

**WEBINAR**

**MONDAY 8 SEPTEMBER**  
**17:00-18:00 CET**

# **When GPS lies and AIS goes dark: rethinking navigation resilience with AI**

In association with



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# PANELLISTS



**Spyros  
Vlassopoulos**  
Managing Director  
**Ionic**



**Capt Alfred Gomez**  
Director, Marine Standards  
/ DPA  
**Seaspan**



**Capt Nestoras  
Grigoropoulos**  
HSSQE Department / DPA  
**SeaTraders SA**



**Dor Raviv**  
CTO & Co-Founder  
**Orca AI**

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**Safe. Reliable. Economical.**

**Navigating Congestion: Collision Risk  
in High-Traffic Pilotage Zones**

 **seaspan**



## Integrated with Global Trade

**#1**

Independent containership  
owner and operator  
(12% market share)

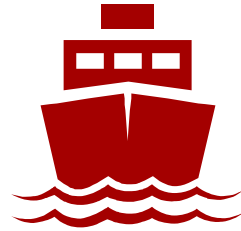
Strong counterparties contribute

**82% of global  
trade flows**

**~99%**

Average utilization since IPO

## Best-In-Class Fleet



**225 ships<sup>1</sup>**

~2.3mn TEU

**~5.3 years**

Average age

**Containers ~7.7 years**

**PCTC ~15 years**

Average remaining charter period



**6,251 employees**

(5,905 Seafarers/ 346 Corporate)



## Navigational Safety Center

- Review past track of the vessel under pilotage
- Verify the execution of parallel berthing operations
- Evaluate if the vessel's speed was excessive compared to the passage plan
- Identify non-compliance with the COLREGS, including close-quarter situations or near misses
- Confirm if the pilot boarded at the designated pilot boarding station
- Assess if tugs were employed/made fast at planned positions
- Review of passage planning for critical errors
- Verify compliance with the passage plan

## Continuous Improvement

- Analysis of challenging ports
- Analysis of high-risk approaches (Speed, Angle of approach, insufficient Tugs)
- Share lesson learned with fleet
- Identify high risk ports and caution the fleet
- Suggest training needs to address any identified gaps related to human factors



