

**SUMMARY:**

**HOW TO CREATE  
A BETTER  
MARITIME  
WORLD**



**Marine transport accounts for about 80% of global trade.**

# A REVOLUTION IN SHIPBUILDING



2028 CSSB will contribute a GDP of USD +1,3B and +3000 employees.

Leading brains and brands in the maritime industry signed LOIs for 7 factories.

## NO EMISSION

- Electric engines
- Hydrogen
- Batteries
- Sails



## COMMERCIAL VESSELS & YACHTS



## EFFICIENCY

- Design
- Computer Fluid Dynamics
- Structural engineering
- Process planning



## GREEN MATERIALS

- Fibre (carbon/basalt, hemp)
- Resins (Bio epoxy)
- Core (foam, honeycomb)



The world's first industrial cluster for sustainable yacht & ship building will continue the maritime history of the UAE.



# THE CENTRE OF MARITIME SUSTAINABILITY



Up to 32 factories, shared machinery and water access.

# CREATING AN ECO-SYSTEM

as platform for  
maritime innovation

- Up to 32 factories
- State of the art buildings
- Shared machinery
- Shared high end offices
- Marina







# CRITICAL CAPABILITY BUILDING

for  
technology  
transfer

## A maritime Technopark to establish a unique industry cluster

Partners are selected from critical technology sectors

### PROPULSION

- Electric engines
- Hydrogen
- Batteries
- Sails

### ENGINEERING

- Design
- Computer Fluid Dynamics
- Structural engineering
- Process planning

COMMERCIAL  
VESSELS  
& YACHTS

### MATERIALS

- Fibre (carbon/basalt, hemp)
- Resins (Bio epoxy)
- Core (foam, honeycomb)

### PRODUCTION

- 3D Printing
- Robotic layout
- Direct moulding



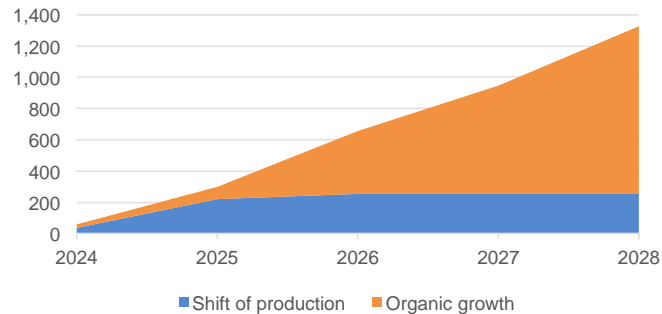
\$ 1,3 BN

significant contribution to the GDP

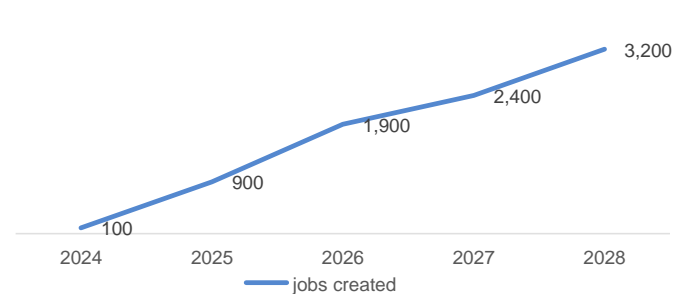
By 2028, CSSB's 21 tenants are estimated to deliver USD 1.3 bn of annual revenues to the UAE

- Shift of **existing productions** from other markets
- Ship building industry is labor intense
- Demand for white color executives and engineers
- Education and Emiratisation

Revenue projection, CSSB tenants (USD mil)



CSSB employment creation (est.)





# CONTRIBUTION TO THE COMMUNITY

- **>USD 30 mil of FDIs**
- **Cooperation with local universities** (capability building)
- **Creation of 700 – 4000 jobs (over time), including qualified job opportunities for Emirati**
- **“National Symbol” of shipbuilding, extending the maritime legacy of the UAE into the future**
- **Diversification of industries**
- **Media impact in maritime publications**
- **Technology transfer from leisure to commercial vessels**





# VISION

## United Arab Emirates World leader in sustainable ship building

- Proofs the vision and strategies of the UAE
- New **innovative companies** in the UAE
- Goal: **3000 employees** and 1+ billion turnover in 5 years

**Establishing the UAE as  
sustainable ship building location**







# THE UAE STRATEGIES

CSSB fits 100%

## The Center for Sustainable Ship Building fits into following strategies of the UAE:

- UAE Environment Policy
- The UAE's Fourth Industrial Revolution (4IR) Strategy
- UAE Net Zero 2050
- National Innovation Strategy
- National Climate Change Plan of the UAE 2017–2050
- UAE Energy Strategy 2050
- The UAE Strategy for Talent Attraction and Retention
- United Global Emirates Campaign
- The UAE Strategy for Domestic Tourism
- The National Strategy for Wellbeing



# THE UAE ACADEMY

for sustainable  
composite  
construction  
&  
Emiratisation



## Composite is the building material of the future

- recyclable
- emission free
- light
- good insulation
- low maintenance

### Significant need for education:

Composite is underrepresented in the market. It is not part of the training plans of most universities in Architecture and Mechanics.

CSSB started conversation with the American University of RAK & RIT.



**AURAK**

الجامعة الأمريكية في رأس الخيمة  
AMERICAN UNIVERSITY OF RAS AL KHAIMAH





# RESEARCH & DEVELOPMENT

In cooperation  
with  
**AURAK**

## AURAK & CSSB have identified 6 research projects.

### Priority 1

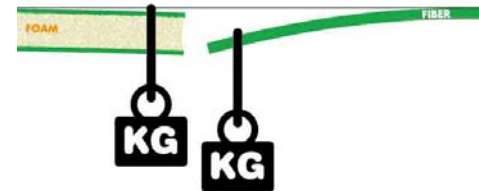
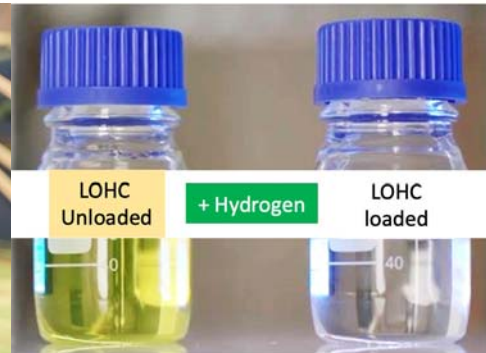
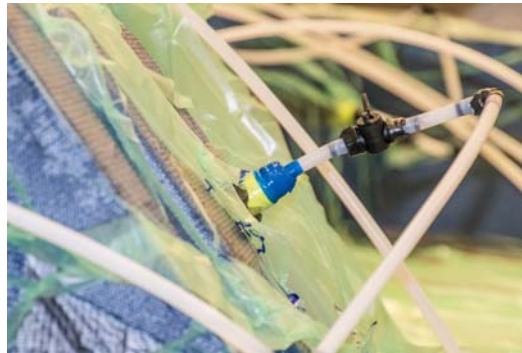
- SOFC fuel cell to use LOCH Hydrogen store systems for small vessels
- Prepreg with lignin based Carbon fibre and Plant based Epoxy resin

### Priority 2

- UV resistant GelCoat system for Prepreg application
- Integration of MEWIS Duct and Kort Nossle in hull shape of small vessels
- Optimizing the usage of adjustable moulding tables for ship construction
- Optimizing the communication process between Engineering and workshop



**AURAK**  
الجامعة الأمريكية في رأس الخيمة  
AMERICAN UNIVERSITY OF RAS AL KHAIMAH



# NECESSARY SERVICE POINT

The CSSB is providing high end maritime Service according European Superyacht Standards

- Fast repairs
- Drive system service
- Refit to Superyacht Standards

## Big need for Service:

Due to the development plans in RAK the need for service will grow. At the moment there is no quality offer in the UAE. Most Superyacht owners are bringing their yachts to Europe for service and repairs.





# TOURISTIC ATTRACTION

**Ships and boats have a great fascination for everyone.  
The CSSB brings further attractions to the UAE.**

- Shipping Museum
- Aeolos Open Boat Yard – tourists can visit the boat yard
- Premier Event/Party location
- Yacht Rental
- Sailing School
- Impressive yachts in the harbour
- Lighthouse of sustainability with exhibition
- Racing events/Race Village





# MEDIA STRATEGY



More than **600 M** contacts **worldwide** per year means **+\$ 30 million** Media Equivalent.

### Target groups

Clients  
Tourists  
High Pot. Employees

### Goals

Yacht Sales/service  
Visits of Events, Museum  
quality, competence

### Market

Maritime worldwide  
Worldwide  
Focus Europe Business

### Campaign

IMOCA 60 racing team  
AP30 Race Teams  
PR Strategy  
social media campaign

### Tools

PR race team office  
PR CSSB office/CRM system  
existing network of journalists  
own channels/influencer network

### Media

all media worldwide  
media worldwide, focus Europe  
TV, Magazines  
Youtube, Facebook,  
Instagram, Forum  
Linkedin, B2B magazines

Sustainable Construction

B2B Events, Lectures







# THE DETAILS



# CSSB IS CONTINUING THE MARITIME HISTORY OF THE UAE



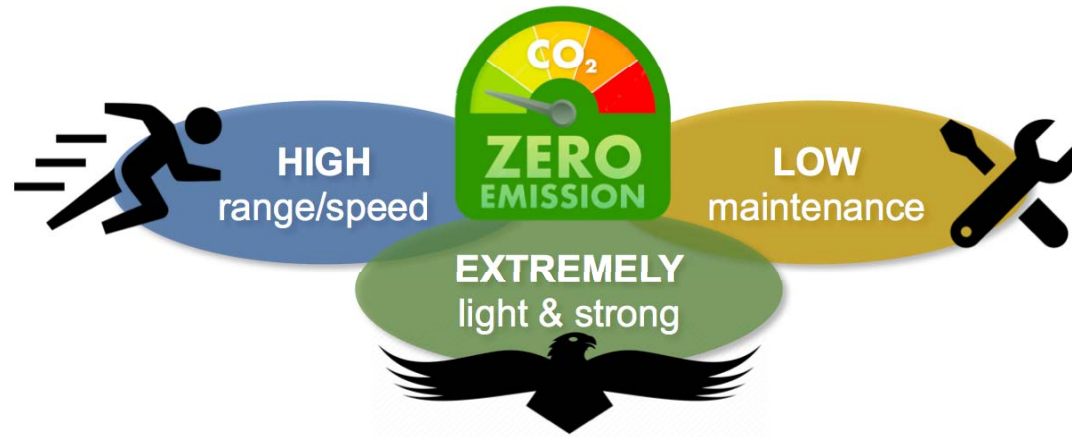
Creating a sustainable community. Working as a team.



# KEY DRIVERS

for maritime  
sustainability

It's a lot about weight reduction.





# THE CHANCE

Reasons  
to join  
the CSSB  
for  
German  
Companies

## SITUATION IN EUROPE

- Lack of workers
- High energy costs
- High administration costs and taxes
- Danger of cutting supply from China



# ALREADY DONE

Boats  
developed  
& produced  
in the UAE



AEOLOS P30 CARBON RACEBOAT



MAYLA 44 77KNOT FAST ELECTRIC MOTORYACHT



AEOLOS M40 ULTRALIGHT CARBON MOTORYACHT



KAEBON EB EINS 89KG CARBON ELECTRIC MOTORBOAT



AEOLOS FLYING DUTCHMAN



# INNOVATION

**Made  
in the UAE**

## Think Tank by AEOLOS

- submarine
- solar refit solution
- drone technology
- wind turbine
- and more ....



Concept/image © Igor Dzukovski



# AVOIDING POLLUTION



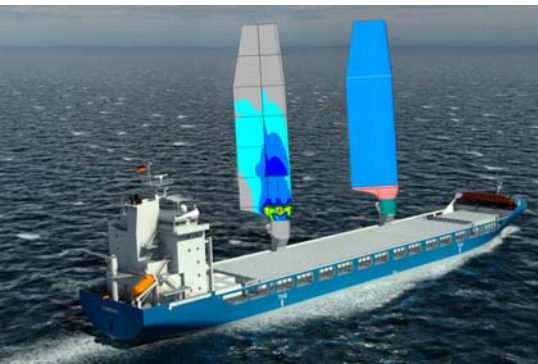
Maritime shipping caused 6.7% of worldwide oil consumption.



# CARBON REDUCTION

## Independent from fossil fuels

- Wind energy
- Solar systems
- Hydrogen





# INNOVATION

## Production in the UAE

### First movers want to invest in production

- Fuel Cell integration
- Hydrogen tank systems
- fire proof batteries
- DNV approved battery systems



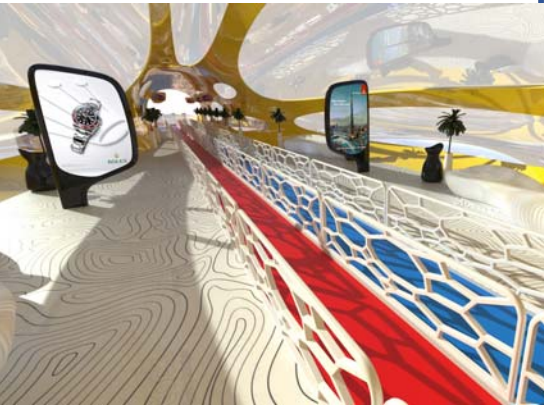
# TRANSFER OF MARITIME TECHNOLOGY IN FURTHER MARKETS



Attracting talents. Thinking out of the box.

