Electrifying the Marine industry

European Ferry Shipping Summit and Ports, Malmö, 2022

Rakshith Sachitanand
Sales Director

Echandia

From 100 to zero-emission in three decades

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The transition to electric transportation is happening now

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EU fit for 55 outlines a plan to **cut transport emission by 90% until 2050**

The maritime sector today **relies on fossil fuels**

The goal is to **ramp-up use of renewable** and low-carbon fuels in maritime **to 6-9% in 2030 and 86-88% by 2050**

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A frontrunner in the most advanced zero-emissions energy solutions for heavy-duty maritime transport

Echandia powers the future of sustainable transport

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Summary of regulatory frameworks – EU & IMO

SMALL

EU

- ETD from 2023
- Fuel EU maritime (2025-)

Inland waterborne

National

Regional

Local

MEDIUM

IMO (International)

- EEDI
- EEXI

EU

- ETD from 2023
- Fuel EU maritime (2025)
- Infrastructure (2025/30)
- Inland waterborne
- ETS

National, regional, local

LARGE

IMO (International)

- EEDI + EEXI
- CII > 5.000 GT (2023)
- Enhanced SEEMP (2023)

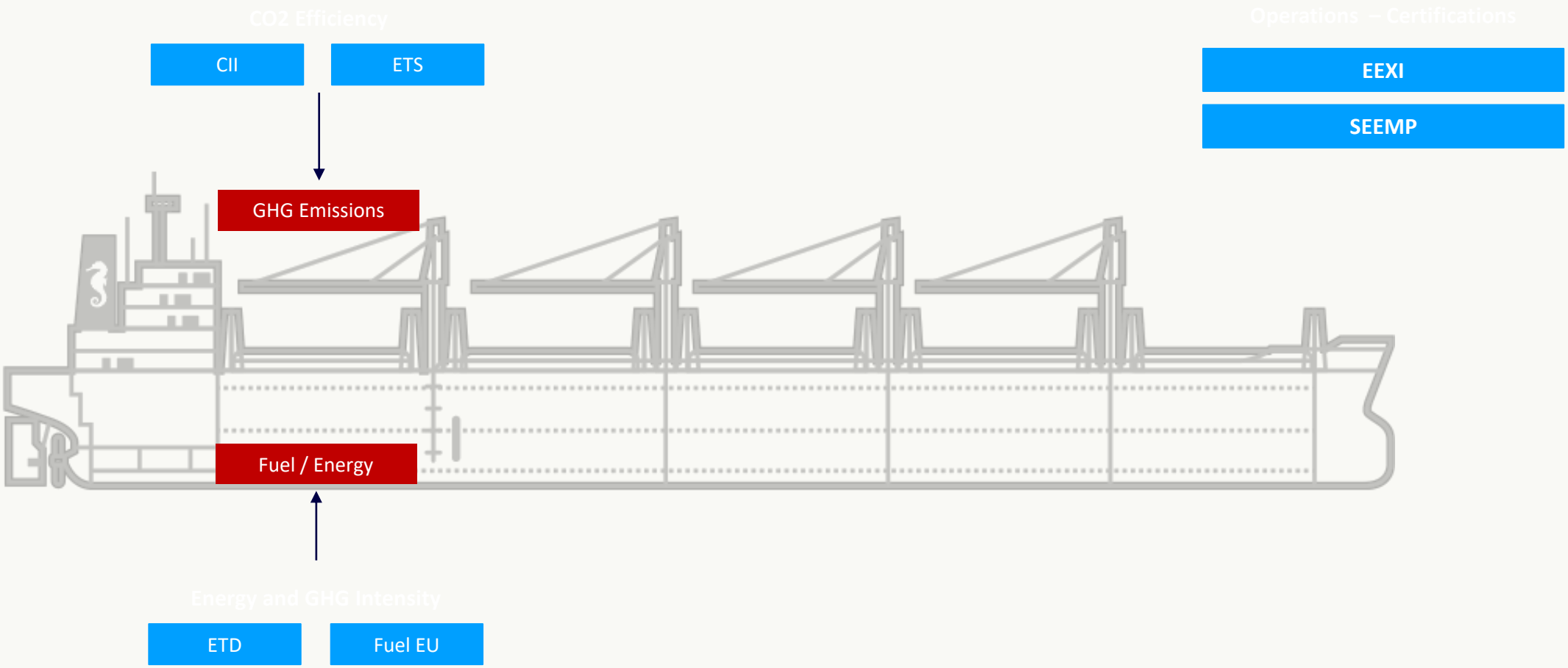
EU

- ETD from 2023
- ETS > 5.000 GT (2023)
- Fuel EU maritime (2025)
- Infrastructure (2025/30)
- Inland waterborne

National, regional, local

Summary of regulatory frameworks – EU & IMO

Where do regulations and directives focus



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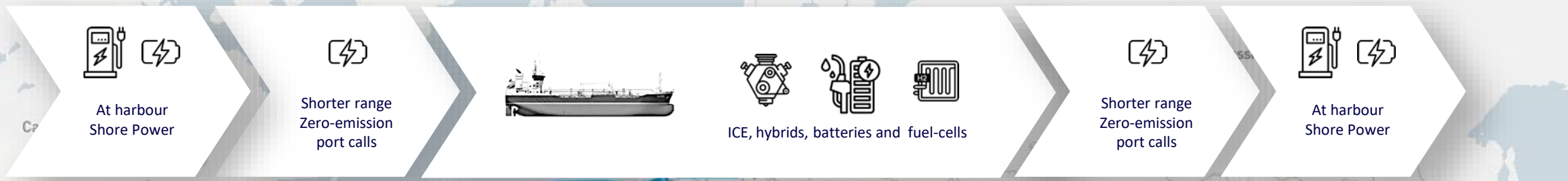
A combination of solutions for global shipping

Regulatory frameworks drives change



- Tougher restrictions for port calls and at quay
- Electrification progress from inland waterways and out
- Deep sea shipping to utilize ICE-hybridization, batteries and FC

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Batteries can perform multiple roles onboard vessels

Spinning reserve
- Backup for running generators
- Fewer generators needed online

Peak shaving
- Act as buffer
- Level power seen by engines

Optimize load
- Optimize operating point of gen'
- Reduce maintenance

Immediate power
- Instant power in support of generators

Harvest energy
- Recover energy from cranes, equipment
- Accommodate energy from renewables

Backup power (UPS)
- Battery system provides backup power, UPS-like functionality

Source: DNV

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Use smaller systems and more of installed capacity

Worldwide reach via customer ecosystem

Headquarters in Stockholm, Sweden, R&D in Sweden and Canada

Offices in Norway, Denmark, UK, Southern Europe (Italy)

Customers in APAC - New Zealand, India, Europe, Nordics

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