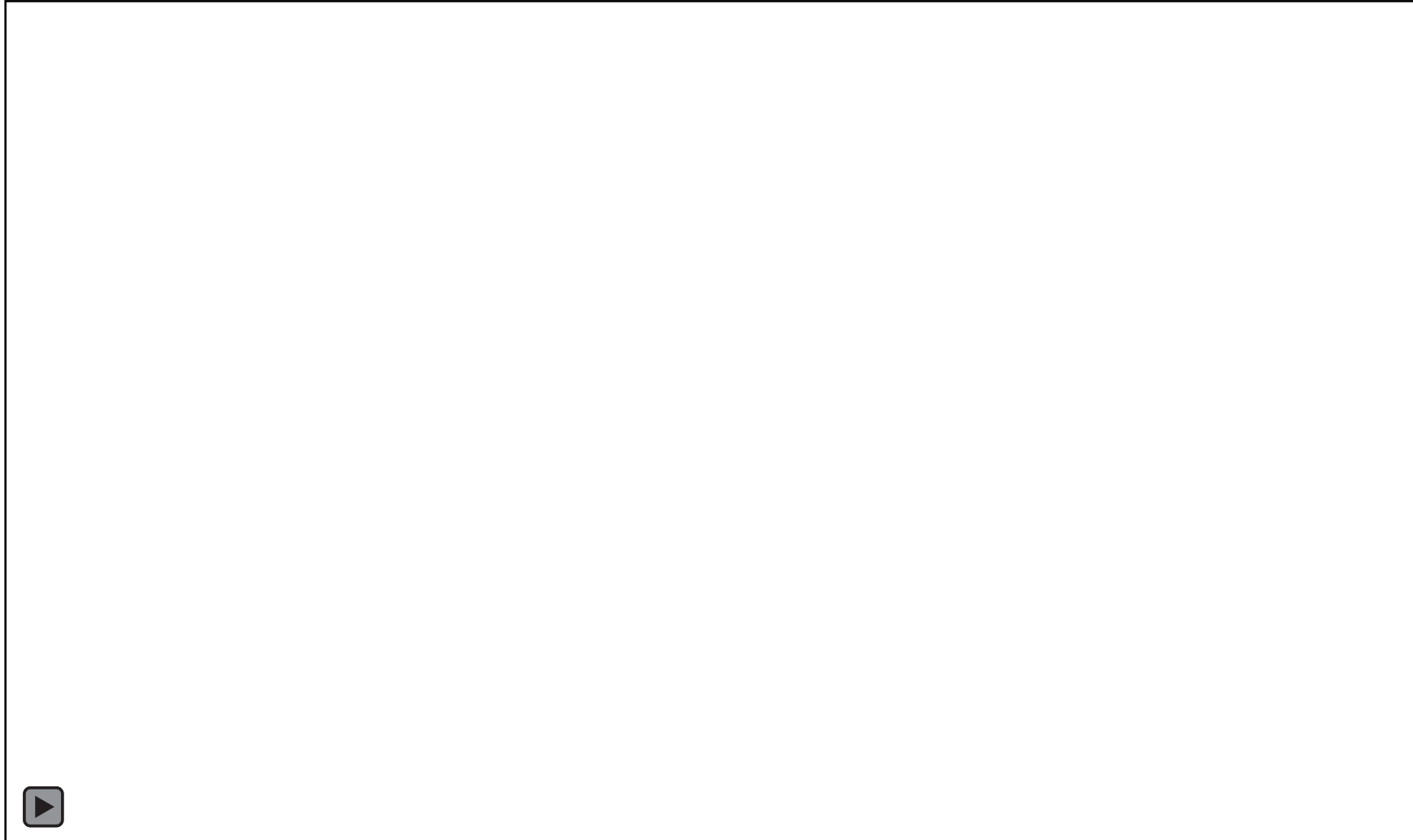


### **Finding**

- Vessel picked up pilot at the break water
- No tugs fast
- Crossed abort point without pilot

### **Actions Taken**

- Engagement with Ashdod Pilots
- Pick up pilots at pilot boarding ground.



## Finding

- Pilot disembarked immediately after the port swing
- Vessel not aligned to center of the channel
- Passed very close to jetty on the port side

## Actions Taken:

- Engagement with Kaohsiung Pilots
- Pilot office accepted the error and discussed internally with all pilots as case study
- Vessel asked not to disembark pilots until vessel is safely positioned.

## Risk in High-Traffic Pilotage Zones

- 16,000+ annual vessel movements managed by Seaspan
- Over 155 container vessels, globally operating in congested ports (e.g., LA/Long Beach, Singapore, Hong Kong)
- Risk of collision and allision rising in busy terminals, especially during:
  - Pilot embarkation/disembarkation
  - Final approach to berths
  - Overtaking or close-quarter situations in narrow channels

## Primary Contributing Factors in Collisions and Allisions

- Limited familiarity with vessel handling characteristics
- Inadequate understanding of local environmental and navigational conditions
- Incomplete or rushed Master–Pilot Exchange (MPX)
- Ambiguity in role clarity between Master and Pilot
- Commercial pressure to reduce maneuvering time
- Over-reliance on electronic navigation aids
- Communication breakdowns under time stress
- Insufficient bridge team engagement or challenge culture
- Increased pilotage congestion, reduced reaction times and weather-exacerbated factors

## How AI Helps Reduce Navigational Incidents?

### Enhanced Detection & Situational Awareness

- Detects non-AIS targets (e.g. small boats, buoys, unlit objects) that traditional RADAR/ECDIS may miss.
- Uses thermal cameras to assist navigation in low-visibility conditions like fog or night approaches.
- Real-time detection of collision risks, tagged and categorized by severity, type, and location.

### Real-Time Shore-Based Oversight

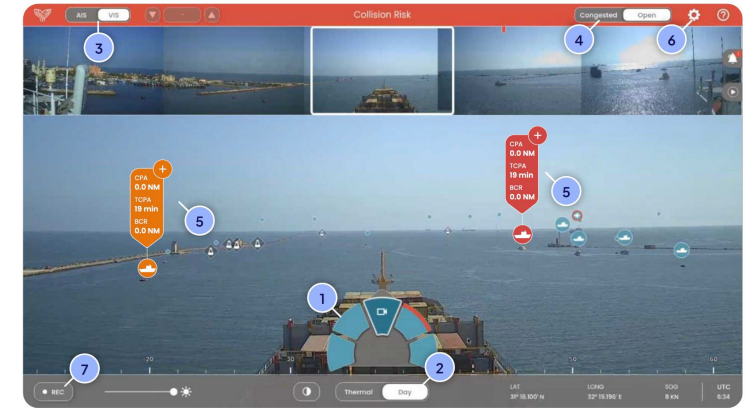
- Remote live access and continuous 24/7 recording allow the Navigation teams to monitor vessel behavior in real-time or review incidents immediately after occurrence.
- Provides remote decision support to assist vessels under stress (e.g., poor visibility, heavy traffic).
- Combine inputs from a global network of AI-equipped vessels with real-time external data—such as weather, traffic (VTS), and regulatory feeds—to provide crews with a dynamic, evolving route overview.