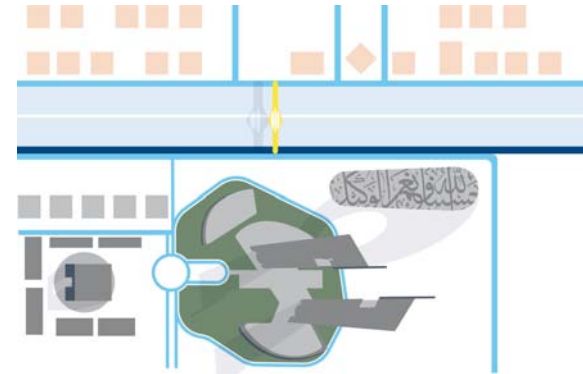
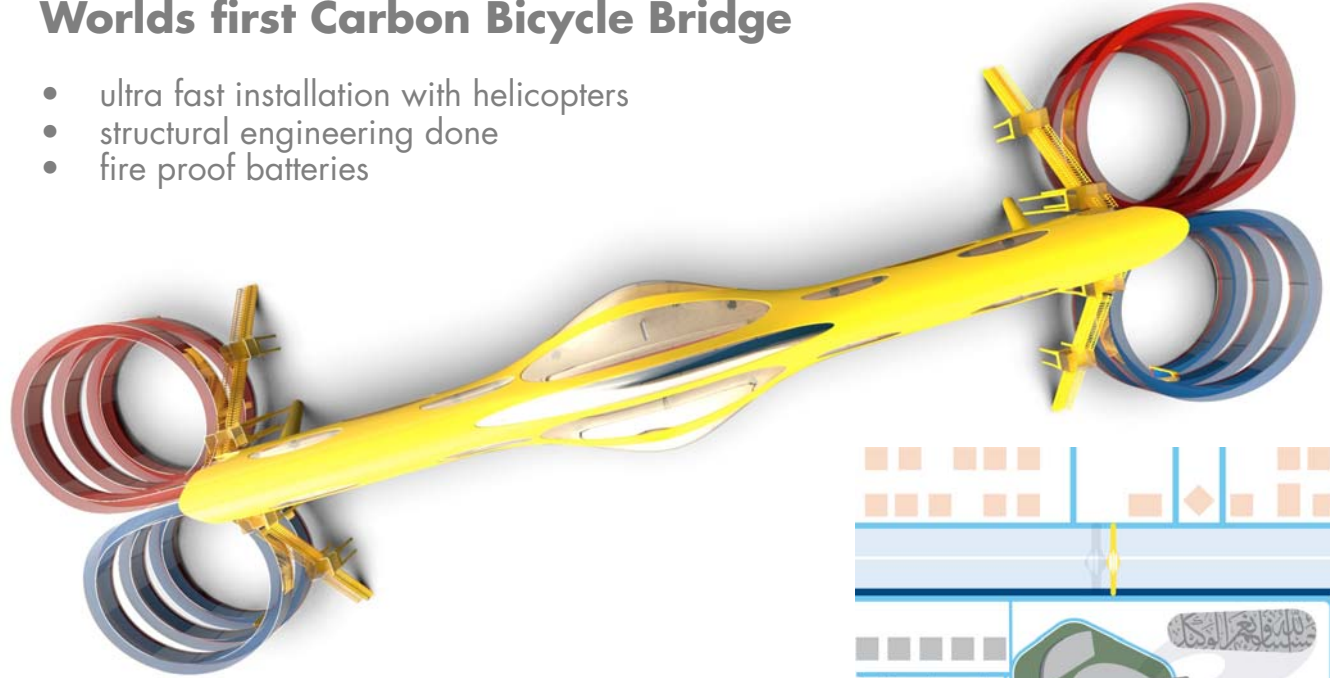
# INNOVATION

**Made  
in the UAE**



## Worlds first Carbon Bicycle Bridge

- ultra fast installation with helicopters
- structural engineering done
- fire proof batteries





# SUSTAINABLE FLOATING HOMES

ALVA YACHTS  
HOMES



# FULLY HYDROGEN DRIVEN

transport  
technology



## ZERO EMISSION SOLUTIONS

- series production in Germany had started
- Fuel Cell PEM technology & Hydrogen tanks
- Infrastructure solutions
- Developed by the engineers of Lehmann Marine







# THE MARKETING



# HIGH MEDIA IMPACT

**professional  
network**

## CSSB is already well connected in the maritime world

- Organisator of the International Yacht Forum under patronage of the German Sailing Association
- Press officer of the biggest offshore race in Northern Europe: Nordseewoche
- Keynote Speaker
- CRM system filled with + 60.000 contacts
- Existing social media channels & fanbase





# MEDIA IMPACT

**MEDIA**

INTERNET

TELEVISION

RADIO

MAGAZINES

NEWSPAPERS

## Print

+ 500 maritime journalists  
+ 1000 business media

## TV

worldwide network

## Online

established  
websites

## Facebook

## Instagram

## Linkedin

several Mio contacts  
worldwide



## YouTube

established  
channel

## Visitors

Influencers

## Clients

AEOLOS  
30.000 contacts  
worldwide

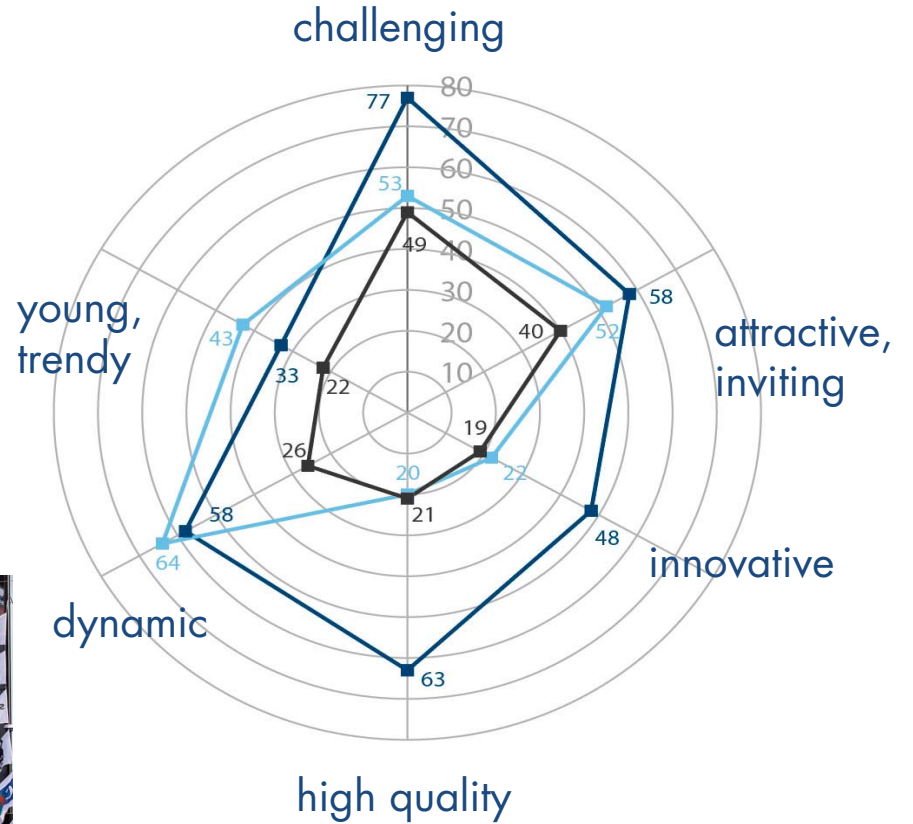


# SAILING IMAGE

■ Sailing

■ Golf

■ Football





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Sustainable Construction

B2B Events, Lectures



# RACE WINNER

In Europe  
they call her  
"The Dubai boat"

## Almost famous: "The Beast"

- 1st Al Gaffal Race, UAE
- 1st Brassfahrt, Germany
- 1st Copenhagen one star
- lot of press releases
- more teams start racing





# RAK ROCKET

## RAK Racing Team

### Local Race Team

- attractive fast boat, made in the UAE
  - existing boat/team
  - experienced successful skipper
  - worldwide professional press work
- 
- +4 mio AED media equivalent value during 4 years



# RAK ROCKET

**Race winner**

## Proven track record of success

More than 100,000 miles sailing and about 300-400 races, Hans Genthe has won lot of race classics, some of them several times:

- 1988 - 1992 olympia campaign Flying Dutchman
- 1993 - 2019 big boat team projects (1st Kieler Woche, Nordseewoche, Rund Skagen, ...)
- 2018 + 2019 1st Silverrudder (race with 450 boats in Denmark)
- 2021 – 2023 1st Al Gaffal Race, 1st places in DOSC club racing, 2nd Double Hand DOSC



# RAK ROCKET

## RAK Racing Team

### EVENTS 2024

- Dubai-Boat Show
- Dubai-Muscat
- Dubai-RAK
- Al Gaffal Race
- Dubai Offshore Series
- RAK-AbuDhabi Race
- **SilverRudder (Den)**  
450 boats, biggest  
single hand race in Europe





# DUBAI BOAT SHOW

the only sailboat

the most  
sustainable  
boat of the show



**RAK  
PORTS**  
YOUR  
SAFE HARBOR  
IN THE UAE

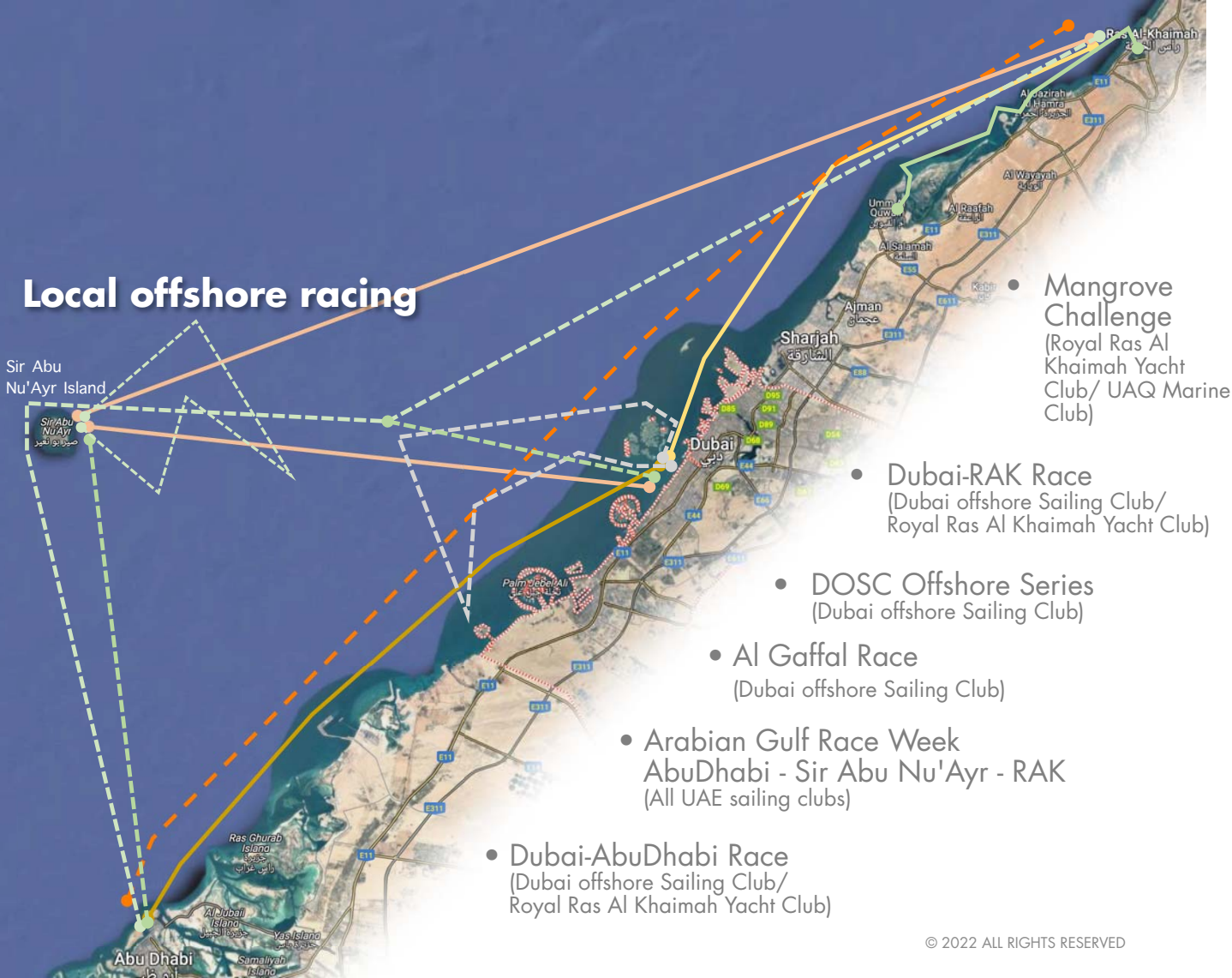
# THE UAE RACES

Establishing a sailing scene

Sir Abu Nu'Ayr Island



## Local offshore racing



- Mangrove Challenge (Royal Ras Al Khaimah Yacht Club/ UAQ Marine Club)
- Dubai-RAK Race (Dubai offshore Sailing Club/ Royal Ras Al Khaimah Yacht Club)
- DOSC Offshore Series (Dubai offshore Sailing Club)
- Al Gaffal Race (Dubai offshore Sailing Club)
- Arabian Gulf Race Week Abu Dhabi - Sir Abu Nu'Ayr - RAK (All UAE sailing clubs)
- Dubai-Abu Dhabi Race (Dubai offshore Sailing Club/ Royal Ras Al Khaimah Yacht Club)



# THE MIDDLE EAST RACES

**Establishing  
a sailing scene**



## UAE/RAK can become a host for races/stop overs

- Dubai-Muskat and Muskat-RAK
- The Ocean Race stopover

### New races concepts:

- RAK-Dibbar
- Persian Gulf Race series
  - Al Jazeera-Bahrain
  - Bahrain-Kuwait
  - Kuwait-Damman
  - Damman-Dohar
  - Dohar-Abu Dhabi
  - Abu Dhabi-Dubai
  - Dubai-Al Jazeera
- Middle East Race
  - Al Jazeera-Jeddah





# THE MUSEUM

## boats and boatbuilding



### The first open boat yard with experience center:

- Cinema: Movie of the transfer of the **UAE's maritime heritage** into the future
- **Ship building museum** to show the heritage of the UAE (1:1 Dhow, Pearl Fishing, Racing Dhow, model boats, navigation instruments, historic boat building tools, ...)
- Protected **walkway through the factory** to watch the state of the art sustainable clean production process.
- Live experience: **Indoor sailing area** with radio controlled sailing and motor yachts
- Cafe/restaurant
- **Event location** can be booked at evening and weekend



# EVENTS

## the event yard

The **AEOLOS** boatyard will be an attractive  
Event location in the evenings/weekends

- Company Events/product launches
- Parties
- Race stop-over harbour with prize giving event
- Lectures, workshops



# THE SAILING SCHOOL

**Growing a local  
community as part  
of the Emiratization  
strategy**

## The UAE has the most reliable sailing conditions

- stable wind conditions
- sunny, warm water
- no dangerous animals
- attractive environment
- long sailing history





# LECTURES

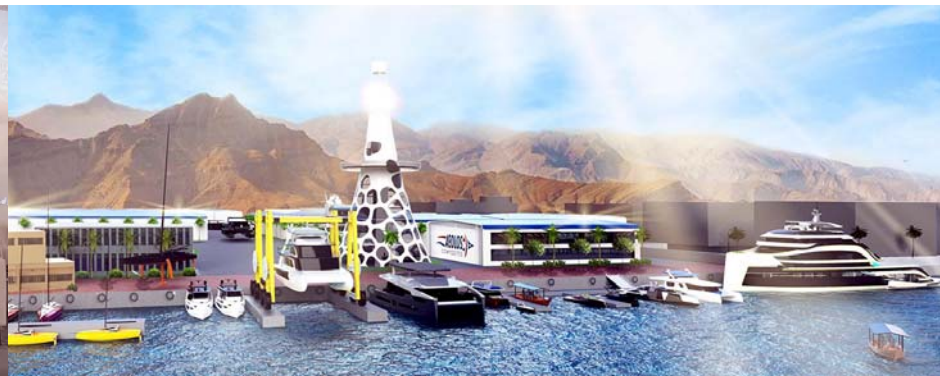
## International recognition

## Taking part in worldwide key events

- World Yacht Racing Forum
- Boat exhibitions
- Training in the lighthouse
- Academy



Emphasizing sustainability and innovation in yacht building  
Hans Genthe  
Managing Director  
Aeolus Yachts



# WORLDWIDE MEDIA AMBASSADOR

United Arab Emirates



IMOCA 60 = FORMULA 1 in sailing.





