

FANT4STIC

RISE OF THE NEXT GENERATION RORO



STARRING

FINNLINES

WALLENIUS-SOL

GRIMALDI

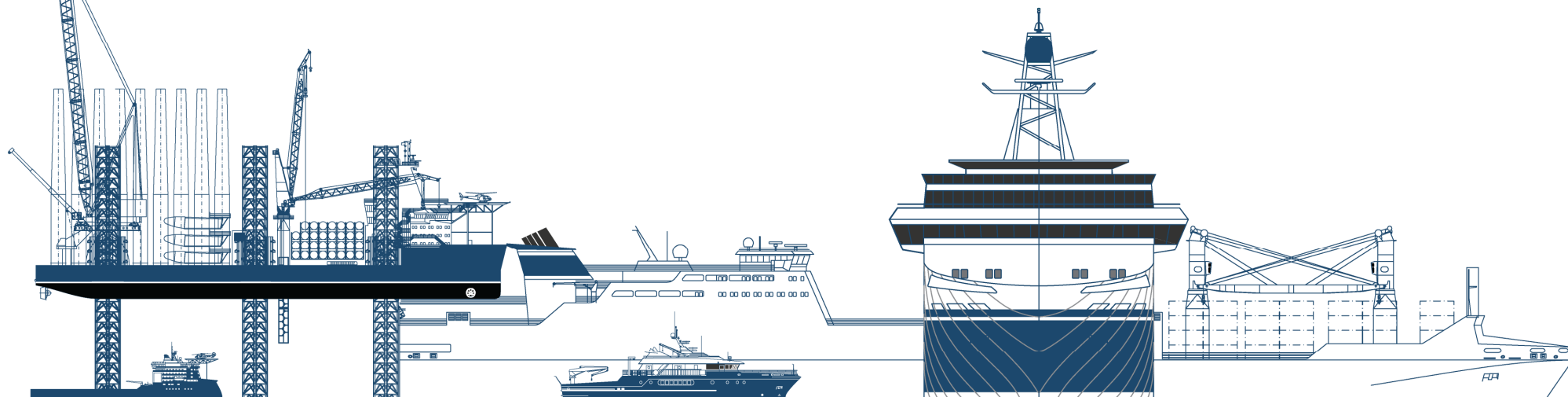
DFDS

COMING TO A HARBOUR NEAR YOU



KNUD E. HANSEN

Christian Damsgaard
Head of Naval Architecture
Sr. Naval Architect



A MODERN CONSULTING COMPANY

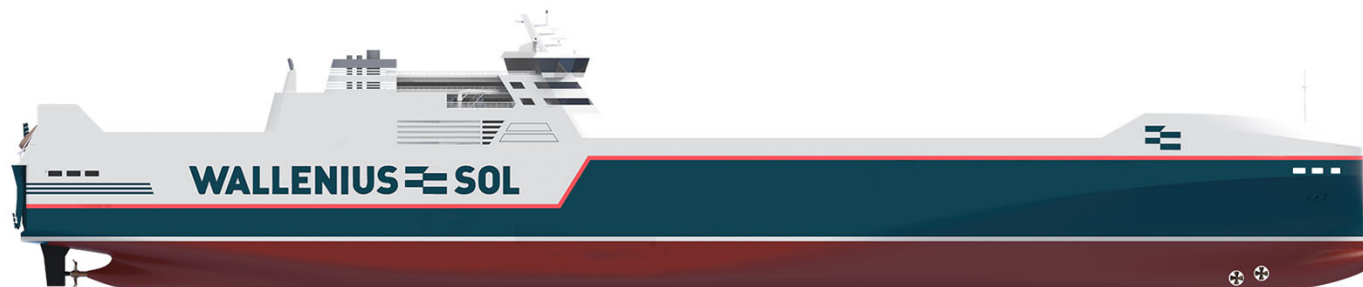
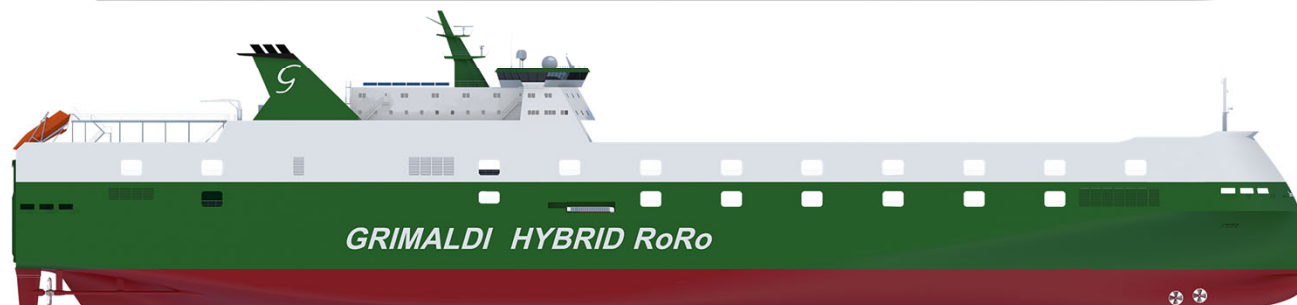
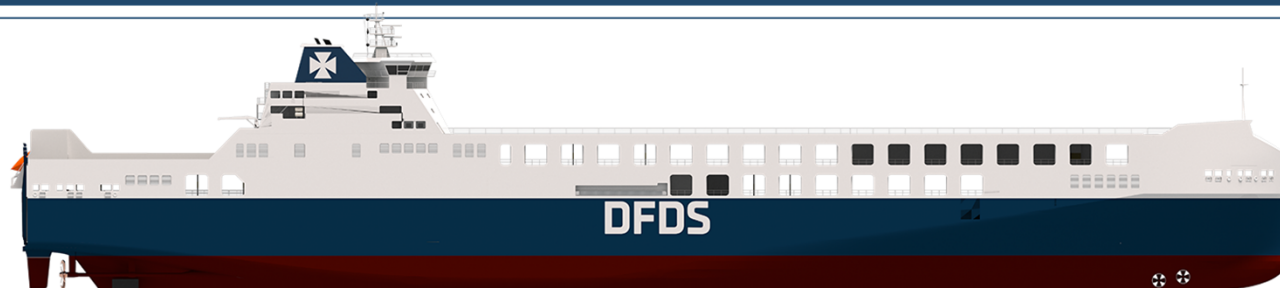


Who are KNUD E HANSEN?

- Ship Design since 1937
- Head office in Denmark
- Abt 100 employees
- Core business are
 - New designs
 - Conversions
 - Energy optimisation
 - Naval Architecture
 - Marine Engineering
 - HVAC Design
 - Inspection and Supervision
- References in vessel
 - Between 6 and 300 m in length
 - Offshore, cruise, container, tanker, icebreaker
 - RoPax, WTIV and RoRo