### Post-Incident Learning and Recurrence Prevention

- Allows shore and ship management and to review structured near-miss events, improving feedback quality to vessels.
- Enables fleet-wide trend analysis of risky behaviors or pilotage zone challenges.

### Data-Driven Improvements

- Supports data-informed changes to procedures (e.g. MPX timing, tug deployment) based on AI-captured trends.
- Helps identify ports or conditions with repeated patterns of navigational stress, allowing proactive mitigation.



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## Capt Nestoras Grigoropoulos

HSSQE Department / DPA

**SeaTraders SA**

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PROMINENCE MARITIME



SEA TRADERS S.A.

# Situational Awareness Implementation

Capt. Nestor Grigoropoulos

DPA / CSO / HSSQE Manager

Prominence Maritime & Sea Traders S.A.

September 2025



# Speaker Introduction



**Capt. Nestor Grigoropoulos**

- **Master Mariner and HSSQE Manager at Prominence Maritime S.A. & Sea Traders S.A., serving also as DPA and CSO.**
- **Seagoing experience on bulk carriers and tankers and over a decade in senior shore-based management.**
- **MSc in Fleet Management – Southampton Solent University**
- **Specializes in ISM Code implementation, ISO, international regulatory compliance, and fleet safety leadership.**



# Our Company in Numbers



15

Bulk Carriers



1534

Seafarers



1,116,876

Total Tonnage (mt)



14

Fleet Avg Age



# Company's Objectives



**ZERO**

Accidents



**ZERO**

Spills, pollution



**ZERO**

Customer complaints



**ZERO**

Tolerance to security incidents



**FLAWLESS**

Operations at stage of excellence



**CONTINUAL**

Improvement

# Perception-Based Support — Not a Replacement for Seamanship



Visual-based  
situational awareness



Detects non-AIS  
targets



Real-time  
perception



Build bridge team  
confidence

# Embedding AI Responsibly Into Bridge Culture

ORCA AI integrated into

Bridge team briefings

Watch handovers

Playback-assisted safety meetings

- ▶ Master is the ultimate responsible for the safety of Navigation on board.
- ▶ Treated as a secondary layer
- ▶ Data aids incident investigation



# Clarifying the Role of AI Onboard

How to overcome crew skepticism about AI navigation assistance?



Weekly playback and feedback



Visual support layer, not a replacement



Full decision authority



Shared lessons



What's the protocol when AI perception conflicts with traditional systems?



Crew's judgment always override the system



Reference, not a rule



Cross-verification  
Instances logged, reviewed, and analyzed



Clear boundaries for AI use



**Thank you for your attention !**

Prominence Maritime & Sea Traders S.A

97 Poseidonos Ave. & 2 Foivis Str, Antens, Greece

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# Beyond GPS & AIS: Building Navigational Resilience with AI

Dor Raviv, CTO & Co-founder, Orca AI



# Countering GPS jamming and AIS spoofing with AI



Experienced skipper



Maritime navigation instructor



Co-founded Orca AI in 2018



AI algorithms engineer



Specialized in deep learning pipelines & data science



Led autonomous ship projects and managed multidisciplinary teams in leading AI startups



**Dor Raviv**

CTO & Co-Founder  
Orca AI



Front Eagle Collision with Adalynn  
near the Strait of Hormuz, June 15 2025

# Front Eagle Collision:

## A Minute-by-Minute Breakdown of Risk, Impact, and Response





# Rising Collisions & Navigational Risks Driven by GPS Jamming and AIS Spoofing



- As a result of increased GPS jamming, +1,600 vessels affected in H1 2025<sup>1</sup>



- Vessels experienced AIS displacements up to 6,300 km, compared with typical normal deviations of 600 km in 2024.