# IMOCA 60 CAMPAIGN

4 years of  
high media impact  
across  
the world

- Highest possible worldwide media coverage
- Highest possible image transfer
- The Formula 1 Grand Prix of sailing:
  - **5,6 billions contacts**
  - **119 countries**







# WORLD'S FIRST 100% CO<sub>2</sub> FREE IMOCA

Carbon capturing  
race boat

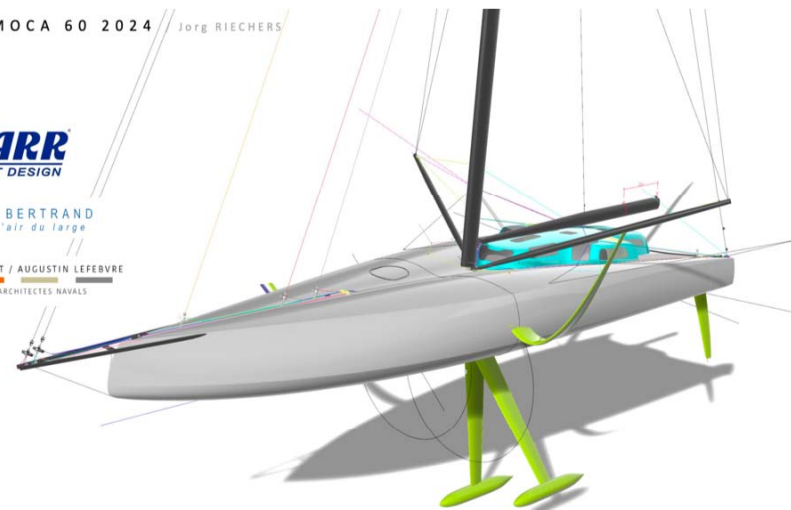
- First full sustainable built IMOCA in the world
- will become built in the UAE
- CO<sub>2</sub> free sailing
- proves and shows the technology of the CSSB
  - super light boat building
  - E-drive
  - lithium-ion batteries
  - hydro generators
  - autonomous offshore drive system (autopilot)

ALVA YACHTS IMOCA 60 2024 Jorg RIECHERS

**FARR**  
YACHT DESIGN

Etienne BERTRAND  
Atelier L'air du large

GUILAUME DUPONT / AUGUSTIN LEFEBVRE  
INGENIEUR ET ARCHITECTES NAVALS



# JOINING THE WORLD'S BIGGEST RACES

- Transat Jacque Vabre 2025/2026
- The Ocean 2026/2027 and later
- Vendée Globe 2028-2029

Expected reach  
5 bn contacts  
4 bn contacts  
6 bn Contacts

1,68 M visitors at the Race Village in Les Sables d'Olonne Vendee Globe



[CHECK THIS VIDEO AND UNDERSTAND  
https://www.youtube.com/watch?v=dfTDfd74qco](https://www.youtube.com/watch?v=dfTDfd74qco)







# THE SETUP



# THE SETUP

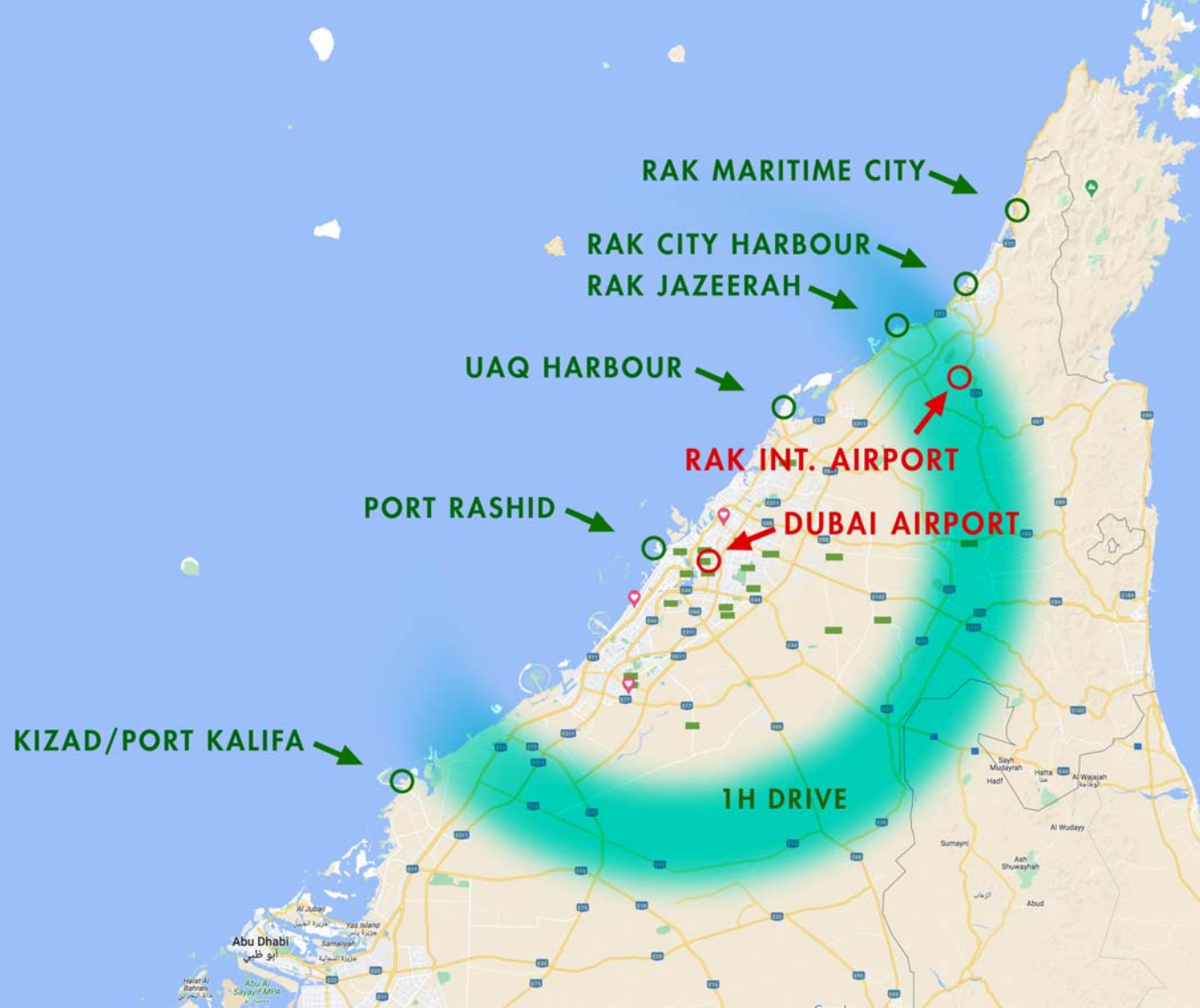


Creating synergies between the CSSB partners, suppliers and clients.



# THE UAE COAST

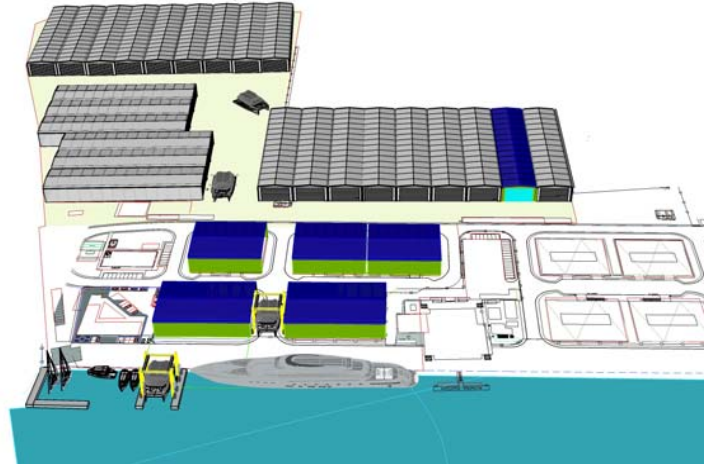
locations  
checked



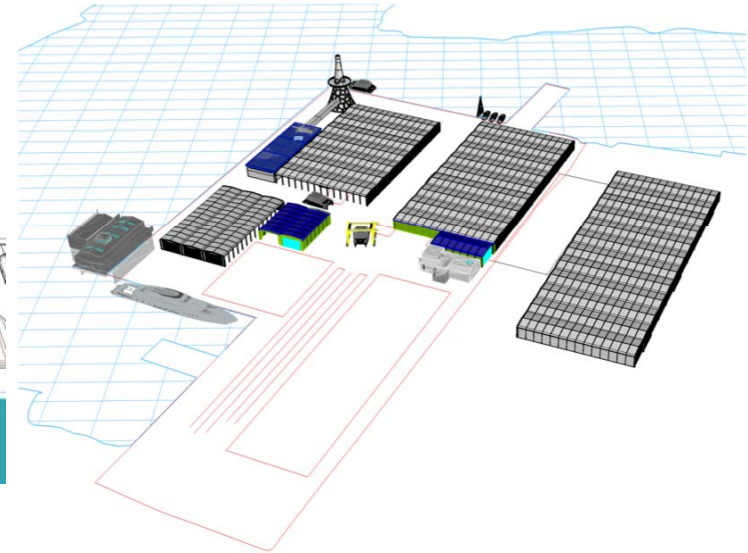
# TWO LOCATIONS

identified  
in  
Ras Al Khaimah

RAK City Khor Port



Al Jazeera





# RAS AL KHAIMAH



Long maritime history between sea, desert and mountains.



GOOD VIBES ONLY

YOU ARE NOW ENTERING A  
STRESS FREE ZONE



Attractive to live





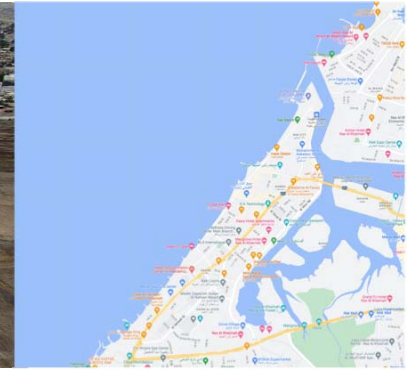
**Rich culture and nature.**



# RAS AL KHAIMAH CITY KOHR PORT

## IN THE CITY

- + attractive touristic location
  - + port zone
  - + marina opposite side
  - + direct contact to government
  - + 2 warehouses 2000sqm built
  - + own worker accommodations
  - + individual freezone possible
- + 15min drive from RAK Airport
  - + 10min to Hotels (Hilton) and beach
  - 1,0h drive from Dubai Airport





LOCATION

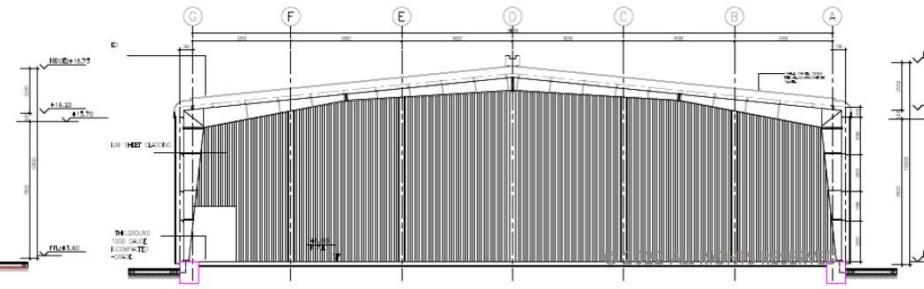
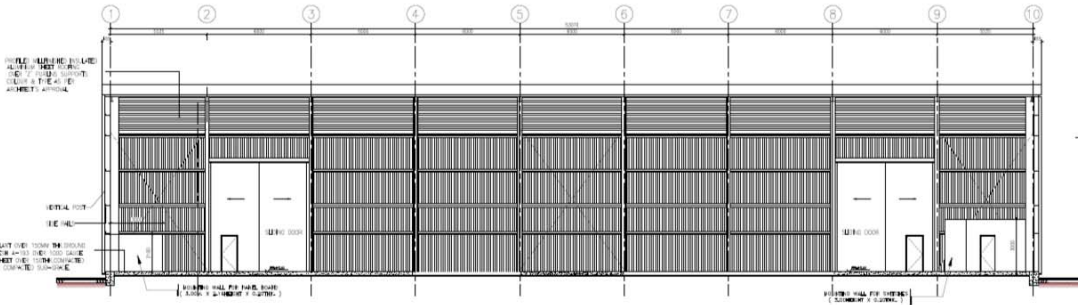
# RAS AL KHAIMAH CITY KOHR PORT



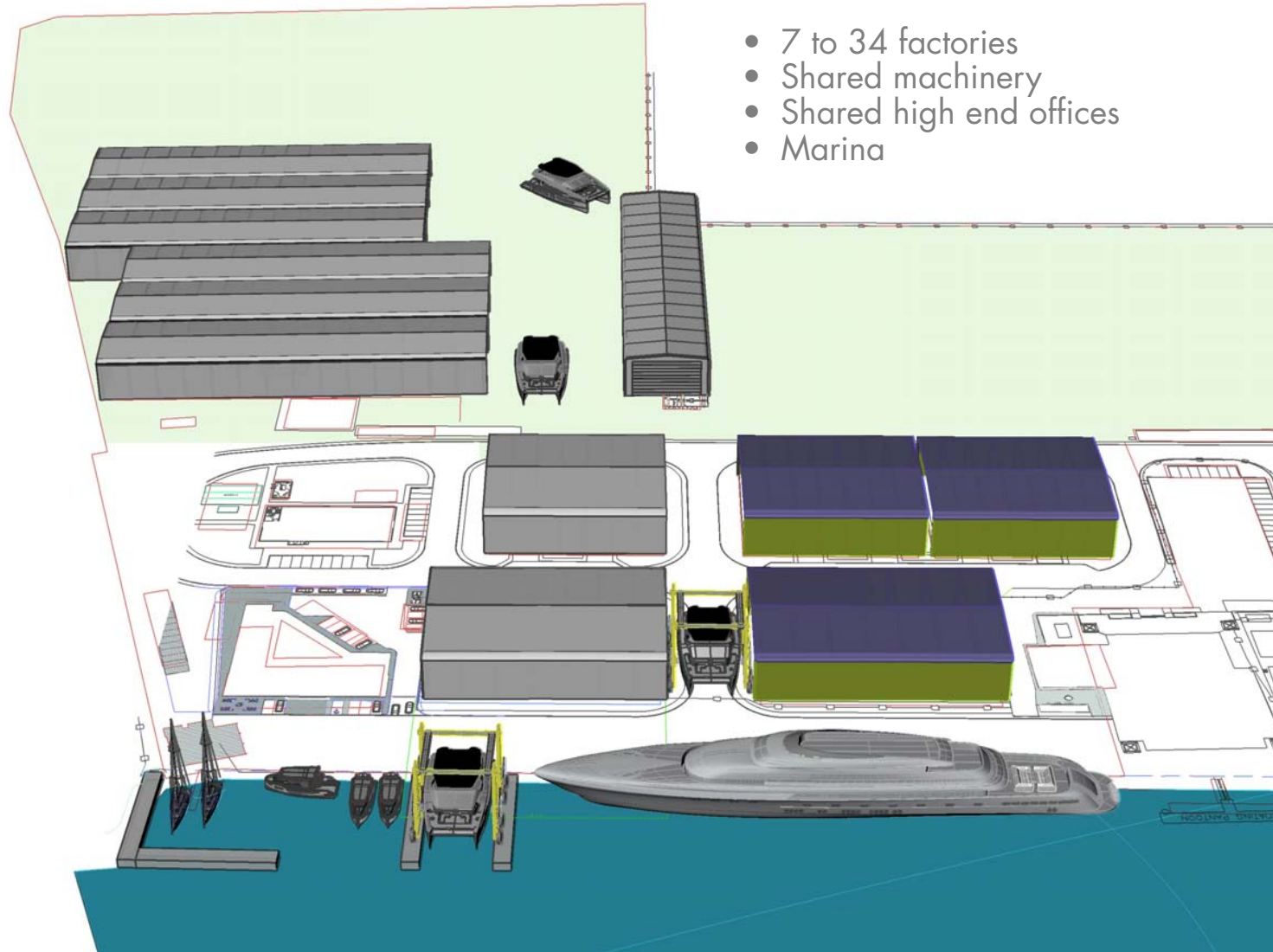
# RAS AL KHAIMAH CITY KOHR PORT

## 2 existing factories

- ready to move in
- 36m x 54m x 7,8m
- 2 sliding doors 6 x 6m
- 50mm PU insulation



