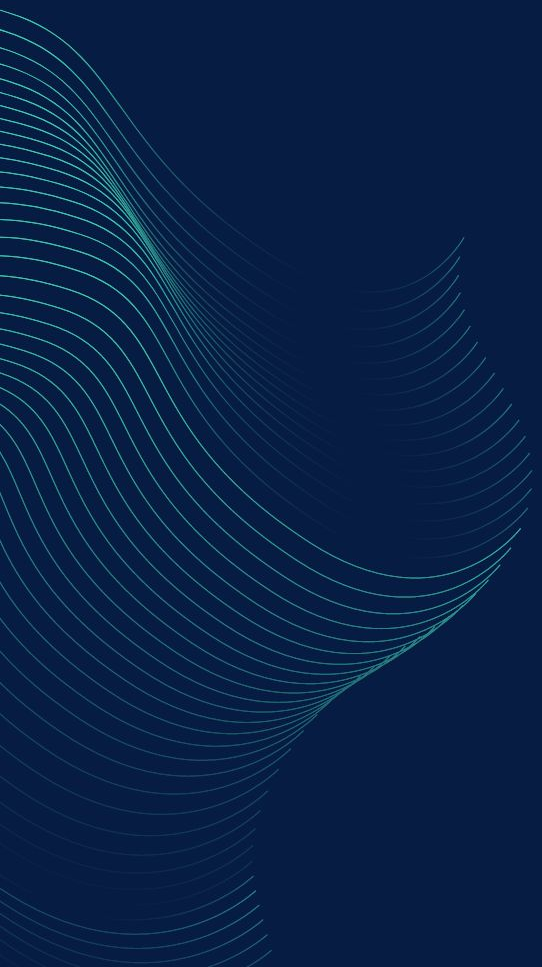

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INNOVATION THROUGH
PIONEERING ACHIEVEMENTS

At the helm of Syroco

2 times **world sailing speed record**

4 times **kite speed world champion**

First man to reach **100 km/h on water**, propelled by the wind

HISTORY OF THE WORLD SAILING SPEED RECORD (WSSR)

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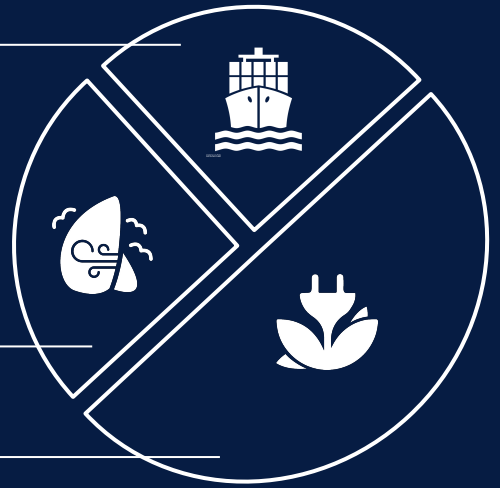
THE 2050 TRAJECTORY

Combine technology & best practices

- Improve ship & fleet operations with smart ship technologies
- Leverage wind propulsion
- Use new types of fuel or energy



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ABOUT SYROCO

Syroco is a **Climate Tech startup** that supports the **energy transition** of maritime transportation.

It provides ship owners and managers, naval architects & shipyards a platform to **evaluate & improve** the efficiency of ships.

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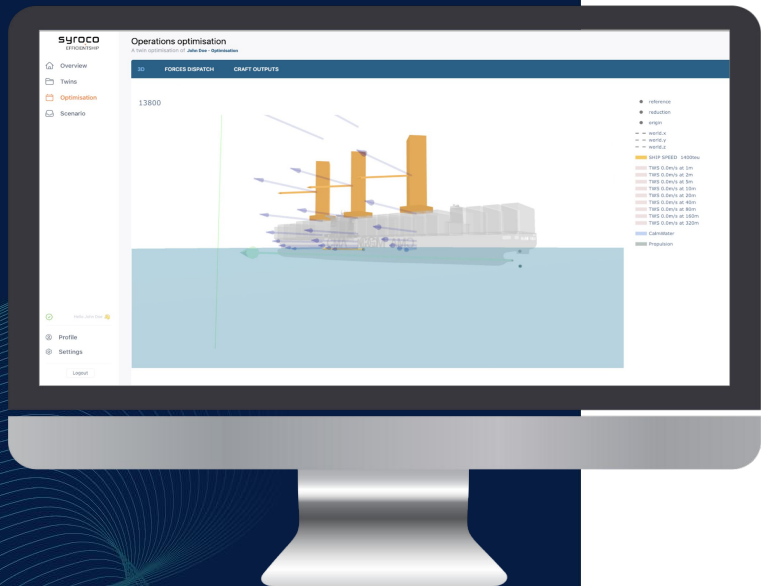
WHAT SYROCO EFFICIENTSHIP IS

