

Nordic Stream Group OÜ

Green

(NH3+Solar+Wind)

Rail ferry



Alternative 1:

MUUGA – HAMINAKOTKA- MUUGA

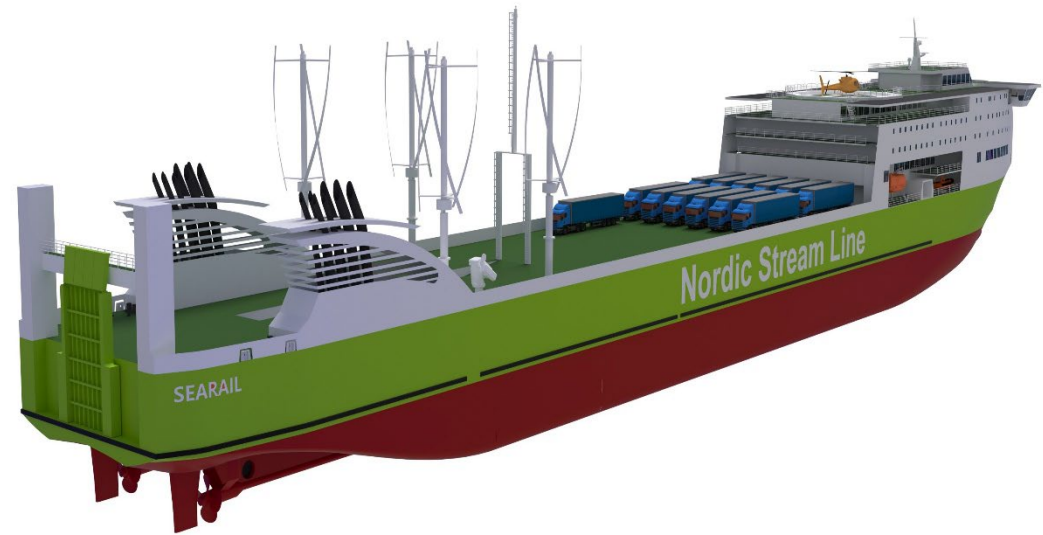
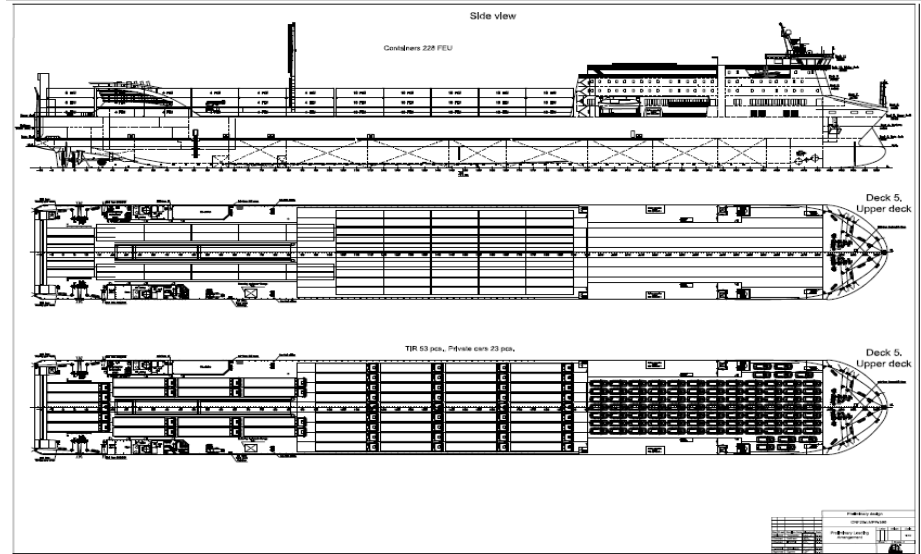
VESSEL PARTICULARS

Principal Dimensions:

- Gross Tonnage(GT) 26 000 tons
- Deadweight (DW) 9500 tons
- Lightship weight 12 000 tons
- Line meters 2700, including 1170 meters of rail
- Length overall, m 220.00
- Length Design WL, m 212.74
- Length Convention, m 205.45
- Length between perpendiculars, m 205.54
- Breadth overall (fenders), m 29.00
- Breadth, m 28.60
- Depth to Main Deck, m 9.00
- Depth to Upper Deck, m 15.40
- Draught Summer WL, m 6.50
- Vessel max speed - 24 knots
- Vessel service speed – 19 knots
- Length of railtracs (main deck) – 1100 meters
- Length of car lines(truck) on main deck 1400 meters
- Crew 32 persons
- Passangers 200 persons
- Drivers 150 persons