# RAS AL KHAIMAH CITY KOHR PORT PHASE 1

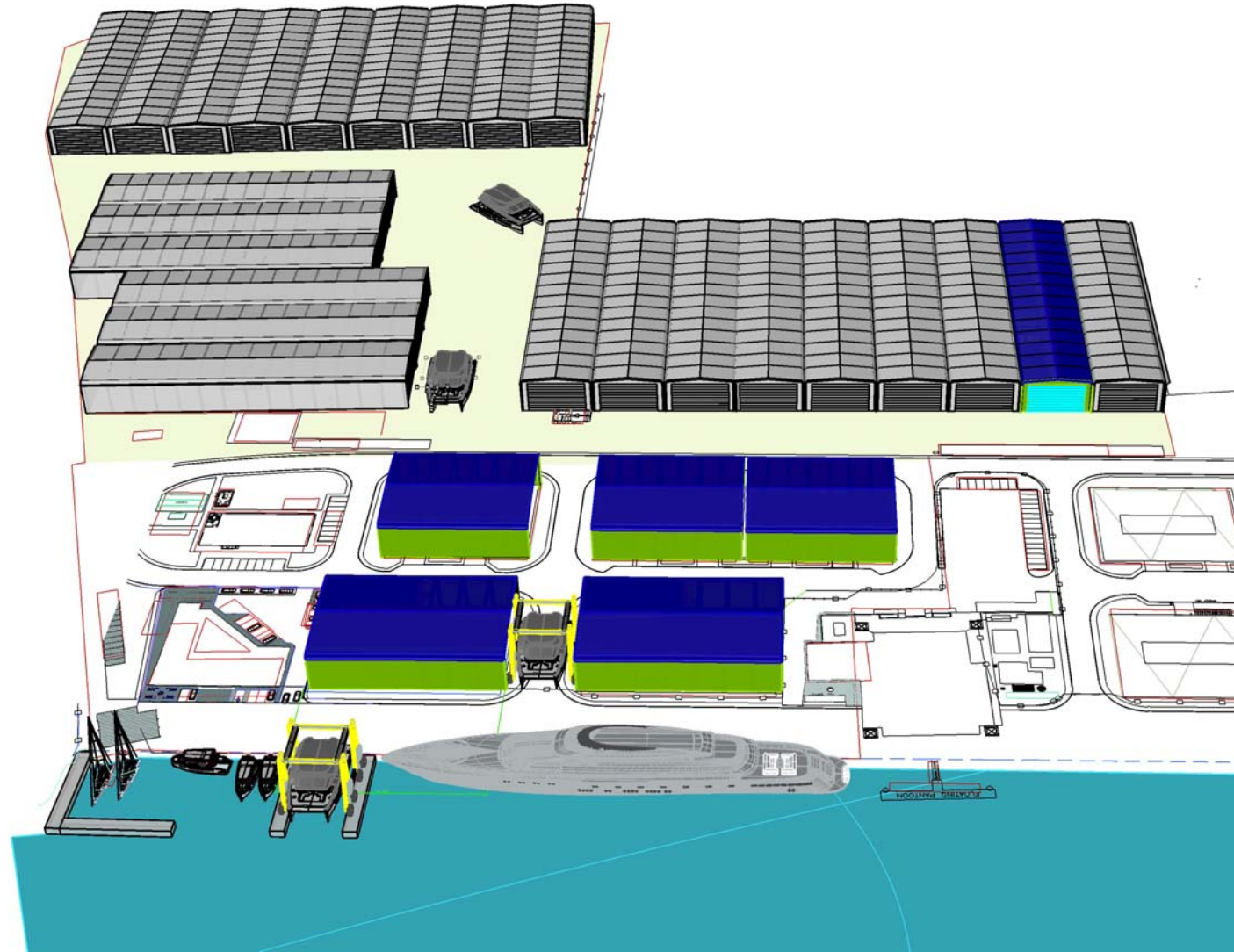


- 7 to 34 factories
- Shared machinery
- Shared high end offices
- Marina



LOCATION

RAS AL  
KHAIMAH  
CITY  
KOHR PORT  
PHASE 2



LOCATION

RAS AL  
KHAIMAH  
CITY  
KOHR PORT  
PHASE 3

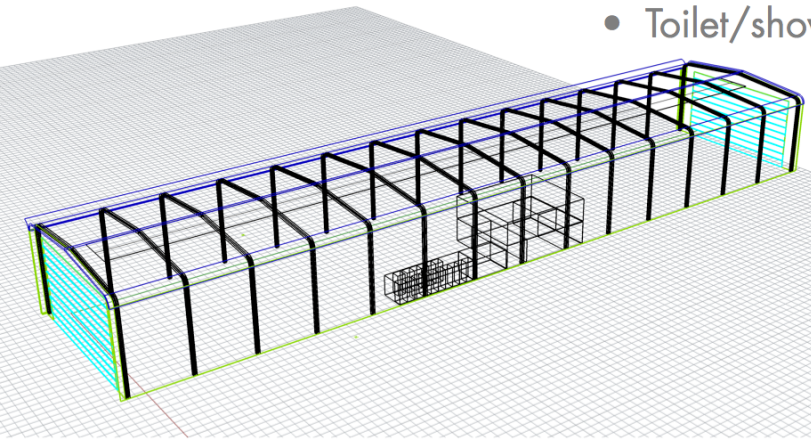




# WAREHOUSES

optimized for  
serial production

- Modern factories with **direct water access**  
**100m x 22m** with AC, insulated steel construction, prepared for solar
- Strait floor & outdoor area
- Electric **rolling doors 14 x 7m**
- 2x 10t roof cranes (7,5m hook)
- **movable Office Block**, 120 sqm, glass frame walls  
5 rooms: 2 x 3mx5m, 1 x 6mx5m, 1 x 3mx3m, 1 x 3mx7m
- Toilet/showers block (10 toilets, 10 urinals, 6 showers)





# CRITICAL MACHINERY

for shared usage

## Voiding CAPEX exposure for tenants

- 40m gantry milling machine
- 40m curing oven
- 40m paint booth
- 26m autoclave
- Travel lift
- Workshop with CNC machinery for wood & metal
- Cold storage



## R&D

a guarantee  
for future

### Tenants benefit from continuous access to high end production facilities

- Robotic layup
- Robotic painting
- 3D mould printing
- 3D direct production
- Winding machines
- Press moulding
- flexible moulds
- ....



# THE NATIONAL SYMBOL FOR SUSTAINABLE SHIP BUILDING



Creating synergies between the CSSB partners, suppliers and clients.



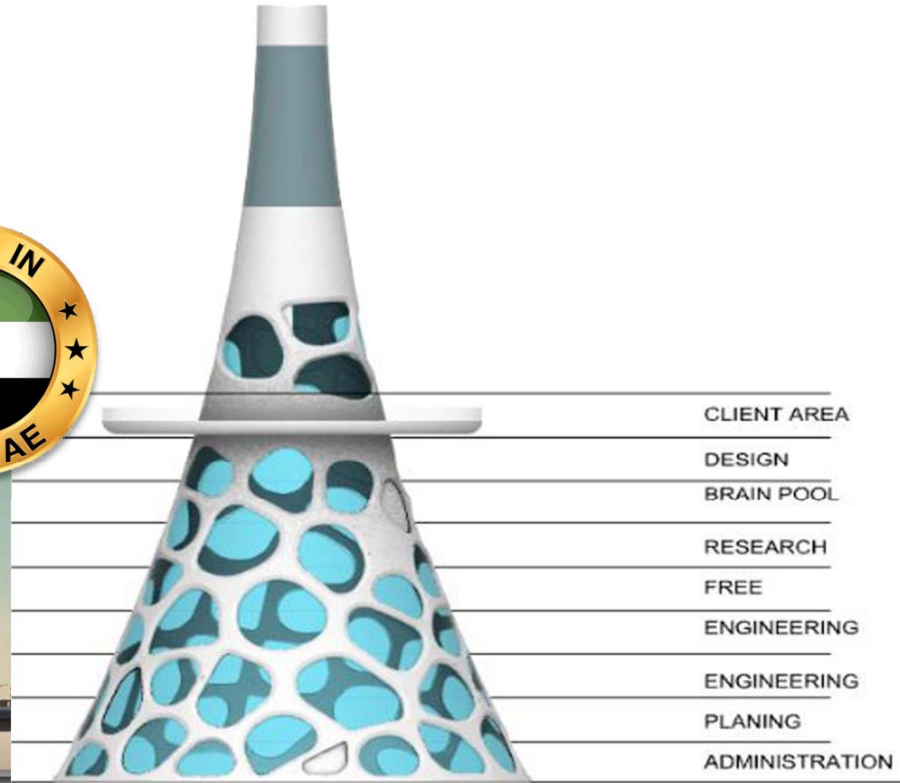
# THE LIGHTHOUSE

Phase 3

Shared Lighthouse

- Office
- Showrooms
- Meeting rooms

-> THINKTANK



# ENERGY

## Consumption

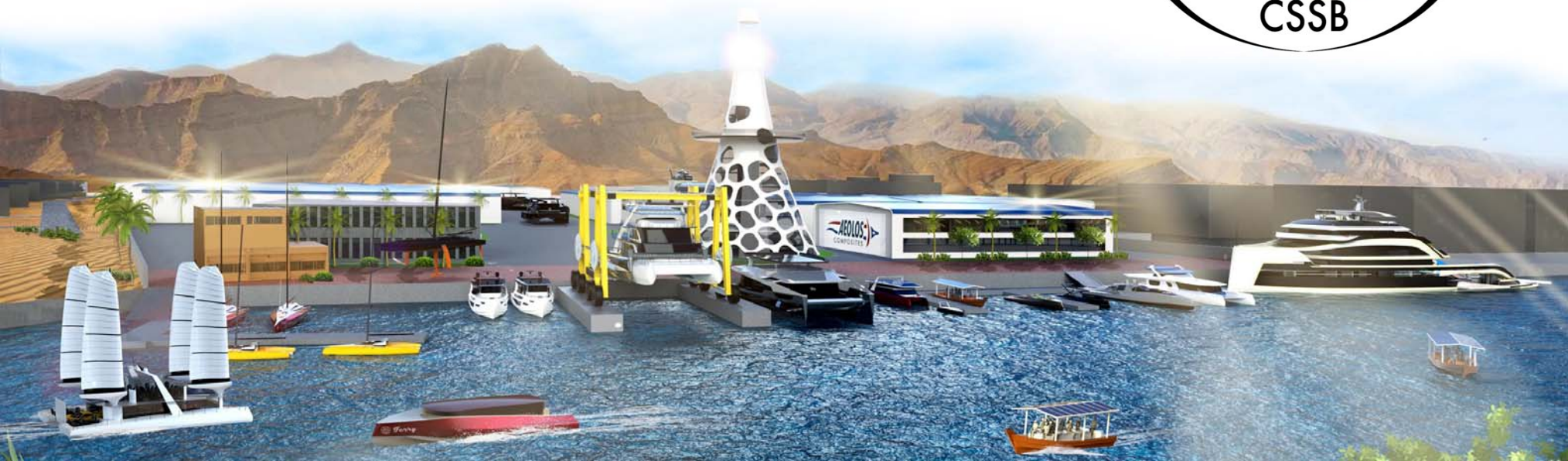
**KW**

|         |   |   |
|---------|---|---|
| Phase 1 | <ul style="list-style-type: none"> <li>• 7 x standard factory (200kw)</li> </ul>  | 1400                                    |
|         | Service Center  |   |
|         | <ul style="list-style-type: none"> <li>• Oven</li> <li>• Big Milling factory</li> <li>• Paint booth</li> <li>• Autoclave</li> <li>• Metal workshop with 3m milling machine</li> <li>• Carpentry with CNC machinery</li> </ul> | 210<br>280<br>200<br>1200<br>180<br>120 |
| Phase 2 | <ul style="list-style-type: none"> <li>• ca. 11 x standard factory (200kw)</li> </ul>   | 2200                                    |
| Phase 3 | <ul style="list-style-type: none"> <li>• ca. 11 x standard factory (200kw)</li> <li>• Lighthouse</li> </ul>   | 2200<br>100                             |





# ALTERNATIVE LOCATIONS



# RAS AL KHAIMAH AL JAZEERAH

## IN THE NATURE

- + attractive touristic location nearby
- + own port/marina
- + direct contact to government
- + low land lease
- + own worker accommodations
- + individual freezone possible