Decision making platform for optimizing the **efficiency and impact** of ships, driven by a **Digital Twin** of ship and propulsion systems (engine, sails, wings, hydrogen, etc.)



- Leverages physics modelling, data and AI
- Core applications include optimisation of operational and energy efficiency, fuel consumption, carbon emissions, CII calculation, etc.

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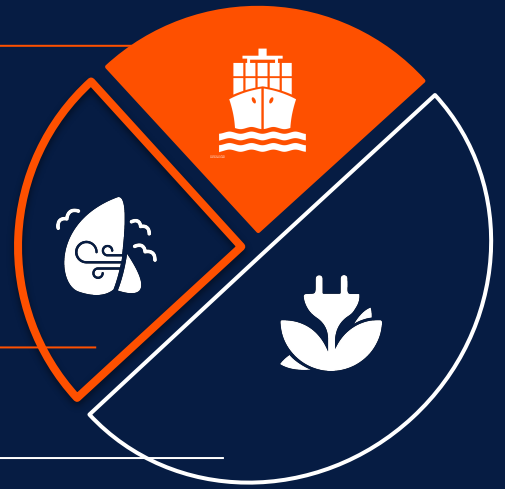
SAVE 10% FUEL (OR MORE)
& REDUCE CARBON EMISSIONS

Syroco EfficientShip use cases

- Improve ship & fleet operations with smart ship technologies
- Leverage wind propulsion
- Use new types of fuel or energy



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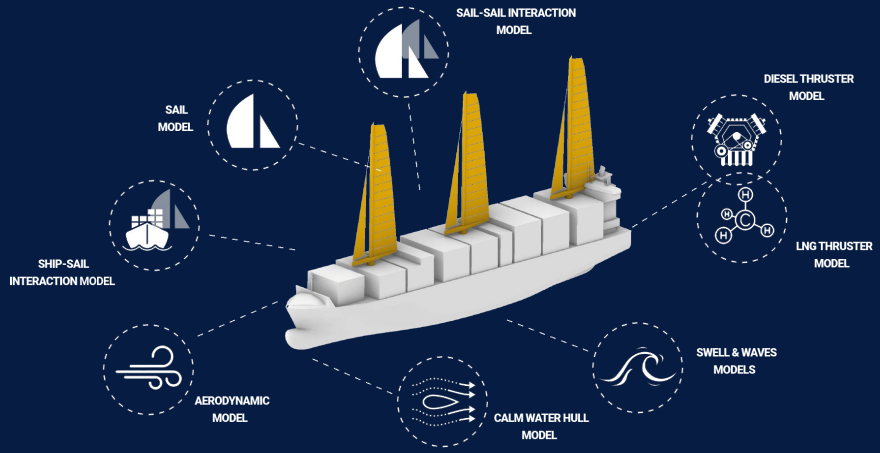
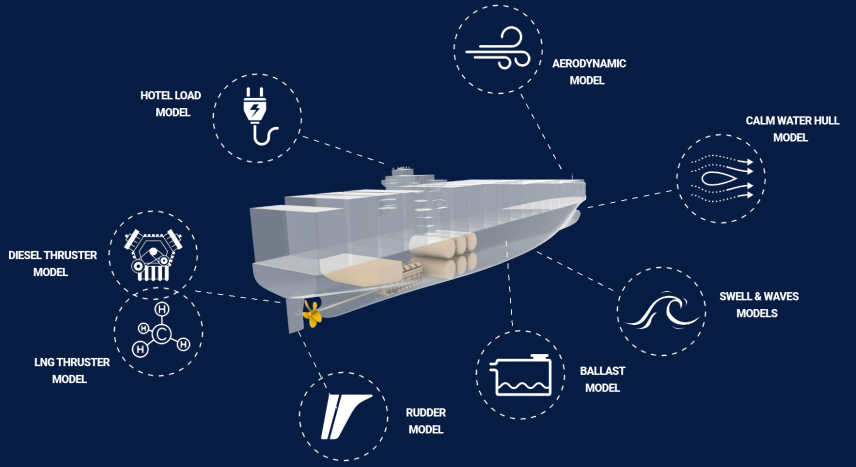
THE DIGITAL TWIN