Nordic Stream Group Railferry design

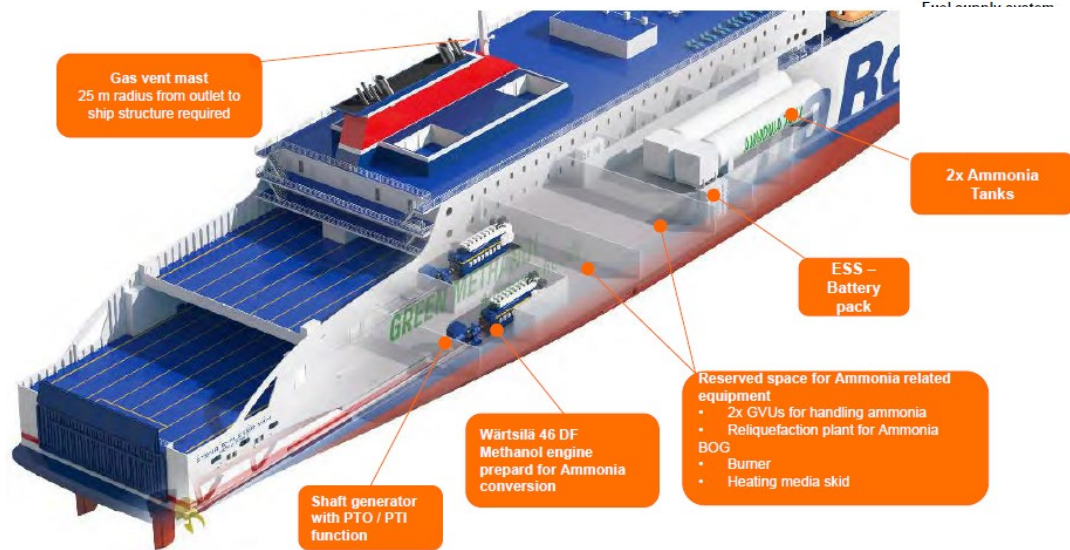
SSG railway ferry cargo and passenger capacities:					200	150	32
	Rail platform	Containers FEU	Trucks	Private cars	Passangers	Truck drivers	Crew
Deck 3 - Option 1	77						
Deck 3 - Option 2			72	23			
Deck 4				33			
Deck 5 - Option 1			53	23			
Deck 5 Option 2		228					
TOTAL- Option 1	77	0	53	56			
TOTAL - Deck 3_Option2			125	79			
TOTAL - Deck 5_Option 2	0	228	72	56			



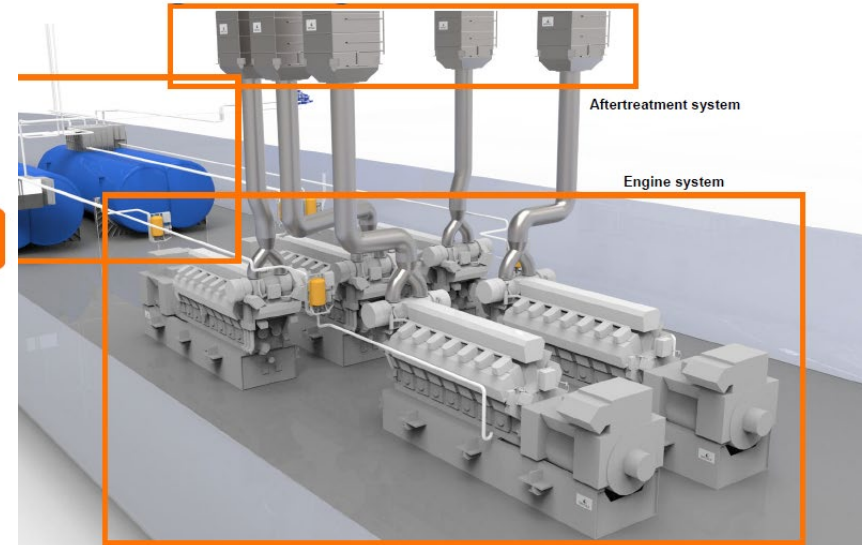
Wärtsilä Future Fuel Technology & Product Development

