

Mo 2

Mo 3

Mo 4

Mo 5

Mo 6

Mo 8

Team



Boyko

Maritime Engineer

15+Y in Maritime



Emilian (CTO)

Aviation Engineer

20+Y in Aerospace

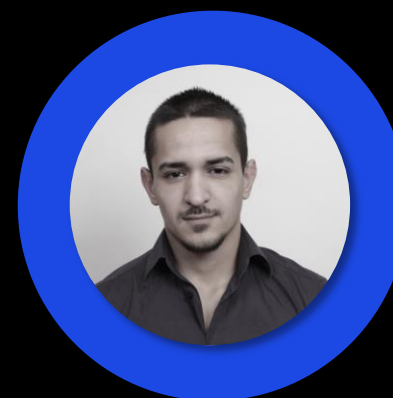


Rennie (CEO)

Marketing

20+Y in Business

EMBA Sheffield



Plamen

Sales

5+Y in Sales



Alexandra

Sales

4+Y in Sales

oldendorff 

DAMEN

Assembleon

PHILIPS

P&G

Nestlé

Advisors in KAUST:



Omar Khasawneh

Mentor

Investment Principal
at KAUST, Saudi Arabia
MBA, CFA



Bulent Erbilgin

Advisor

Visiting Professor
at Universities of
KAUST, Saudi Arabia and
Berkeley, California



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