LOCATION

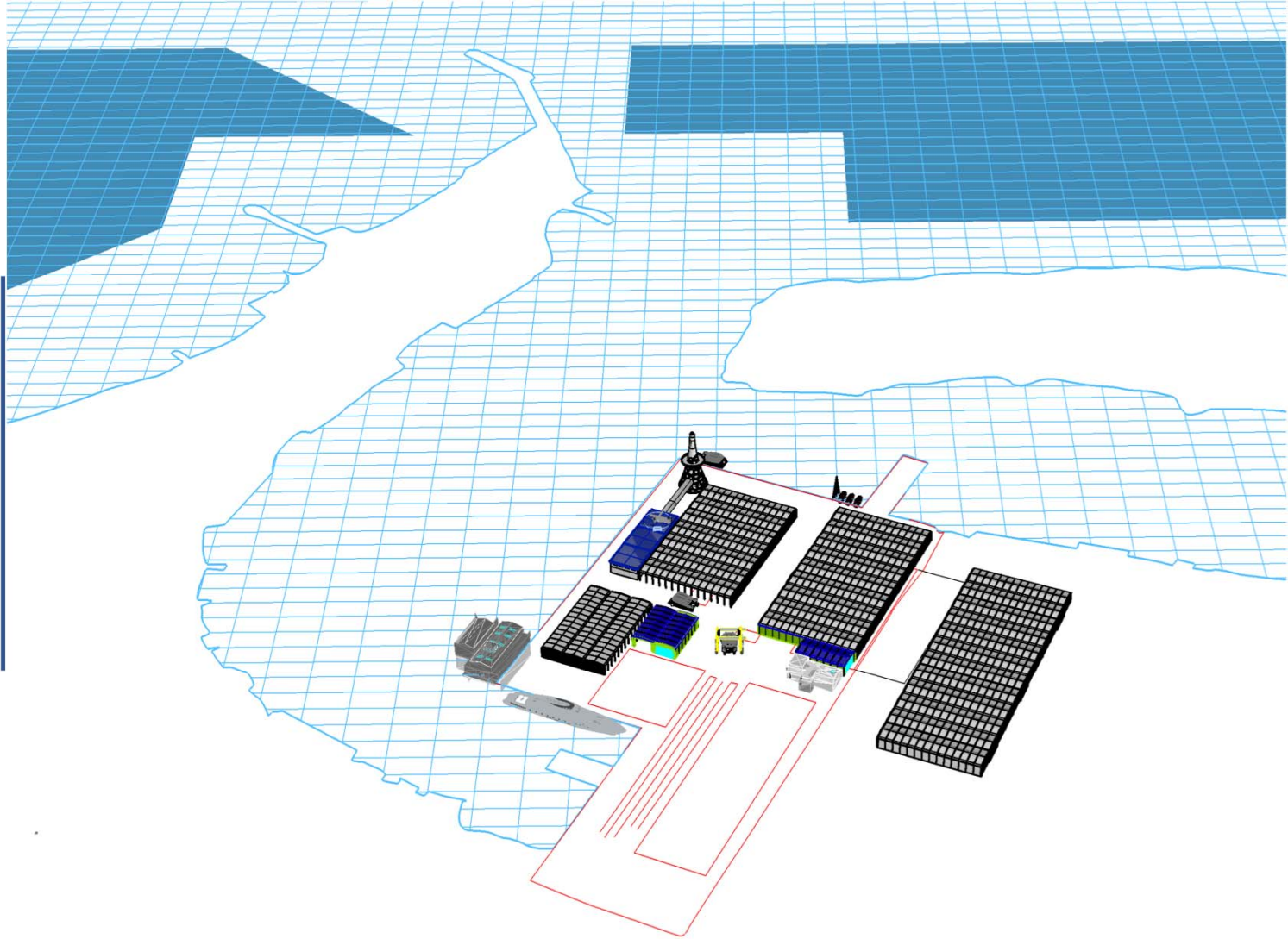
# RAS AL KHAIMAH AL JAZEERAH





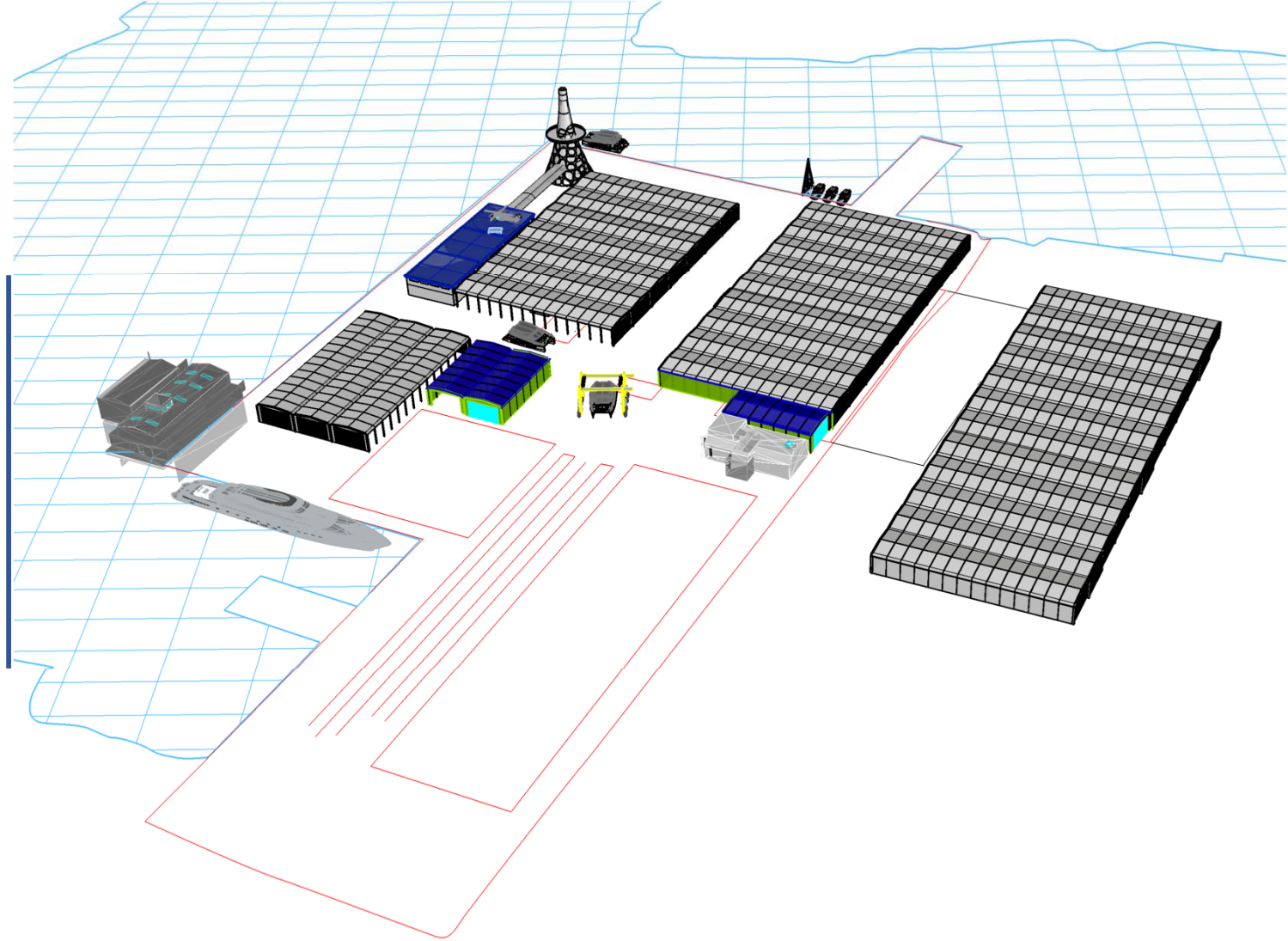
LOCATION

# RAS AL KHAIMAH AL JAZEERAH



LOCATION

# RAS AL KHAIMAH AL JAZEERAH







# THE SUSTAINABLE CONCEPT



**OUR GOAL:**

**PROTECTING  
LIFE IN  
THE OCEANS**



**Establishing new production processes and materials**



# THE SUSTAINABILITY STRATEGY



**Solar**

-> **Energy**

Solar roofs & wall insulation



**Waste**

-> **Hydrogen**

H2 technology waste converter



**Plants**

-> **Materials**

Bio resin & fibers



**Methods** -> **Efficiency**

Continuous optimization process/R&D  
Partnership with Universities

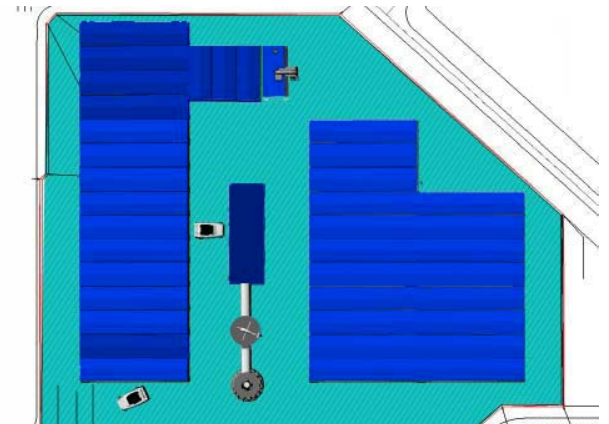






# SUN TO POWER

- 2200 sqm solar panels per factory
- well insulated factory walls and doors
- remaining power used for Hydrogen production





# WASTE TO HYDROGEN

Hydrogen production out of WASTE is an **approved technology** !

- new combination of have been using technology for a long time

H<sub>2</sub> can be stored **long term** and transported **safely** in liquid organic hydrogen carrier (LOHC)

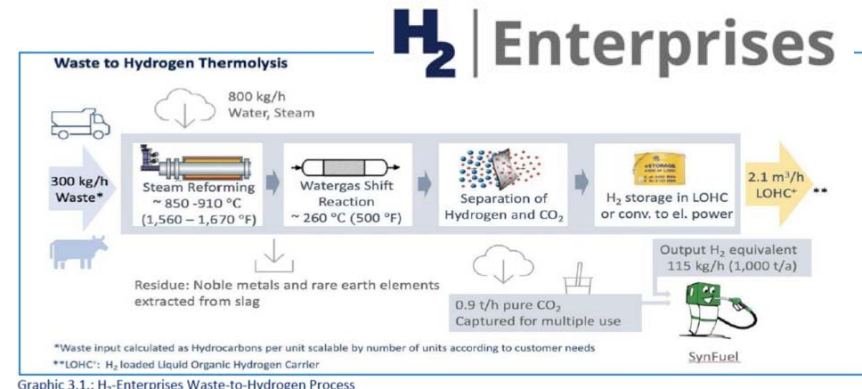
- no danger of explosion
- long term storage, no loss, no hydrogen boil off

## Approved German Engineering

World leaders as partners:

- ILF consulting engineering
- Schneider Electric
- Steinmüller Engineering
- ThyssenKrupp
- Siemens
- AKKODIS

...



Graphic 3.1.: H<sub>2</sub>-Enterprises Waste-to-Hydrogen Process



## MARKET NEEDS

### Market needs:

- CO<sub>2</sub> Shortage for industrial use/too expensive
- H<sub>2</sub> Shortage worldwide
- increasing need of H<sub>2</sub> in the UAE
- too much CO<sub>2</sub> in atmosphere







**DO NOT  
BURN!**

**CONVERT  
TO H<sub>2</sub>  
& CO<sub>2</sub>**

**200.000t WASTE**

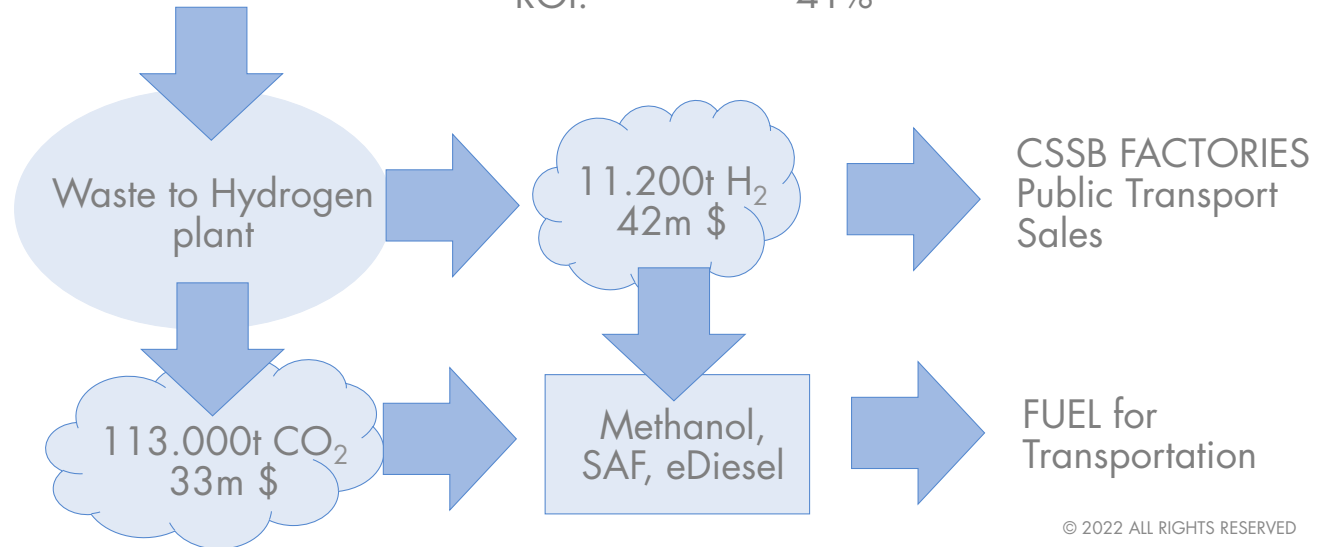
- municipally waste (MSW)
- landfill waste (dump sites)
- non-recyclable plastics
- tyres, seats
- other organic waste

Income: 75m \$/year  
(Based on 3,8\$/kg H<sub>2</sub>/0.3\$ CO<sub>2</sub>)

Invest: \$ 145m  
Project IRR: 33%  
Equity IRR: 72%  
ROI: 41%

ROI after 3 years

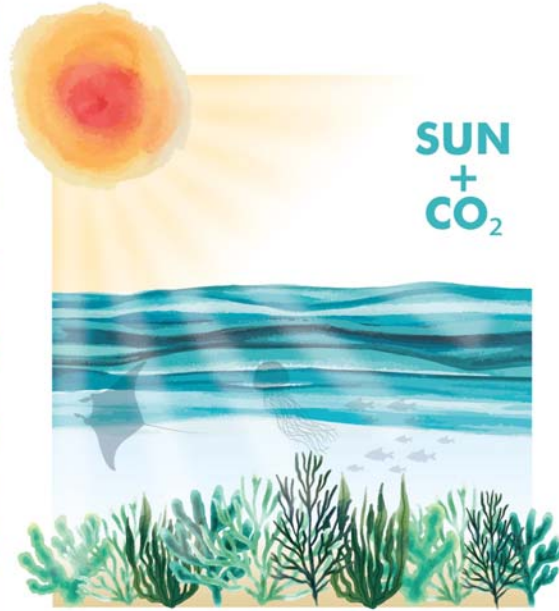
**H<sub>2</sub> | Enterprises**





# BIO COMPOSITES

# ARABIAN GULF



SEAWEED

CO<sub>2</sub>  
CERTIFICATES



PLASTICS  
CARBON FIBER  
RESIN  
BIO FUEL  
HYDROGEN



SHIPS & BOATS  
CONSTRUCTION

ENERGY FOR  
TRANSPORT



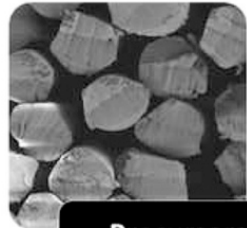
# BIO COMPOSITES

## Epoxy

- made of renewable and sustainable agricultural crops
- Usage of residual agricultural waste or plants

## Lignin Carbon fibres

- Biopolymer comprising ~30% of organic carbon on the earth
- Appr. 70% better carbon footprint of Polyacrylnitril (PAN)
- Appr. 35% less production costs



**Precursors**

Different lignin content  
Different draw



**Stabilization**

Skin-core structure



**Carbonization**

Hollow structure





## CARBON CREDITS

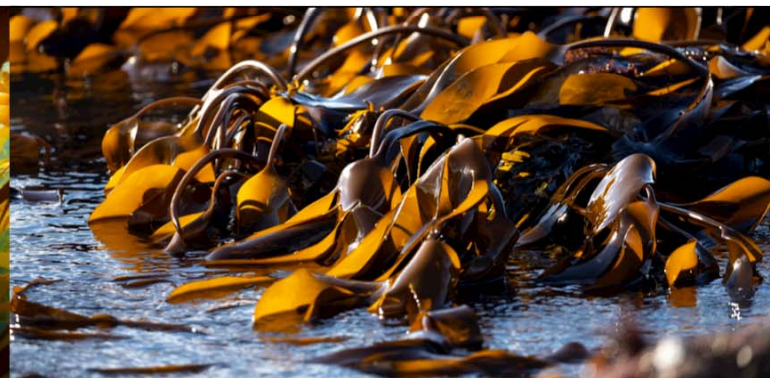
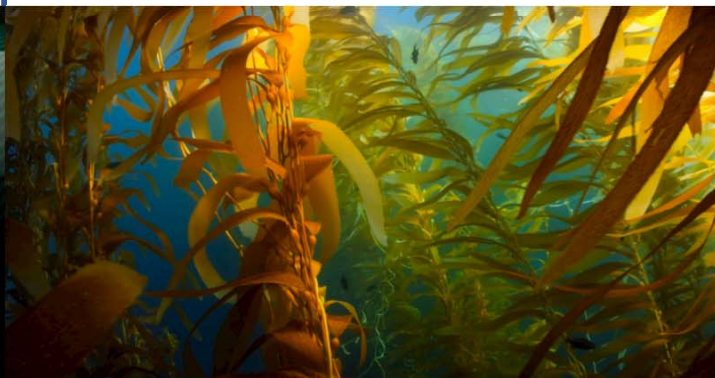
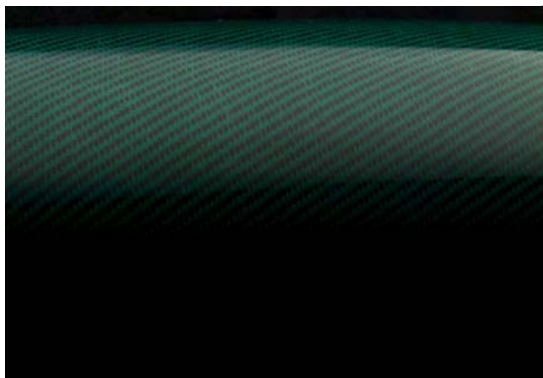
**\$ 1,1mio  
per year/km<sup>2</sup>**

### Growing Seaweed in the Arabian Gulf

Potential in the Arabian Gulf: Up to 147.000 –153.000 t/km<sup>2</sup>/year.  
1 ton of seaweed absorbs 120 kg CO<sub>2</sub>, 2 kg nitrogen, 0.2 kg phosphorus

- is binding 18.000 t CO<sub>2</sub> = 1.080.000\$ carbon credits
- is mitigating 1.500 t CO<sub>2</sub>, converted in biofuel = 90.000\$ carbon credits

1 carbon credit/offset = 1 ton of CO<sub>2</sub>, average value 60\$ (40-80\$)