Decarbonising the Maritime Industry through the Uptake of Ammonia

E-Flexer Ammonia Propulsion system

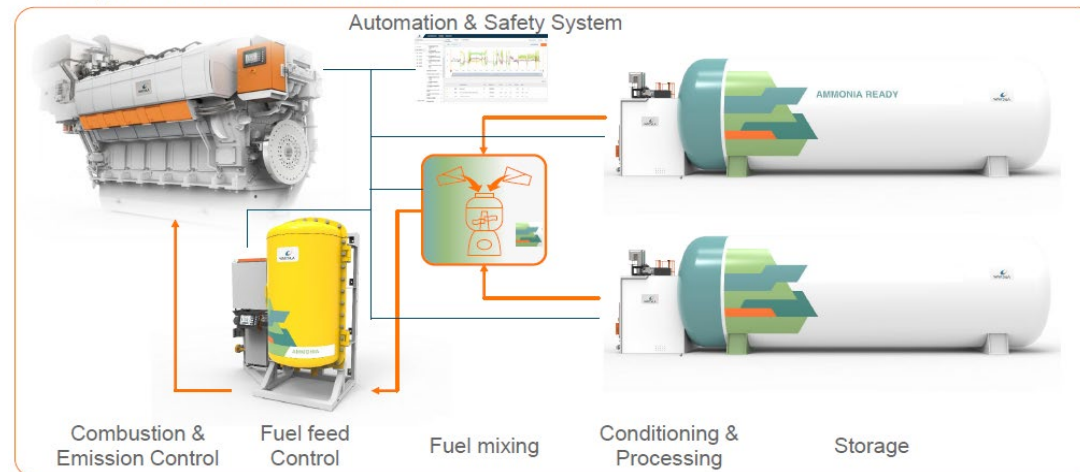


Ammonia system overview



Ammonia supply system

The green transformation: Ammonia



M/V „ SEARAIL“ sailing schedule (Alternative 1): Muuga – Hamina/Kotka-Muuga

OÜ NSG railferry Sailing schedule on line : Muuga-Hamina/Kotka-Muuga						
Assumptions:						
Distance between the ports:			105	Nautical miles		
Vessel AVG speed			18	knots		
Trip time one direction:			6:00:00	hours		
Vessel service Time at Port			6:00:00	hours		
	Departure	Arrival	Hamina/Kotka	Departure	Arrival	Muuga
	Muuga	Hamina/Kotka	Load/Disch	Hamina/Kotka	Muuga	Load/Disch
Monday	8:00	14:00	6:00	20:00	2:00	
Tuesday	8:00	14:00	6:00	20:00	2:00	6:00:00
Wednesday	8:00	14:00	6:00	20:00	2:00	6:00:00
Thursday	8:00	14:00	6:00	20:00	2:00	6:00:00
Friday	8:00	14:00	6:00	20:00	2:00	6:00:00
Saturday	8:00	14:00	6:00	20:00	2:00	6:00:00
Sunday	8:00	14:00	6:00	20:00	2:00	6:00:00
Monday	8:00					

Timber railplatforms modified for container transportation
(mod.13-401-06)



Containerized cargoes transshipment from Finland to Europe and Asia (works also vice versa)

No of Operation	Place of Operation	Name of Operation	Remark
1	Dispach plant/station in Finland	Loading of the container onto NSG railferry1520 mm railplatform	Containers reloading from other owners railplatforms and trucks can take place at Kouvola reloading railstation
2	Port of HaminaKotka	2.1 shunting of train platforms onto railferry 2.2.or discharging containers from railplatform to container storage and from storage to railferry weather deck	
3	Port of Muuga	3.1. shunting of train platforms from railferry 3.2. discharging containers from railferry weather deck to container storage and/or directly onto railplatforms	To the Muuga rail marshalling yard
4	Muuga -Kaunas	Train transportation of containers on train platforms to Kaunas	
5	Kaunas	Reloading of containers from 1520 train platforms onto 1435 mm railplatforms and/or trucks	
6	6.1 Kaunas - Destination point-Europe railstation	Train transportation on European 1435 railways	For European destinations
	6.2 Kaunas- Koper/Triest ports	Train transportation to reloading ports	For Asian destinations by deepsea
	6.3 Kaunas-Duisburg dry port	Train transportation to reloading onto Asian container block-trains	For Asian destinations by rail