A virtual representation of a real-world ship

Built through the **assembly of models,** each of them representing the physics & data-driven behaviour of an element of the ship





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10% fuel savings Today !

SHIP COMPANION

Build baseline and track performance for onboard efficiency and safety advisory

FLEET PERFORMANCE

Predict and track fleet performance in select scenarios, routes and operating conditions

DESIGN OPTIMISATION

Optimise ship design, test operating scenarios and select configuration for new build or refit

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SHIP COMPANION: PERFORMANCE GUIDANCE DURING OPERATIONS

The digital twin sails in parallel with the actual ship, providing baselines of historical & expected performance

Provide guidance and advice:

- Track the ship and her performance
- Compare actual data to baselines
- Improve efficiency and performance for each voyage

Tests scenarios to update operating profile based on actual conditions

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FLEET PERFORMANCE ANALYSIS

Digital twin evaluates performance of scenarios

Create scenarios of operating conditions:

- Maritime routes
- Operating schedule
- Forecasted or historical weather
- Variable operating parameters

Using advanced scenario simulation capabilities, the digital twin sails on any number of routes, using any combination of configurations and parameters to compare efficiency and compute actual savings.

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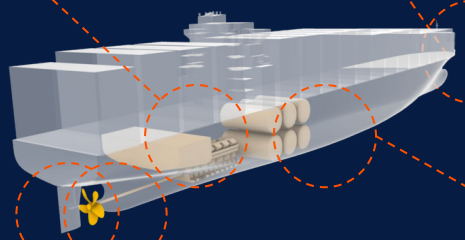
OPTIMISATION POINTS

Multi objective weather routing & speed profile

Engine RPM



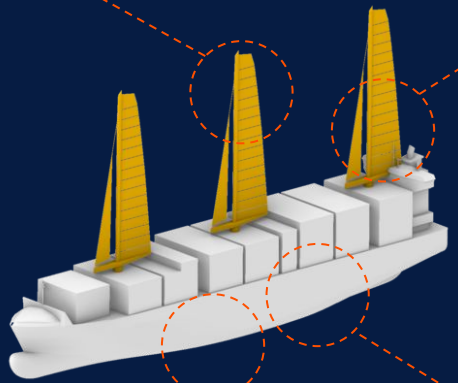
Rudder angle

Propeller pitch

Trim / Draft

Sail usage

Sail trim



Fouling

Leeway

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CASE STUDIES

RO-RO CARGO SHIP

Optimise efficiency of ship, with conventional propulsion and in hybrid mode (fuel & wind).

Build and track operational baseline on-board ship, for crew & fleet center.

WIND PROPULSION FOR CONTAINERSHIPS

Compare efficiency and impact of several wind propulsion technologies on different ships.

Simulate scenarios: 4 billion nautical miles sailed virtually by 29 digital twins on 17 maritime routes.

CRUISE SAILBOAT

Compare performance and efficiency of different hull designs and rigging configurations.

Simulate scenarios: 25 configurations,
50 operational profiles and maritime routes.

HIGH SPEED CREW TRANSPORT VESSEL

Simulate impact of hull optimisation and foil addition on vessel speed, seaworthiness & fuel consumption.

Build operational baselines for optimal use.

CMA CGM PIRIOU Zéphyr & Borée low carbon shipping NAVAL GROUP HYNOVA PONANT

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APPLIED TO THE GREEK FLEET

4021
merchant ships
(100 m or more)

37 million
tons of fuel

24 billion €

(per year)

SAVE
10%
FUEL

2.4 billion €

12 million
tons of carbon

(per year)

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