# CONTINUOUS IMPROVEMENT PROCESS

## Collaboration

- partnerships with Universities

## Management

- establishing a culture of open communication

## Measurement

- Balance Scorecard key indicators

## Software

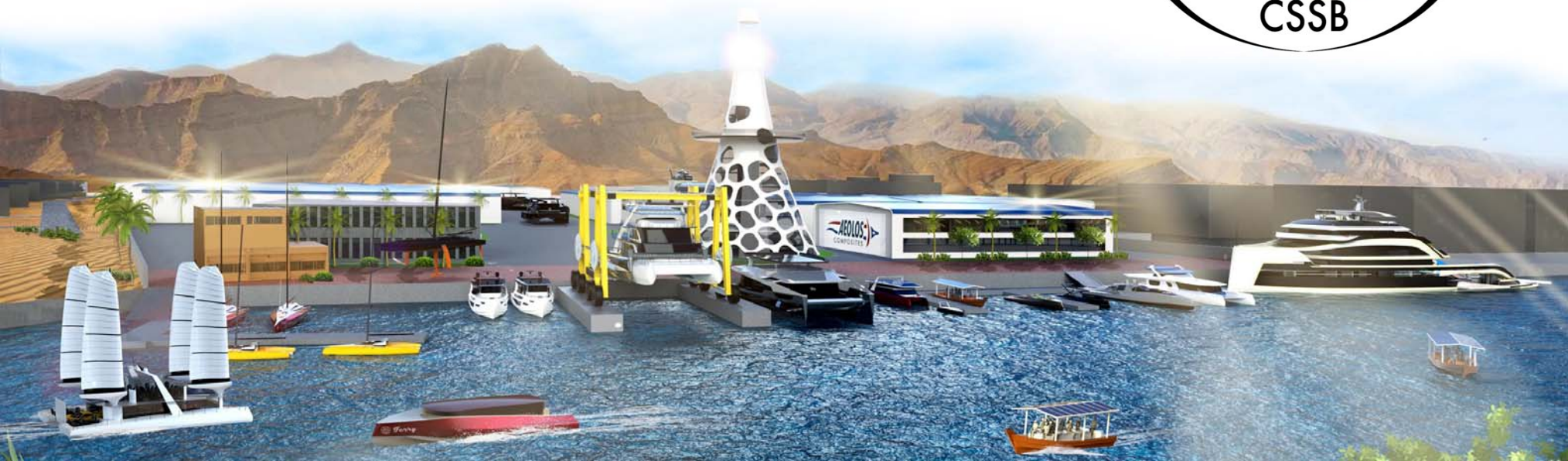
- Approved software solution







# THE PARTNERS



**WORLDS LEADERS  
IN MARINE  
SUSTAINABILITY  
WANT TO INVEST**



# STAKEHOLDER MAP







# FOUNDING PARTNERS

world leaders  
LOI signed

## Leading brains and brands in the industry

|        |                                   | factories<br>2024 | planning<br>2028 |
|--------|-----------------------------------|-------------------|------------------|
| 1.     | Alva Yachts (GER)                 | 2                 | 5                |
| 2.     | AEOLOS (UAE)                      | 1                 | 4                |
| 3.     | Dutchcraft/Zeelander (NED)        | 1                 | 2                |
| 4.     | NOTUS (UAE)                       | 0,5               | 1                |
| 5.     | Lehmann Marine (GER)              | 1                 | 1                |
| 6.     | H2 Enterprises (USA(UAE)          | 1                 | 4                |
| 7.     | SICOMIN (FRA)                     | 0,5               | 1                |
| 8.     | ACCWING (Frau)                    | 0,5               | 1                |
| 9.-11. | SDC/DesignLab/MK<br>(GER/UAE/GER) | office            | office           |
| 12.    | Optima Yachts                     | 0,5               | 1                |
|        | total                             | 8                 | 20               |



DUTCH CRAFT



H<sub>2</sub> Enterprises



# ALVA YACHTS

world leader  
in  
sustainable  
yachting

## ADVANCED LUXURY ELECTRIC YACHTS

- Catamarans from 60, 78 and 90 feet
  - Motorboat EcoCruiser 50 feet
  - Sailing Yachts 72' and 82 feet
- 
- 60" and 90" in production in Turkey
  - confirmed orders for 14 yachts



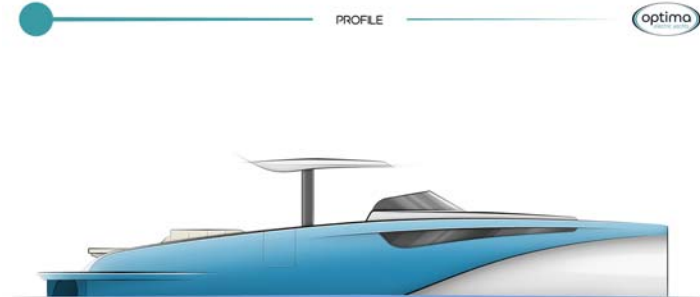
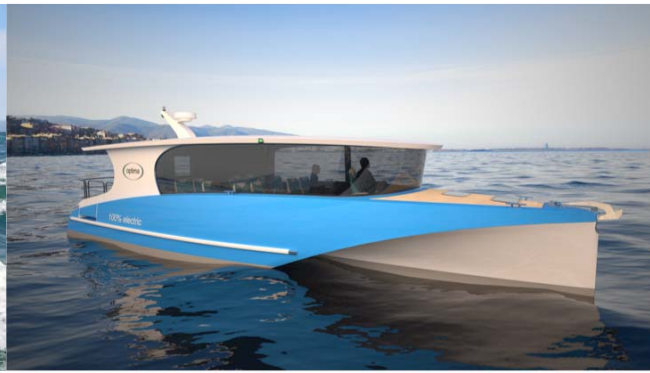


# OPTIMA YACHTS

Innovative monohull  
with trimaran efficiency

## SUPER EFFICIENT ELECTRIC YACHTS

- Innovative hull concept
- prototype successful tested
- attractive ferry concept







ZEELANDER

# ZEELANDER

extraordinary  
motoryachts

## DRIVEN BY PERFECTION

- 3 models
- offshore going
- super high quality
- timeless design



# DUTHCRAFT

extraordinary  
motoryachts

## ADVANCED LUXURY ELECTRIC YACHTS

- 4 models from 25-54 feet
- electric drive systems
- innovative designs

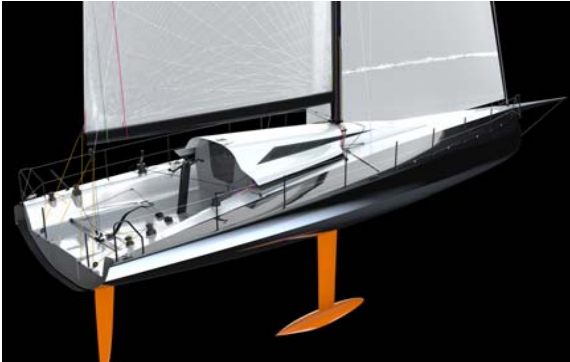


# AEOLOS

UAE based  
performance  
yacht producer

## INNOVATION PRODUCED IN THE UAE

- Superfast sailing yachts
  - Efficient motor yachts
  - Sustainable commercial vessels
  - Maritime parts & service
- > 9 yachts produced since 1/2022,  
confirmed orders for further 8 yachts





# GERMAN ENGINEERING

Urgent need for space and water access

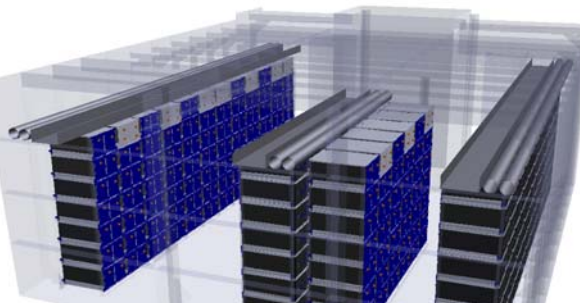
|            | production/<br>delivered | designed/<br>engineered | planned  |
|------------|--------------------------|-------------------------|--|
| LEISURE    | DINGHY                   | FD                      | P10  |
|            | SAILING YACHTS           | P30                     | P45  |
|            | SAILING CATAMARANS       |                         |  |
|            | MOTOR YACHTS             | Kaebon EB1              | M40cc, M40gt, M60  |
|            | SOLAR CATAMARANS         | Mayla 44                | S 60   |
| COMMERCIAL | WATER TAXIS              |                         | ABRA 40 Solar  |
|            | SOLAR/HYDROGEN FERRIES   |                         | A60s   |
|            | HIGH SPEED VESSELS       |                         | M60 Interceptor  |
|            | DRONES                   |                         | M40 Patrol   |
|            |                          |                         | P70, P100<br>C48, C60,<br>C80, C110<br>M24<br>S80, S100<br>M40t<br>A90s<br>M100i |

# LEHMANN MARINE

Production of  
Compact Marine LFP  
Battery Systems

## WORLD LEADING MARINE TECHNOLOGY

- Highest safety level
- Environmental friendly cobalt-free battery
- Compact and light-weight battery system
- Superior energy density
- Modular rack design
- From 11 kWh to several MWh
- DNV & RINA Type Approvals



**H<sub>2</sub>  
Enterprises**

**Safe  
Hydrogen Storage**

## Chemical binding of Hydrogen LOHC – Liquid Organic Hydrogen Carrier

- no cooling, no pressure
- less energy consumption
- 50x more cost effective than LHO-Batteries
- infinite storage life
- compatible with existing infrastructure



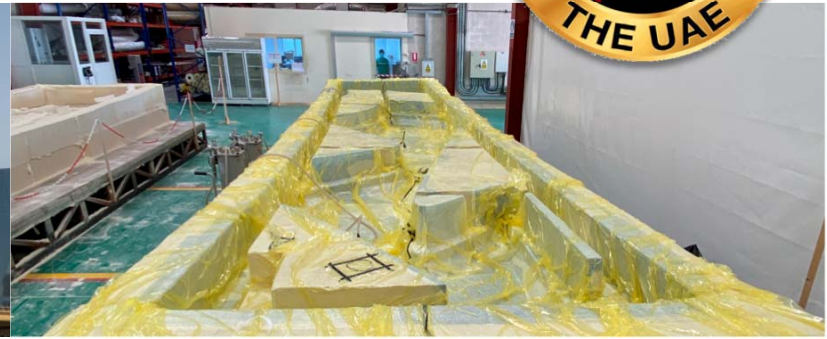


# NOTUS COMPOSITES

UAE based  
producer  
for advanced  
composite  
materials

## Enables clean and sustainable production of superlight ships

- Less weight than classic GRP (20-30%)
- Less waste (<2%)
- Almost zero production errors
- No harmful styrene or VOC emissions
- No human contact to chemicals
- No chemical mixing and vapour exposure

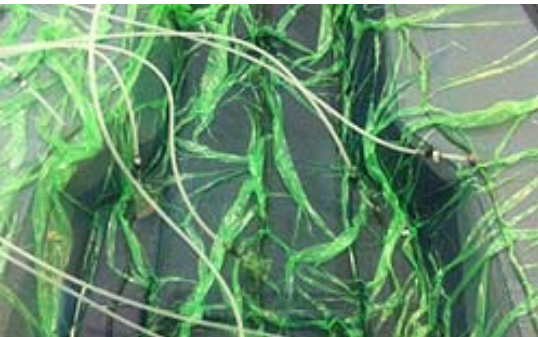


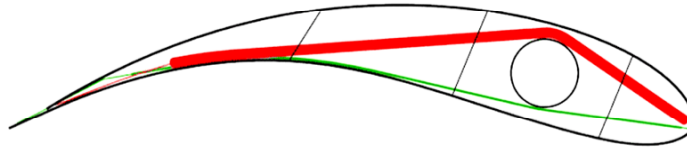
# SICOMIN

advanced  
composite  
resins

## Pioneers in bioresin with 40 years of experience

- Own plant and laboratory in France
- Long experience in bio resins
- Special products for prepreg production
- Decades of experience in maritime applications



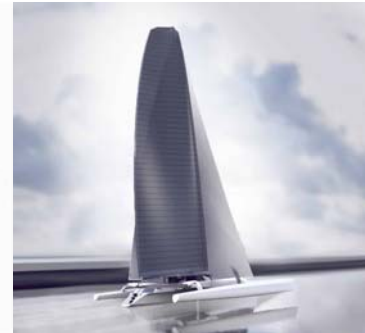


# ACCWING

advanced  
composite  
wingsails

## The DREAM-TEAM: Sails & Hydrogen

- Will reduce fuel consumption from 6-100% depending on concept
- Easy to handle
- Low weight
- Option of being stowed below deck
- Made of sail fabric or composite skin panels
- If no wind, hydrogen drive systems take over





# SHIP DESIGN CONSULT

Naval engineering  
at it's best

## Leaders in sustainable solutions

- Solutions to increase the value of the fleet (CII)
- Refit of sustainable drive systems
- Optimization of existing hulls
- New builds
- Tank testing (shareholder HSVA, Hamburg ship towing tank institute)

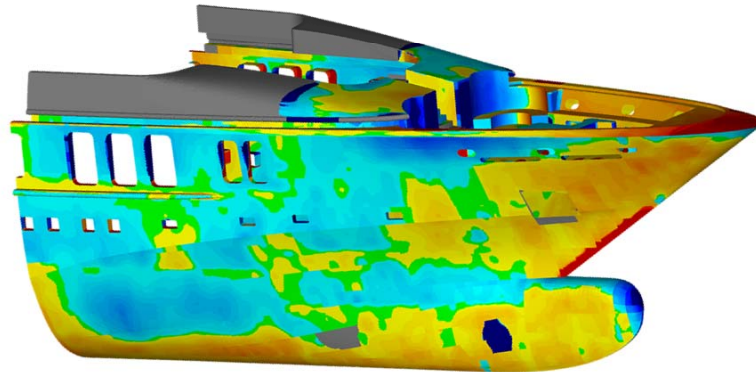


# WREDE CONSULTING

Coating  
Refit

## SPECIALIZED ON BIG YACHTS

- World leading coating consultant for superyachts 30-160M
- 3D scan technology for surface analysis
- 9 offices. Worldwide network.
- Project Management. Documentation. Surveys.
- R&D with dedicated company (Wretec)





# MK YACHT DESIGN

Naval engineering

## Multihull talent Matthias Krenz

- Multihull design
- Structural engineering
- Interior design





# KAEBON

worlds lightest  
series production  
electric motor boat

## MARITIME ELECTRIC MOBILITY WITH EASE

- Kaebon EB eins – 89 kg weight
- high performance
- ultra transportable
- super low running costs



NOMINATED 2024



# COMING PARTNERS



# AEOMAR

White label  
production  
for other boatyards

## PASSION FOR PRODUCTION

- In cooperation with Notus Composites
- Experienced Carbon Prepreg production team



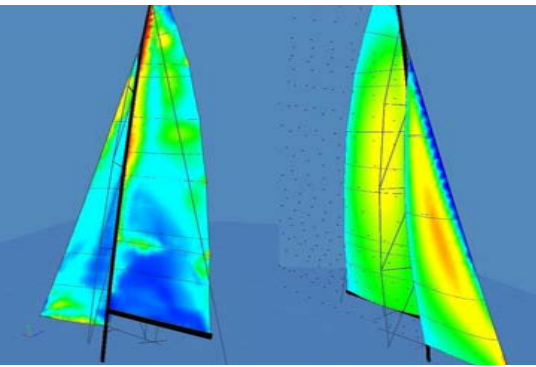


# AEO SPARS

Mast & Spars  
Production

## PUSHING THE EDGE

- Carbon Prepreg production at aerospace standards
- No competition in the Middle East
- Big local advantage due to high transportation costs of spars
  
- Engineering excellence
- In cooperation with Tim Hall, ex CEO Hall Spars



# SCHNEIDER & DALECKI

White label  
production  
for other boatyards

## Leading GRP boat producer in Europe

- 1000+ hulls per year and lots of parts
- Maritime: Bavaria Yachts, Hanse, Delphia, TTS, Nautitech, Fassmer, Corsiva, Axopar
- Automotive: Westfalia (Camper), Concorde (Busses)
- Architecture: Polcom, Wenker





# ELVSTRØM

Innovation  
in production

## Leading in reliability and sustainability.

- World's first sustainable high tech sail material
- World's oldest and second biggest sailmaker
- Worldwide network of dealers





# eCAP MARINE

Experts in  
emission-free power  
generation systems

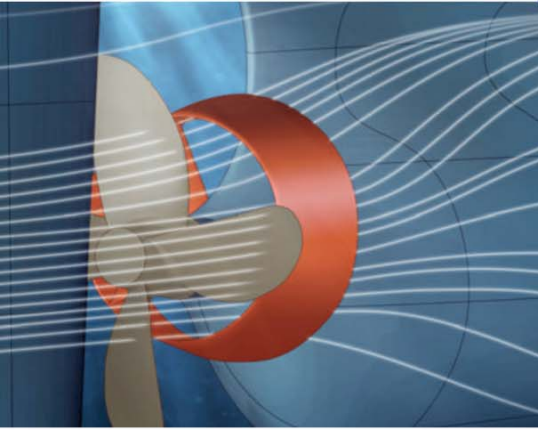
## WORLD LEADING MARINE TECHNOLOGY

- Marine drives with hydrogen and fuel cells
- Mobile hydrogen tank systems
- Carbon Type 4 H2 pressure vessels
- Hydrogen Power Containers
- sustainable floating power plants
- Hydrogen piping, sensors, valves
- Legal compliance, rules and regulations





# CARBON REDUCTION



Total estimated CO<sub>2</sub> reduction until 09th July 2023:

**13,585,840 t**  
**1,050 ships**

Power gain (%)

12  
10  
8  
6  
4  
2  
0

0

1

2

3

4

3-5%

Multipurpose vessel

5-7%

Tanker

6-8%

Bulk carrier

Thrust coefficient (C<sub>Th</sub>)

# HYPERCRAFT

world leader  
high performance  
electric  
drive systems

## WORLD LEADER IN EFFICIENCY

- battery systems with stable cooling
- high efficient motors
- offroad and marine integration
  
- 20% better weight/power ratio
- extreme heat resistance







# THE BIG CHANCE: PRODUCTION IN THE DESERT



The UAE offers one of the world's best business environments.