OÜ Nordic Stream Group railferry weekly routing scheme

Route 1 : Muuga – Finnish port – German Baltic Sea port – Finnish port – Muuga (1 roundtrip)

Route 2: Muuga – Finnish port – Muuga (5 roundtrips)



Foreseen Cargoes transshipped by OÜ Nordic Stream Group railferry in/on railcars

A. From Germany to Finland

1. Metals – for Finnish Automotive Industry -
2. Containers from Duisburg

• From Latvia, Estonia to Finland

1. Timber logs for pulp&paper plants

B. From Finland (via Mukran) to Europe and Asia

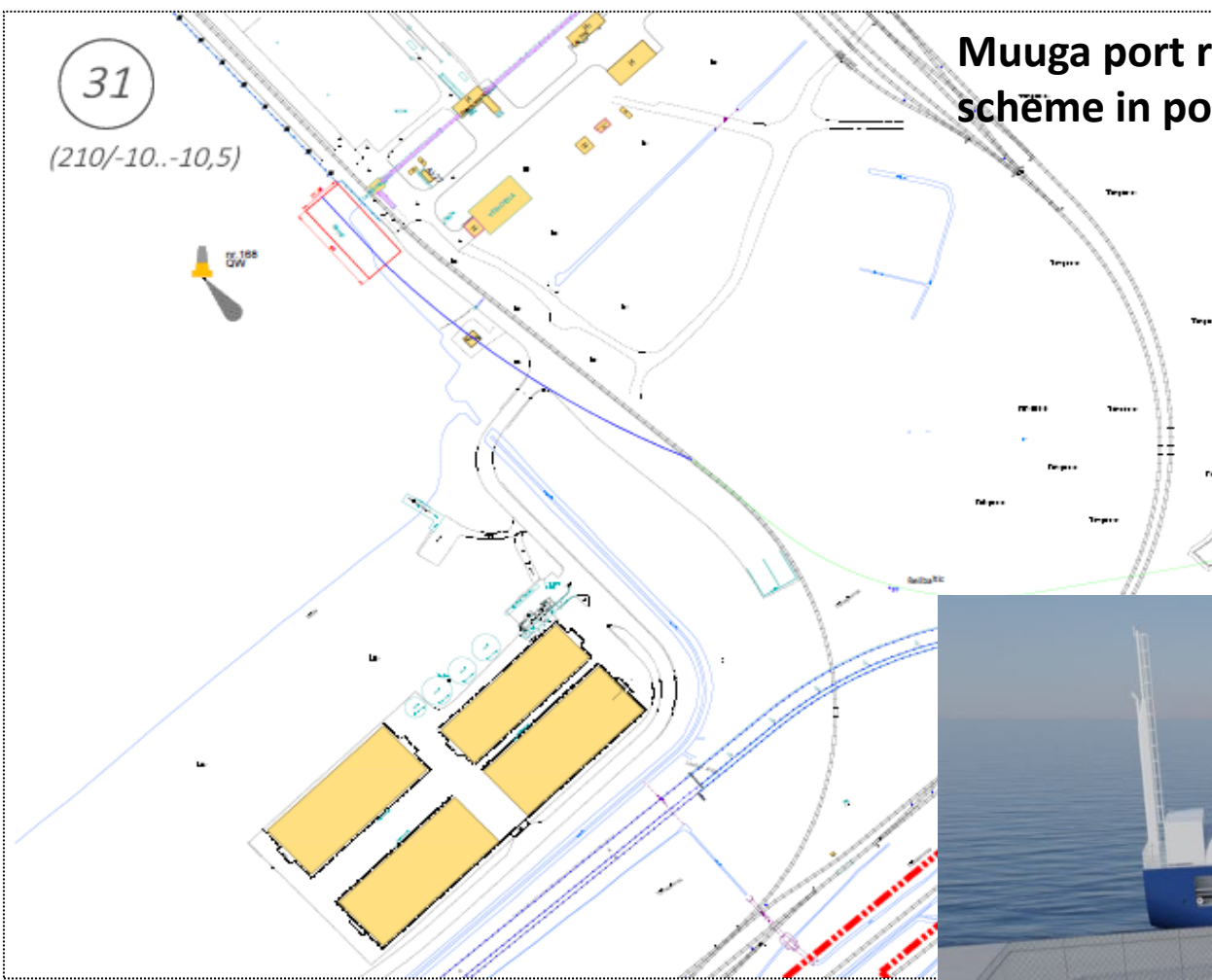
1. Pulp & Paper
2. Cars
3. Products of chemical industry
4. Containers to Asia