THE FANTASTIC 4



MAIN PARTICULARS

LOA 237.4 m
Beam 33.0 m
Draught 7.1 m

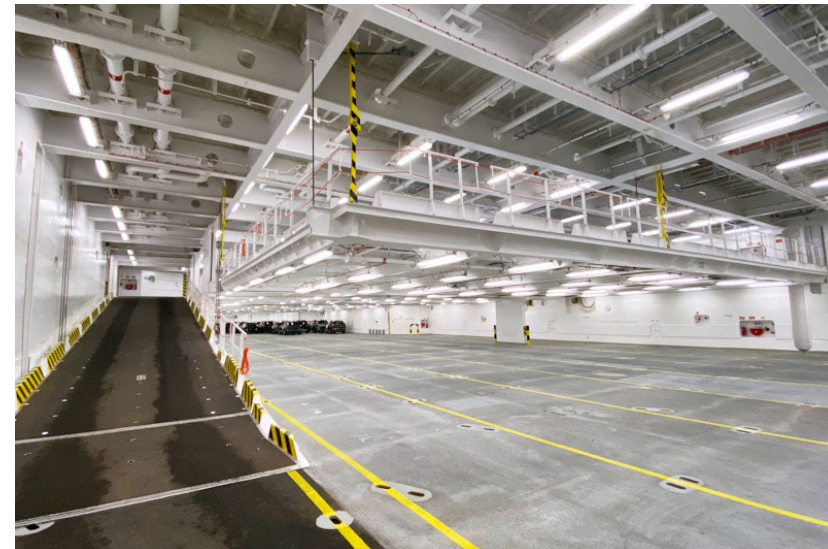
DWT 15,900 m
LM 6,700 m

Vessels ordered 6 pcs

CO2 reduction +25 %

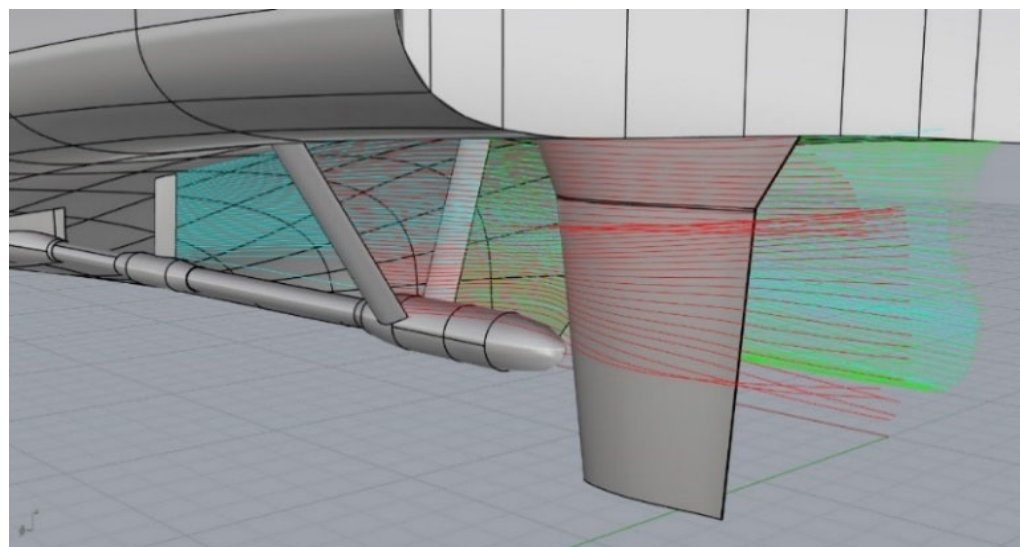
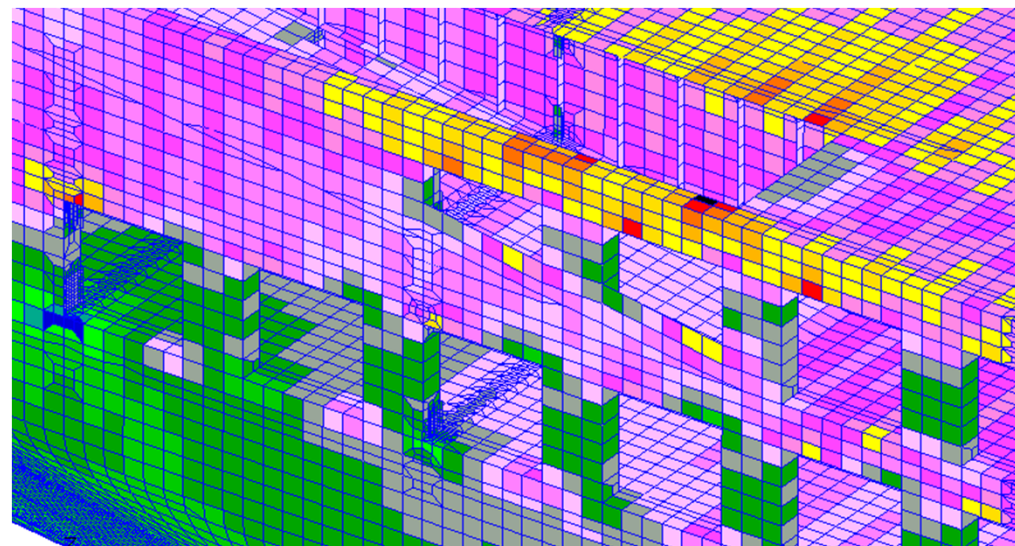
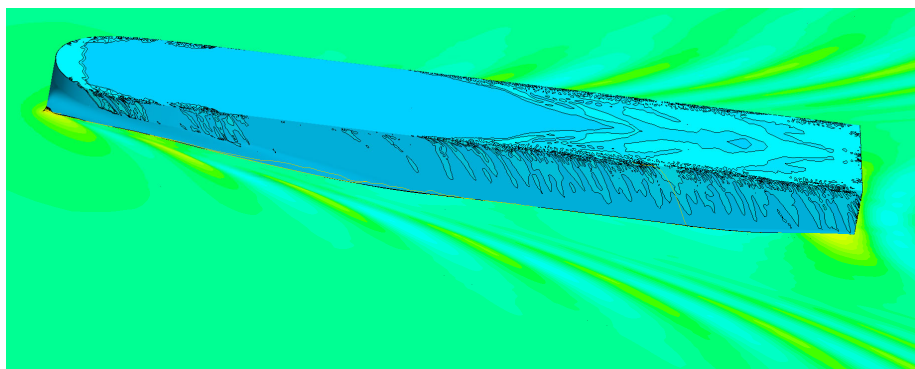
Selected design considerations