**SUCCESS**

**thanks fast  
return of invest**

## **8 Advantages of production in the Center of Sustainable Ship Building**

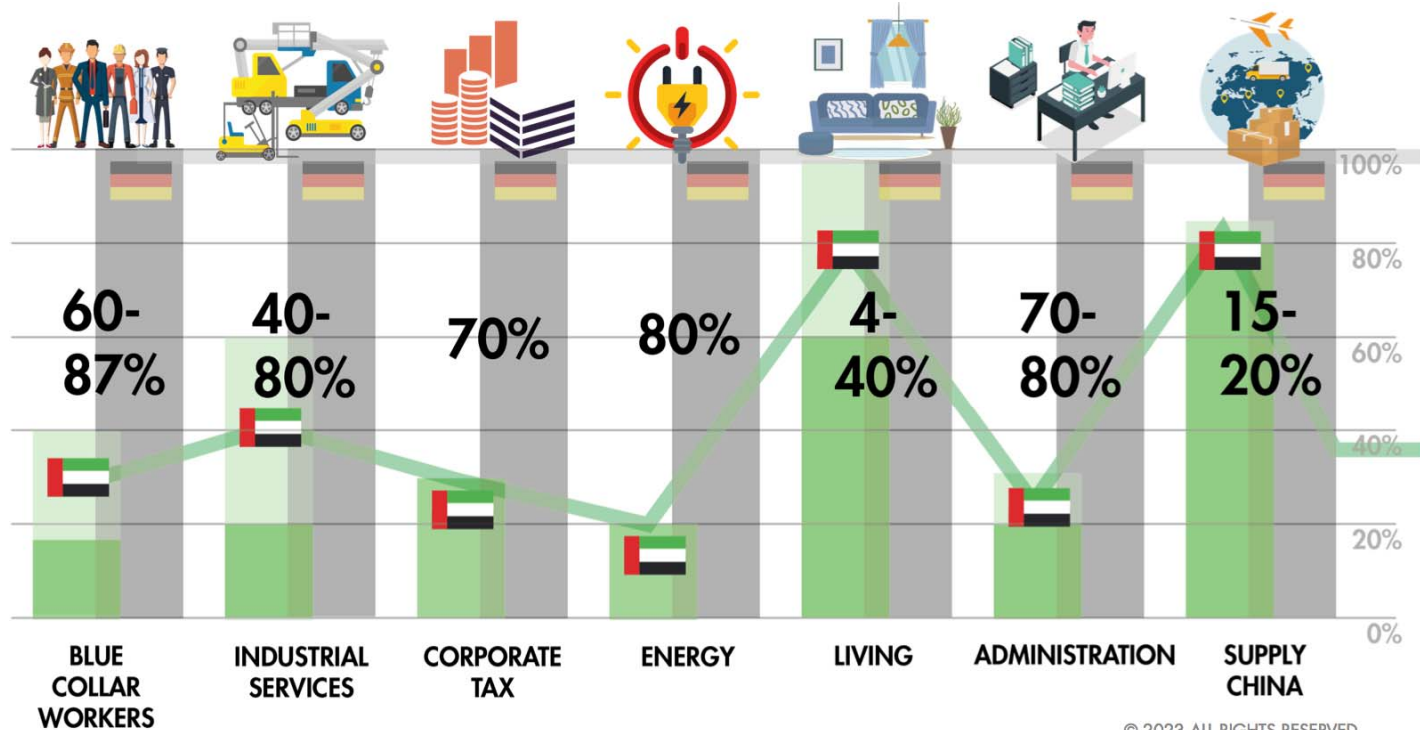
- 1) **Reduction** of production costs of 40-70% compared to Europe
- 2) sufficient **high motivated** workforce
- 3) Use of **high tech** machinery without investment
- 4) fast **mould** production at **low cost** with minimal tolerances
- 5) Easy company setup, **low tax**
- 6) Focus on **core competence**, with working in a network of **experts**
- 7) Attractive environment **optimized** for ship building
- 8) **More clients** thanks worldwide CSSB marketing



# COST REDUCTION

compared  
To Germany

## VARIOUS ECONOMIC BENEFITS FOR UAE OPERATORS





# REASONS TO RENT

## Environment

### Human Resources

- sufficient highly **motivated** workers
- **70% lower** labor costs (compared to Europe)
- Dubai has attractive immigration concepts
- High end property is still **cheap** (Mariah Samak, Engel & Völkers)

### Government

- Low, stable energy prices
- No/**low taxes** (soon only 9% company tax)
- Incubator business is doing very well
- Stable, **business-friendly** system
- Fast, easy company founding (1-5 days)

### Clients

- **Attractive** Client areas: Lighthouse Office & Marina
- Modern hotels and resorts only 10min from the CSSB
- Dubai is the **most popular** holiday destination of the world
- UAE has become a safe haven for high net worth people



# REASONS TO RENT

## Business

### Technology Advantages

- High end machinery prepared **for 40m** boat length
- **Prepreg** production process
- High End Coating solution/facilities

### Logistics

- Supply from China 10-15 days faster, 15-20% cheaper (compared to Europe)
- Perfect HUB thanks Emirates Airlines (Kees Hoving, Deutsche Bank)
- **perfect for logistics**, perfect managed ports (Martin Hockl, Kühne – Nagel)
- Very low local transportation and crane costs
  
- **High end materials on stock**  
(carbon, epoxy, foam, honeycomb)



# REASONS TO RENT

cost  
reduction

## VARIOUS ECONOMIC BENEFITS FOR UAE OPERATORS

|   | UAE                       | Benchmark Germany          | Cost savings |
|---|---------------------------|----------------------------|--------------|
| Corporate Tax                           | 9% <sup>1</sup>           | 29.8% <sup>2</sup>         | 70%          |
| Labour costs<br>(qualified blue collar) | €5.21 / hour <sup>5</sup> | €39.50 / hour <sup>4</sup> | 87%          |
| 3 <sup>rd</sup> party services          | <i>various</i>            | <i>various</i>             | ~50%         |
| Energy costs / kwh                      | <€0.08 <sup>3</sup>       | €0.40 <sup>7</sup>         | 80%          |
| Supply Chain from<br>Chinese ports      | ~20 days                  | 35 – 45 days               | 15 – 20%     |
| Cost of living index                    | 60.25 <sup>8</sup>        | 62.93 <sup>8</sup>         | 4%           |

<sup>1</sup> since 2023

<sup>2</sup> <https://www.gtai.de/en/invest/investment-guide/corporate-taxation>

<sup>3</sup> benchmark facility

<sup>4</sup> [https://www.destatis.de/EN/Themes/Labour/Labour-Costs-Non-Wage-Costs/\\_node.html](https://www.destatis.de/EN/Themes/Labour/Labour-Costs-Non-Wage-Costs/_node.html)

<sup>5</sup> full cost incl. social contribution; experienced industrial welder

<sup>6</sup> new build, fully equipped (crane, office space, water access)

<sup>7</sup> <https://www.statista.com/statistics/1050448/industrial-electricity-prices-including-tax-germany/>

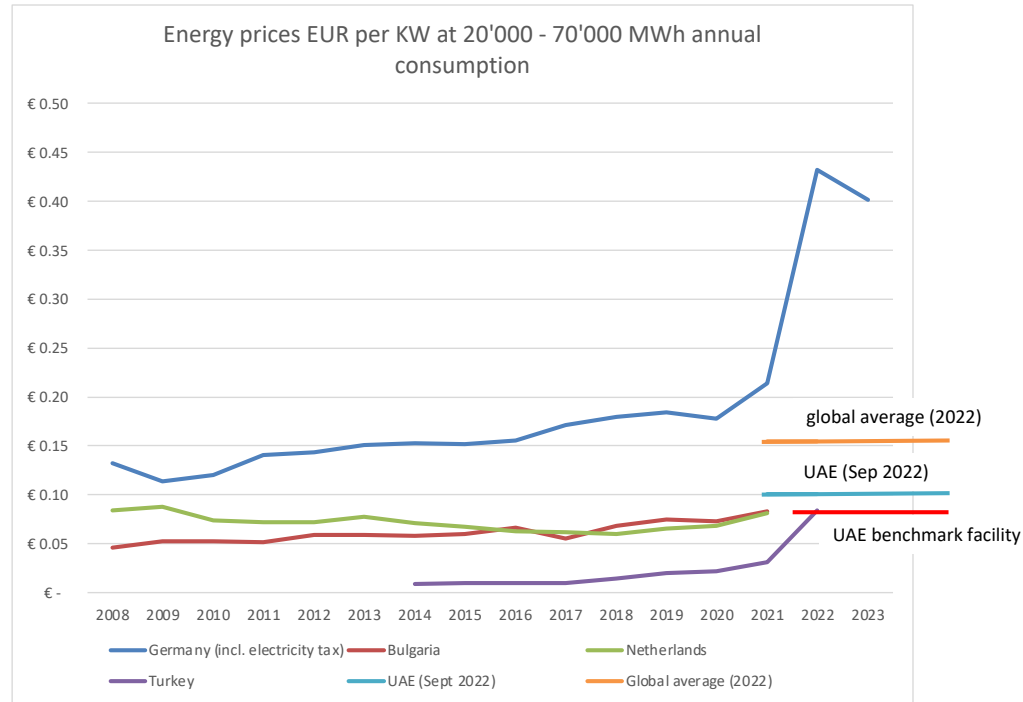
<sup>8</sup> [https://www.numbeo.com/cost-of-living/rankings\\_by\\_country.jsp](https://www.numbeo.com/cost-of-living/rankings_by_country.jsp)



# REASONS TO RENT

## Energy

### COMPETITIVE ENERGY PRICES: EUR 0.076/KW\*



\*prices are subject to dynamic models; hence, average prices deviate from effective charges. To determine comparative value, a benchmark facility has been analyzed. ALL NET VAT.



# REASONS TO RENT

## Knowhow

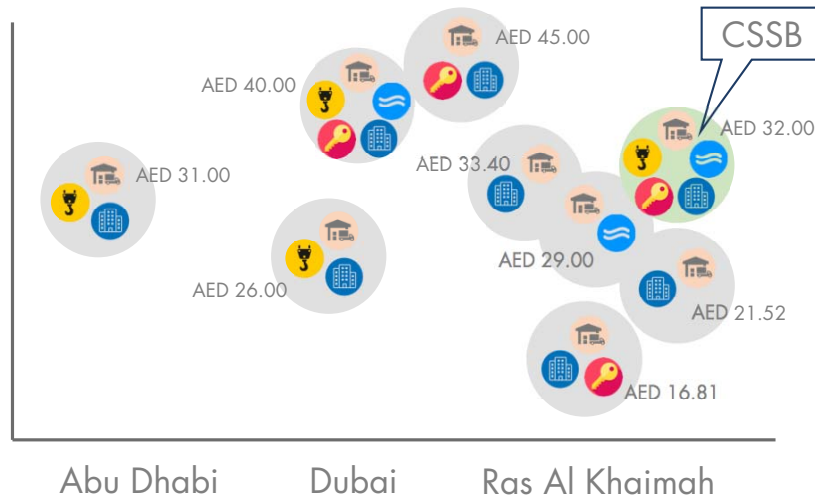
- Synergy effects between tenants (shipyards, propulsion, engineers, etc.)
  - Continuous Research & Development. Investment planned.
    - Robotic Layup and Painting
    - 3D Mould Printing
    - 3D Direct Production
    - 3D Direct Production
    - Winding technology
    - Prepreg development
- > Leads to technology advantages





# THE RENT High Value

## CSSB facilities are premium equipped



The rent index for commercial properties in UAE is affected by great demand as result of continuous economic growth within the region. Prices vary widely depending on location, grading, quality, isolation and other factors. Monthly prices of exemplary commercial real estate in UAE in AED per square meter net VAT.





# THE RENT

## Factories for rent

- AED 32/sqm/month unserviced
- AED 37/sqm/month incl. 24/7 service & maintenance

## Shared machinery

- hourly rates 30-50% below market price for tenants

## Shared Lighthouse

- AED 80/sqm/month

## Storage area outside

- AED 16/sqm/month

## Marina berth

- AED 200-500/month

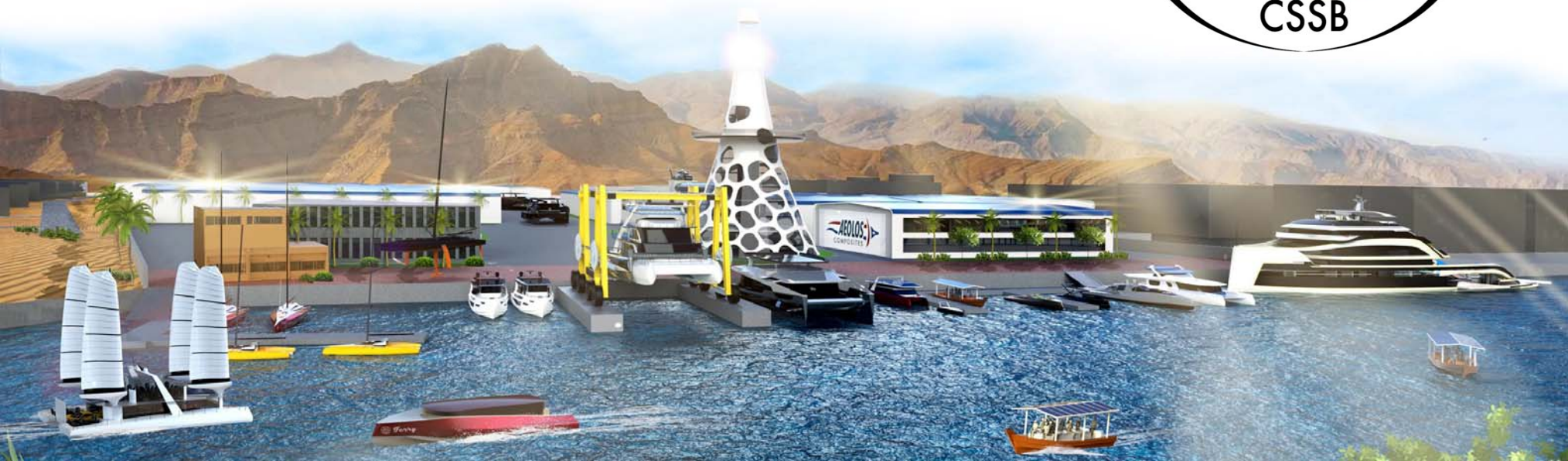
all prices net VAT

**Tenants are preferred investors in CSSB -> additional ROI.  
Ask for Investor Presentation.**





# PLANNING



# OUR WAY: TEAMWORK



The whole world can learn from sailing.