C. From Finland to and via Estonia,Latvia, Lithuania to Ukraine, Italy and other W.Europe

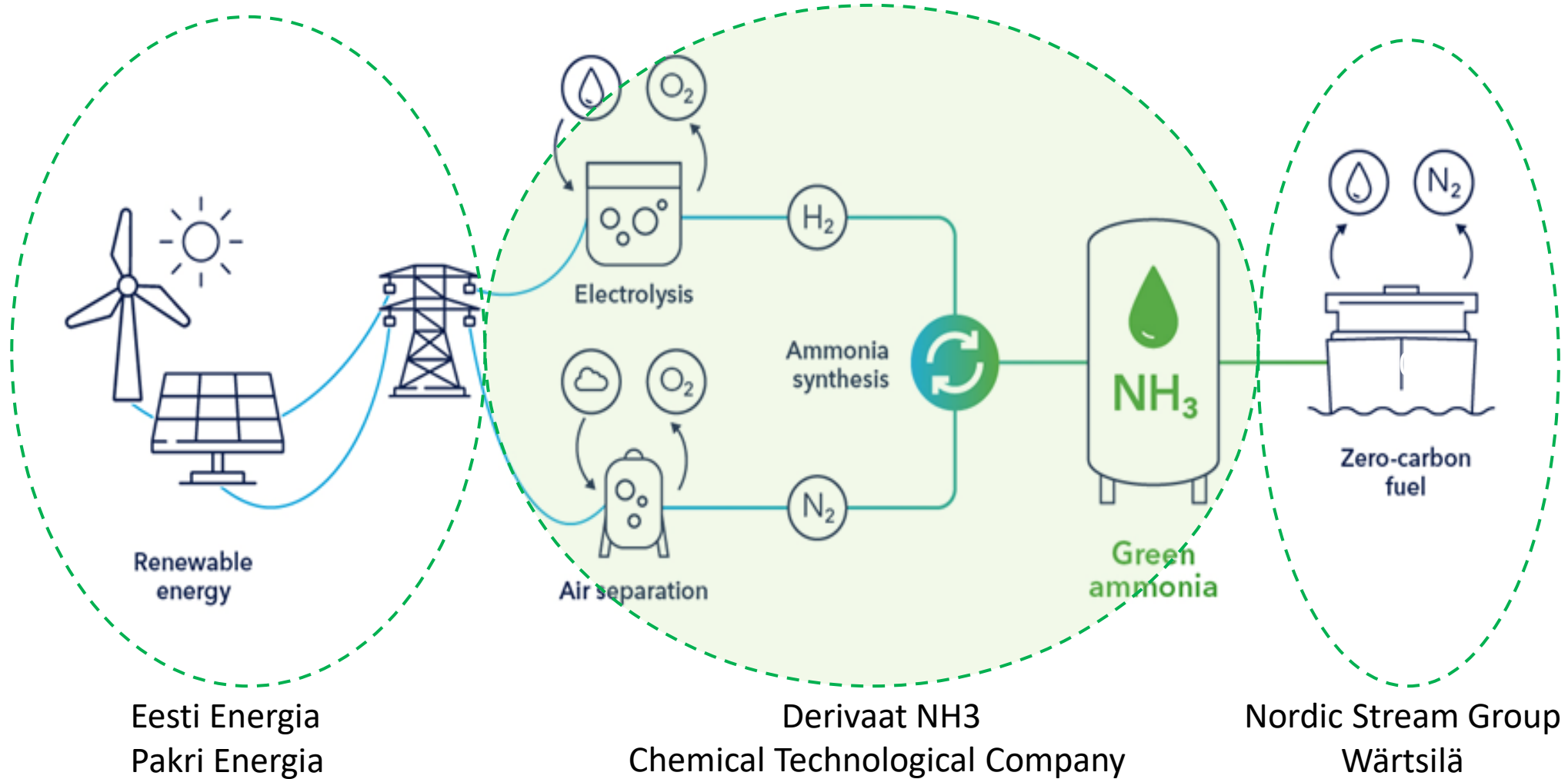
Same goods as under **B.**

Greening the supply chain: a crucial lever to reduce products' environmental footprint