- 'Traditional' trailer vessel
- 1 vs 2 propeller
- Sideramps vs center ramp
- EEDI challenges



EEDI challenge

- Phase I
- Weight optimisation
 - pillar optimisation
 - transverse beams
 - FEA
 - Yard logistic
- Power
 - Hull optimisation
 - Appendage alignment
 - Propeller – rudder system
- Pre-contract model testing



GRIMALDI EUROMED

MAIN PARTICULARS

LOA	238.0 m
Beam	34.0 m
Draught	7.2 m

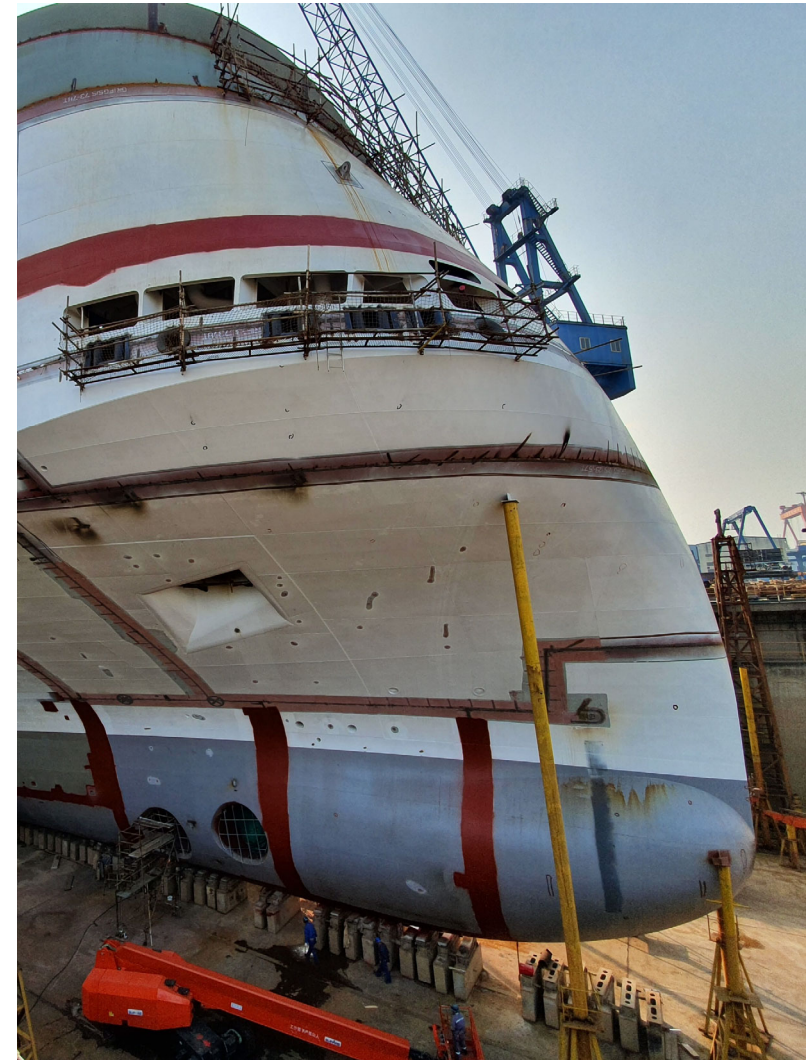
DWT	17,000 t
LM	7,800 m

Vessels ordered 9 pcs

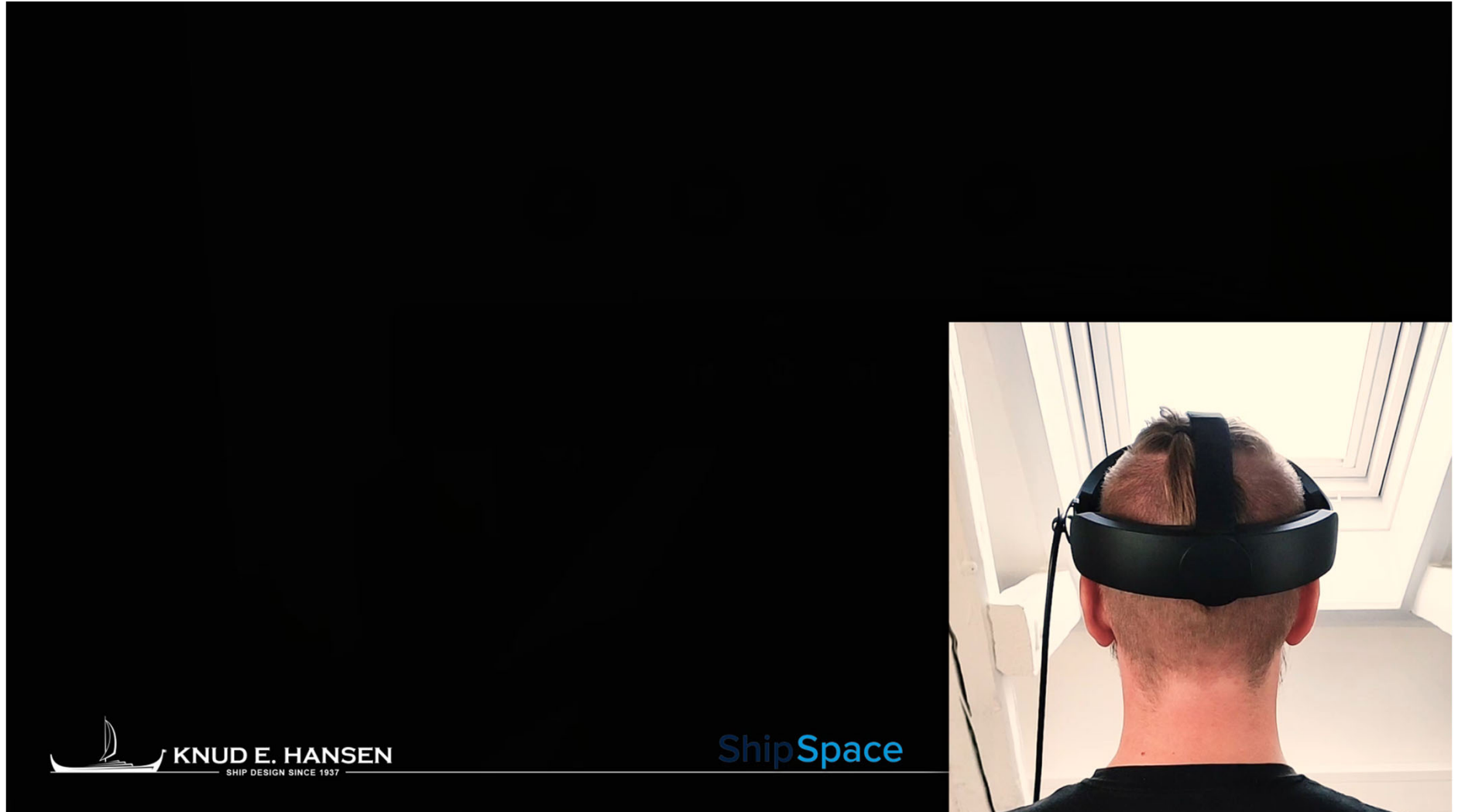
CO2 reduction +40 %

Selected design considerations

- 'heavy' trailer vessel
- 5 deck
- Hybrid
- Air Lubrication System
- Asymmetrical stern ramp