# BUILDING ON MUTUAL BENEFITS

- **Strategic partnership**  
potential JV, to include RAK interests into commercial operations
- **Financing opportunity**  
through public funds
- **Co-development / co-planning**  
of critical capacities (alignment with RAK harbor strategy, urban development strategy, public investment plan etc.)





# TIMELINE

most important events

## 2023

a.s.a.p.

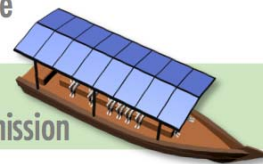
start operations in RAK Kohr Port

move in existing office and factory

2.12.

COP 28 30.11-12.12. PR

CSSB and ABRA autonomous ZERO emission



## 2024

1.1.

Start construction CSSB

CSSB facilities

20.-28.1.

boot Düsseldorf Exhibition

AP 30 presentation

28.3.-3.3.

DUBAI BOAT SHOW

M 40 CC worlds most efficient motoryacht

October

Fort Lauderdale boat show

M60 presentation



## 2025

January

boot Düsseldorf Exhibition

AP 45 presentation

17.2.

IDEX Defence Exhibition

Presentation M60 Interceptor

3.3.

Inauguration ceremony

Worlds fastest patrol boat Academy, Shipbuilding Museum and OpenFactory



## NEXT STEPS

Moving forward

## INVESTMENTS IN A SUSTAINABLE FUTURE

- Production started in factory in DIP2 1/2023
- Factory plannings done
- Decision for the location: Bulgaria, Maledives, Turkey, UAE done
- new offers for the land (duration, start, costs/sqm) done
- Decision for land: Dubai, Abu Dhabi, RAK almost done\*
- Getting the last numbers for the business plan done
- CSSB Company founding asap\*
- Renting land 10/2023
- Employing further engineers and workers 11/2023
- CSSB starts production in first factories 12/2023
- Start construction of new factories 1/2024

\* depending on final land offers

# POTENTIAL

30 years network & clients



pipeline



Representing additional

- 10-20 warehouses
- 1500-4000 jobs

Lois signed



Representing

- 7 warehouses
- 500 jobs

Growing 2028 to

- 18 warehouses
- 3000 jobs







# BACKGROUND INFORMATION

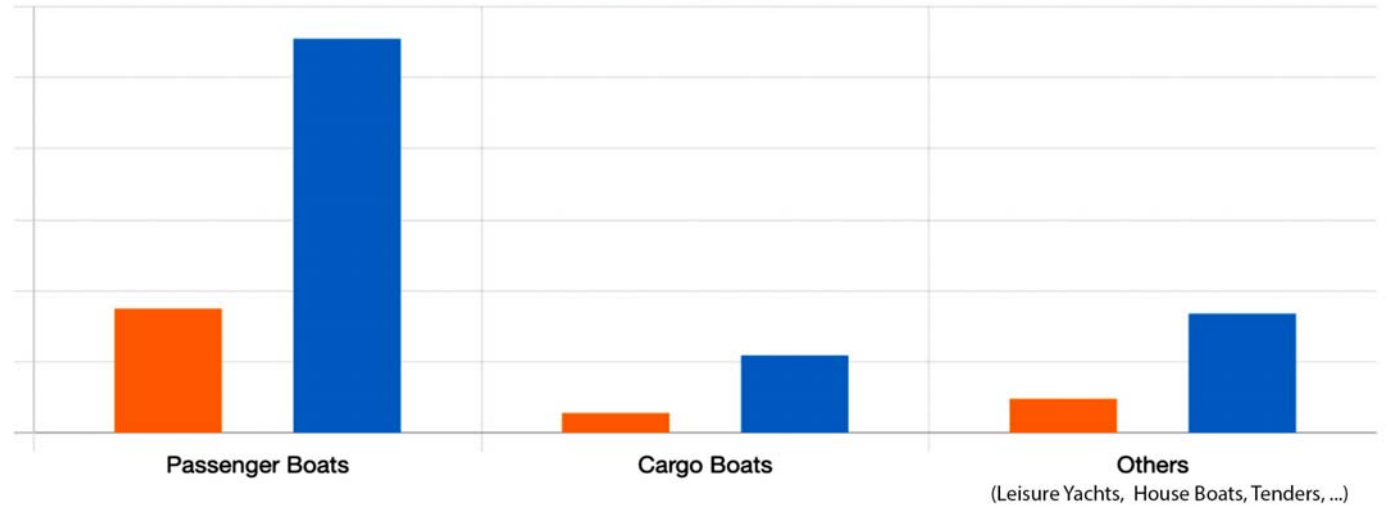




## Electric Boat Market

### By Application

2021 2031



# FAST GROWING ELECTRIC BOAT MARKET

from \$ 5 b in 2021  
to \$ 17 b in 2031

CAGR 13% p.a.

# DEMAND FOR FUEL SAVING SOLUTIONS

Carbon Intensity Indicator (CII) is forcing shipowners into action

## The value of ships depends on their CII - fuel consumption

- Based on the fuel consumption ships become classified into Category A-E
- shipowners have to report carbon emissions for each ship
- Mandatory since 1/2023 (IMO, MARPOL Annex VI)
- Net **ZERO** emissions in 2050
- The rating of A to E defines also the **value** of the vessel
- In D and E the performance **must** be improved

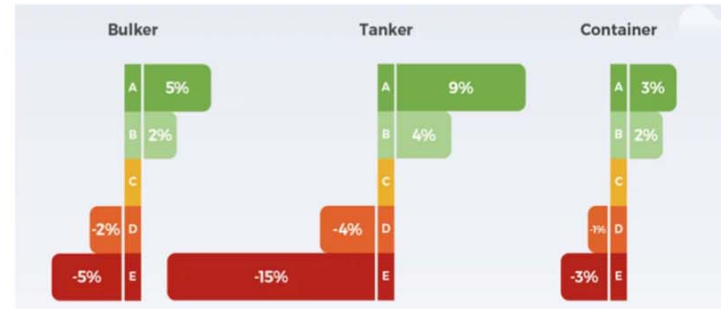
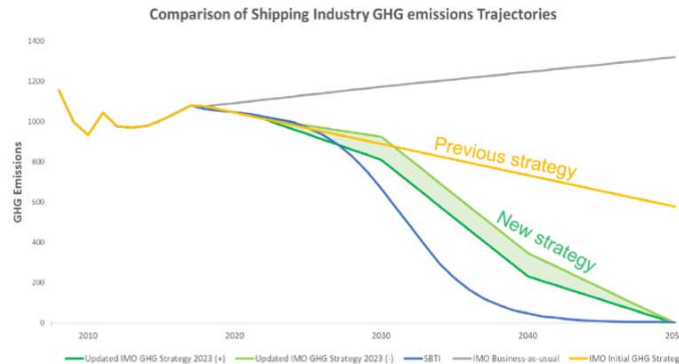


Figure 7: Estimated % value change (bulker, tanker and container)



# THE UAE STRATEGIES

## details and links

### **Vision 2031**

launched by H. H. Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai  
<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/innovation-and-future-shaping/we-the-uae-2031-vision>

### **UAE Environment Policy**

The UAE Environment Policy serves as a comprehensive framework and reference point for all federal and local environmental policies, strategies and decisions.

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/policies/environment/uae-environment-policy>

### **The UAE's Fourth Industrial Revolution (4IR) Strategy**

Achieve future security of water and food supply by using bioengineering sciences and advanced renewable energy technologies

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/government-services-and-digital-transformation/the-uae-strategy-for-the-fourth-industrial-revolution>

### **UAE Net Zero 2050**

The UAE Net Zero by 2050 strategic initiative is a national drive to achieve net-zero emissions by 2050, making the Emirates the first Middle East and North Africa (MENA) nation to do so.

<https://u.ae/en/information-and-services/environment-and-energy/climate-change/theuaesresponsetoclimatechange/uae-net-zero-2050>

### **National Innovation Strategy**

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/innovation-and-future-shaping/national-innovation-strategy>

[https://www.ecssr.ae/en/reports\\_analysis/national-innovation-strategy/](https://www.ecssr.ae/en/reports_analysis/national-innovation-strategy/)

### **National Climate Change Plan of the UAE 2017–2050**

Enhance the UAE's economic diversification agenda through innovative solutions -

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/federal-governments-strategies-and-plans/national-climate-change-plan-of-the-uae>

### **UAE Energy Strategy 2050**

The strategy aims to increase the contribution of clean energy in the total energy mix from 25 per cent to 50 per cent by 2050 and reduce carbon footprint of power generation by 70 percent.

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/environment-and-energy/uae-energy-strategy-2050>

### **UAE Strategy for Talent Attraction and Retention**

Contributes to strengthening the UAE's leading position as a preferred destination for living, working and investing.

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/human-resources-development-and-education/the-uae-strategy-for-talent-attraction-and-retention>

### **United Global Emirates Campaign**

The United Global Emirates' campaign will build on the UAE's 'Impossible is possible' brand to reassert the nation's status as a magnet for investment, creativity, innovation and achievement – a place where big ideas can be transformed into reality.

=> The Sailing School =====

### **The UAE Strategy for Domestic Tourism**

In December 2020, UAE Government launched the 'UAE Strategy for Domestic Tourism' with the aim to unify local and federal efforts to harness the UAE's tourism resources and reinforce the role of domestic tourism in the national economy.

<https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/tourism/the-uae-strategy-for-domestic-tourism>

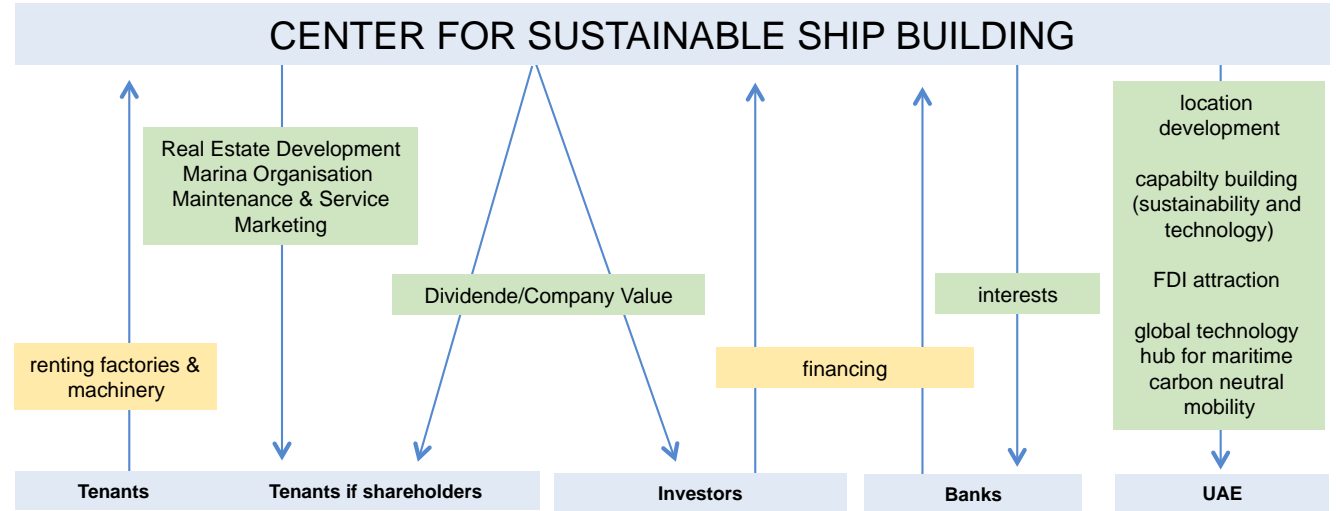
### **National Strategy for Wellbeing**

The strategy aims to make the UAE a world leader in quality of life through a number of strategic objectives and initiatives highlighting the UAE government's focus on the citizen's wellbeing.

<https://u.ae/en/about-the-uae/the-uae-government/government-of-future/happiness/national-programme-for-happiness-and-wellbeing>



# BUSINESS MODEL

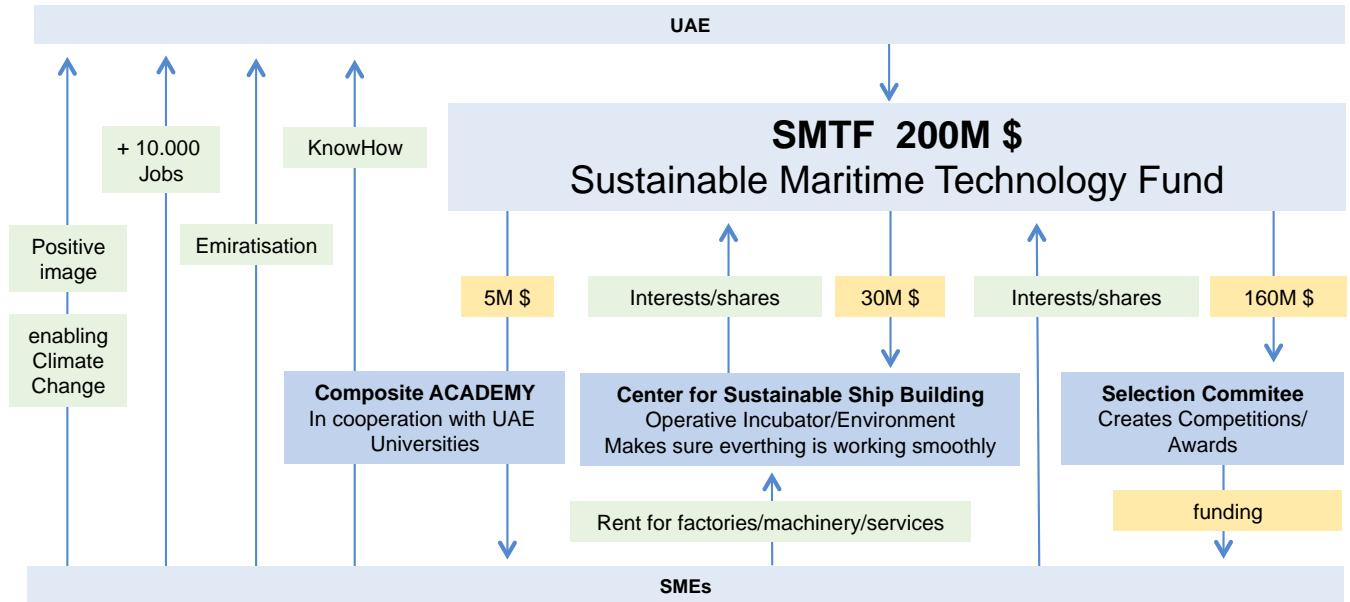




# VISION SMTF

## Sustainable Maritime Technology Fund

### Establishing a Technology Fund for the acceleration of the climate change







## The CSSB Team



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