Muuga port rail-ramp and Vessel green NH3 bunkering scheme in port of Muuga



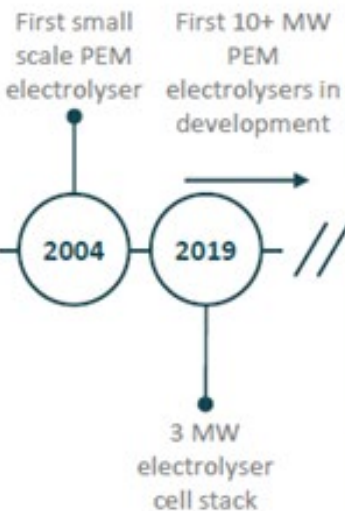
OÜ Nordic Stream Group daughter company OÜ Derivaat NH3
developable project in Paldiski, Estonia :
Green ammonia (NH3) production



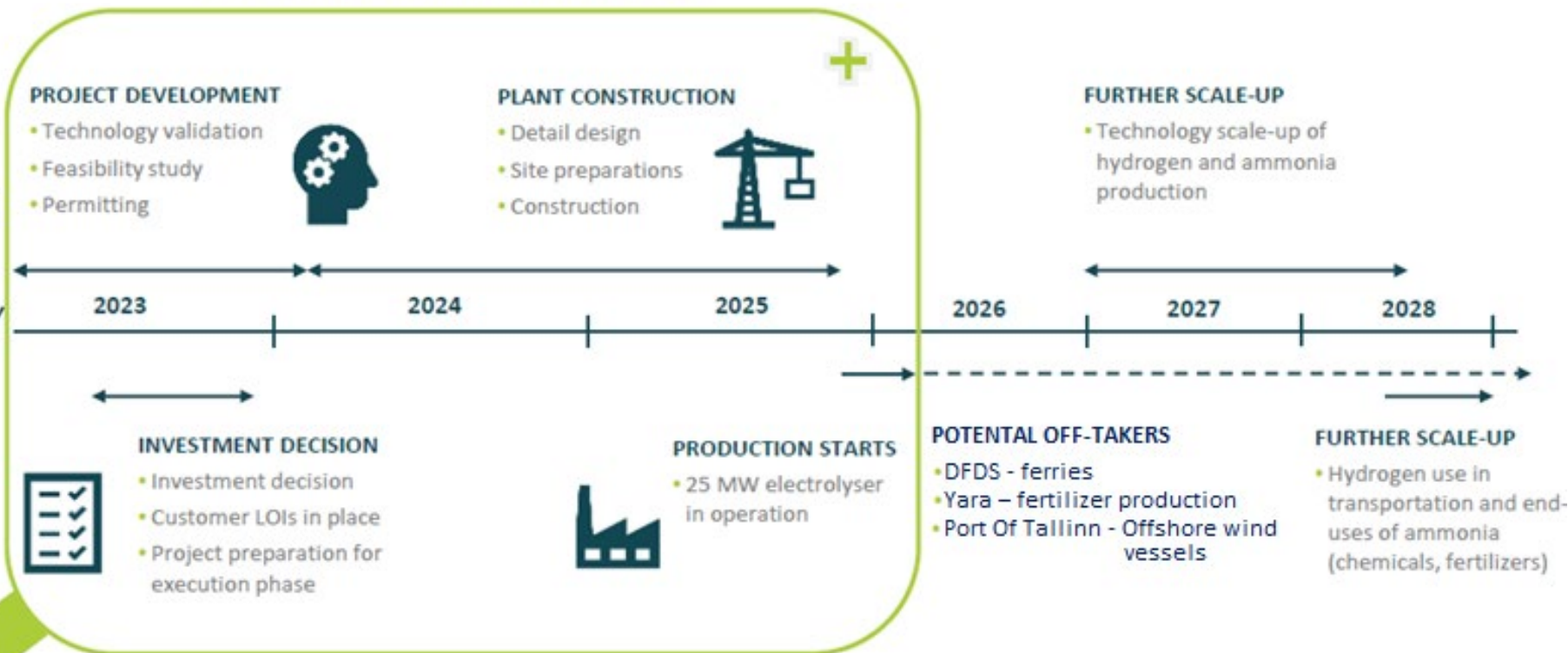
PROJECT TIMELINE

FULL SCALE PROJECT

TECHNOLOGY DEVELOPMENT



KIK PROJECT – 25 MW ELECTROLYSER



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