- Arabian Gulf, Strait of Hormuz & Red Sea as areas with the highest frequency of interference.<sup>3</sup>

## Sources

1. <https://www.agbi.com/analysis/oil-and-gas/2025/06/gps-jamming-hits-1600-ships-a-day-as-war-risk-premiums-rise>
2. <https://windward.ai/blog/middle-east-on-the-precipice-gps-jamming-in-the-arabian-gulf-and-strait-of-hormuz-disrupts-970-ships-daily>
3. <https://www.marineinsight.com/shipping-news/red-sea-gps-spoofing-sees-a-sharp-rise-ship-crews-seek-urgent-support>



# A Computer Vision & AI Approach to Combating GPS Spoofing



# GPS Spoofing and Jamming



# Strengthening Resilience Against GPS Jamming & Spoofing

## **New Tools for Crews**

Real-time alerts and anomaly detection.

## **Better Situational Awareness**

AI-driven data overlays for informed decisions.

## **Crew & Vessel Safety**

Early detection reduces risk to life and ship.





Thank you!

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Managing Director

**Ionic**

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# When GPS Lies & AIS Goes Dark: Rethinking Navigation Resilience with AI

**Spyros N. Vlassopoulos**  
*Managing Director*



# Ionic at a Glance

- Family business established in 2009
- Focused on the ownership and operation of a fleet of high-quality modern vessels currently totaling 19 ships in service comprising both oil tankers and bulk carriers all built in Japan.
- Committed to service excellence with “tanker-management standards” applied to the management of both “wet” and “dry” vessels throughout the organization.
- Ionic’s vessels are of the highest quality, with fuel efficiency and compliance and adherence to new regulations coming into force being always a paramount goal.
- The entire fleet is operated to a first-in-class standard of technical maintenance so as to minimize down-time and risk of maritime incident.
- Safety, Health, Quality and Environment responsibilities extend throughout the organization whilst our high ethical standards are, and always will be our core value - we are very proud of attaining this standard and we focus on maintaining it.

Trust

Family

Technology

Innovation

Efficiency



# Ionic – Orca AI

- Ionic has always been a firm believer of technological advances in our industry
- 7 Ionic tankers have been equipped with Orca AI for the past year, and remaining fleet has commenced installation
- The ships will get Orca AI's digital watchkeeper SeaPod to boost onboard situational awareness, as well as Fleetview which enables shoreside teams to monitor ships' navigational behaviour



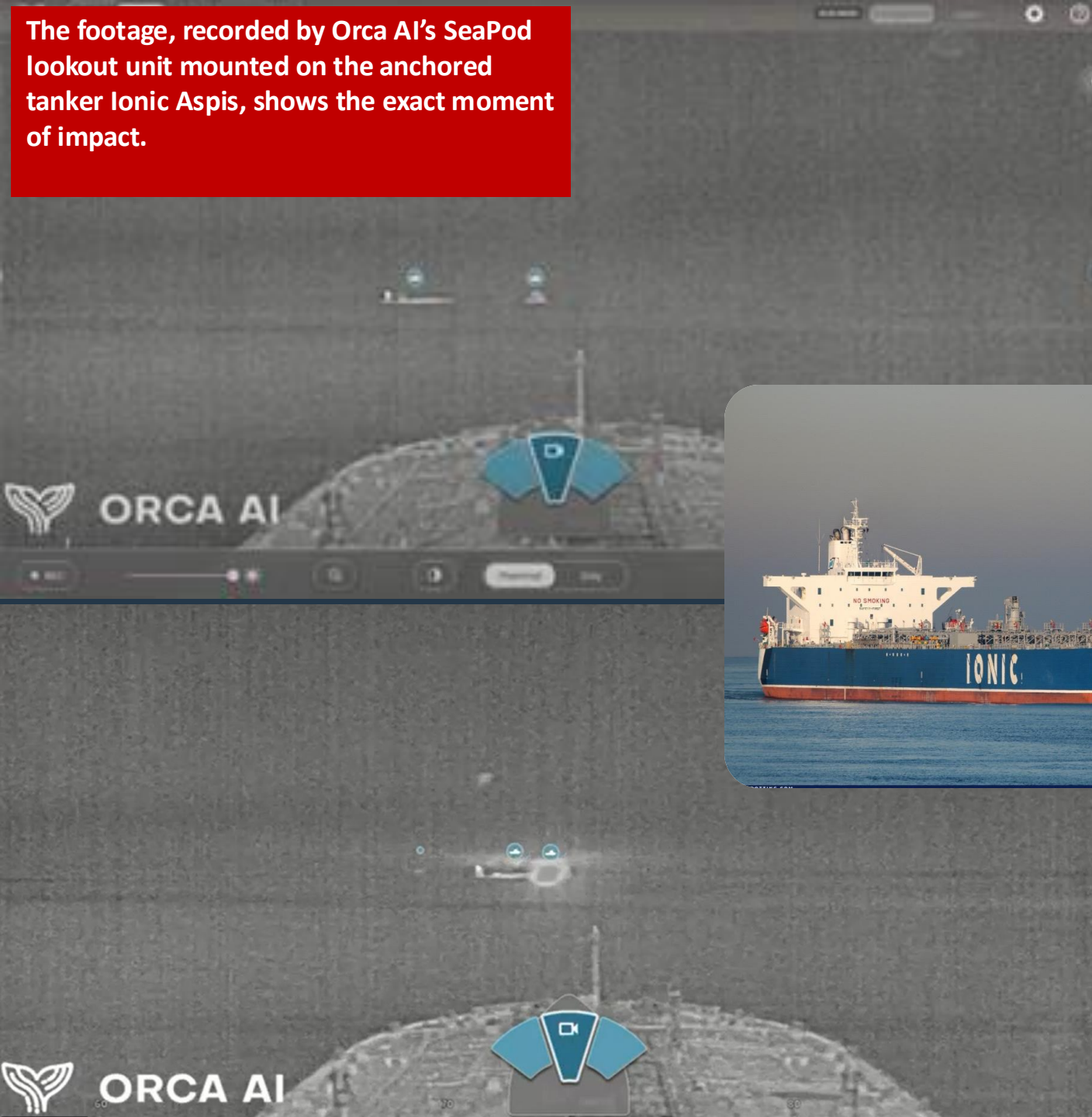
# The challenge of navigating in low-visibility conditions like fog, heavy rain or night transits



- Traditional navigation: seamanship, dead reckoning, soundings, limited aids
- New-age Navigation: technology has transformed navigation – but challenges remain
- **Before**: lack of information vs **Now**: too much information → filtering, trusting data wisely, retaining core skills
- Seafarers can “see” through fog, rain, and night better than ever
- New risks: judgement, systems management, and maintaining seamanship in a tech-heavy environment



The footage, recorded by Orca AI's SeaPod lookout unit mounted on the anchored tanker Ionic Aspis, shows the exact moment of impact.



# Thank you

Spyros N. Vlassopoulos

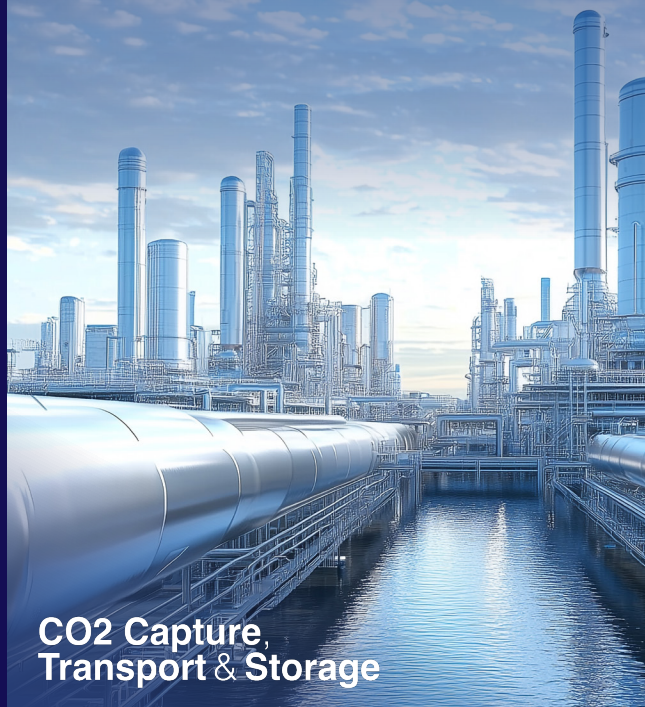
*Managing Director*



# UPCOMING EVENTS

8 SEPTEMBER 2025 • MILAN

CO2 SHIPPING,  
TERMINALS & CCS  
CONFERENCE EUROPE



9-10 SEP 2025 • SINGAPORE

OFFSHORE  
SUPPORT JOURNAL  
CONFERENCE ASIA



30 SEPT-1 OCT • AMSTERDAM

MARITIME  
DECARBONISATION,  
EUROPE  
CONFERENCE | AWARDS | EXHIBITION



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