Pillar arrangement Use of Virtual Reality



GRIMALDI EUROMED



MAIN PARTICULARS

LOA	238.0 m
Beam	34.0 m
Draught	7.2 m

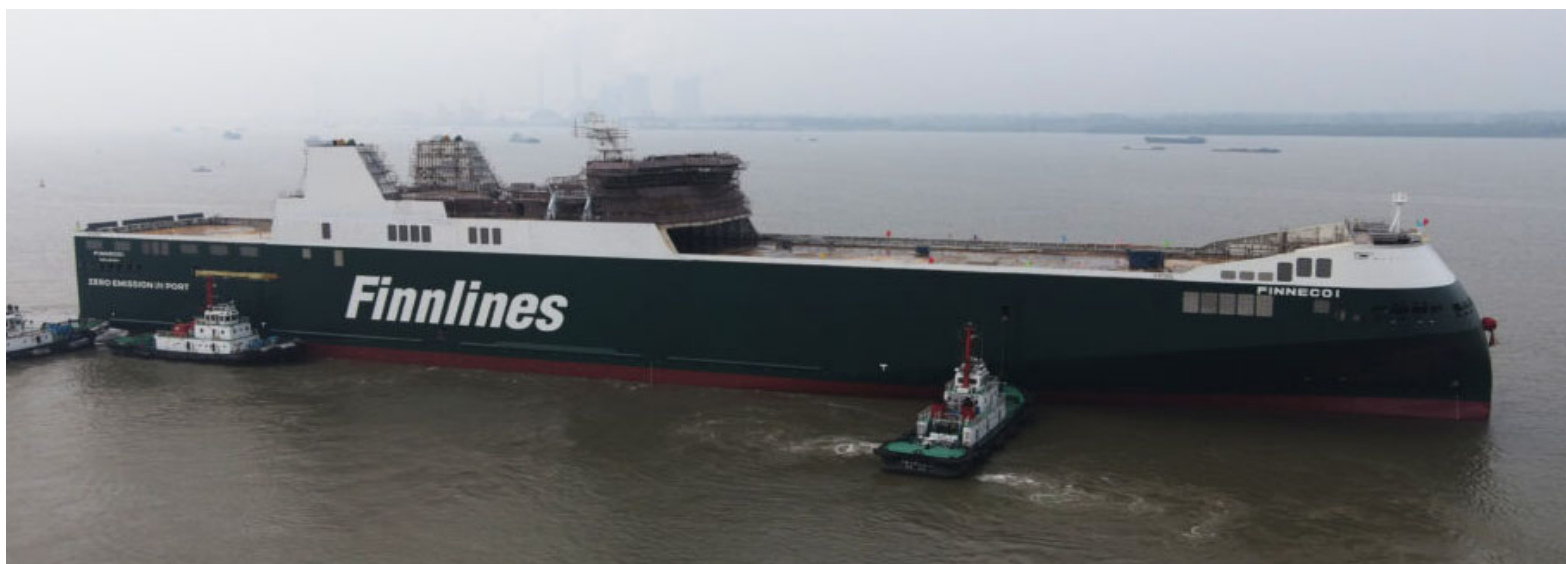
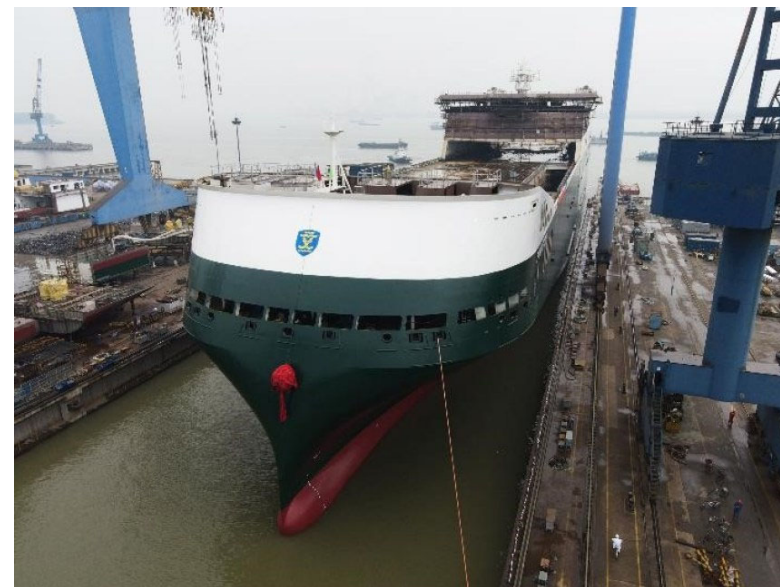
DWT	17,400 t
LM	5,800 m

Vessels ordered	3 pcs
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Cargo increase	+38 %
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Selected design considerations

- heavy paper cargo
- Containers on deck
- 4 deck (3 closed)
- No pillars
- Hybrid
- Ice 1A Super



WALLENIUS-SOL



MAIN PARTICULARS

LOA	241.7 m
Beam	35.2 m
Draught	8.7 m

DWT	27,000 t
LM	5,800 m

Vessels ordered 2 pcs

CO2 reduction abt. 63 %

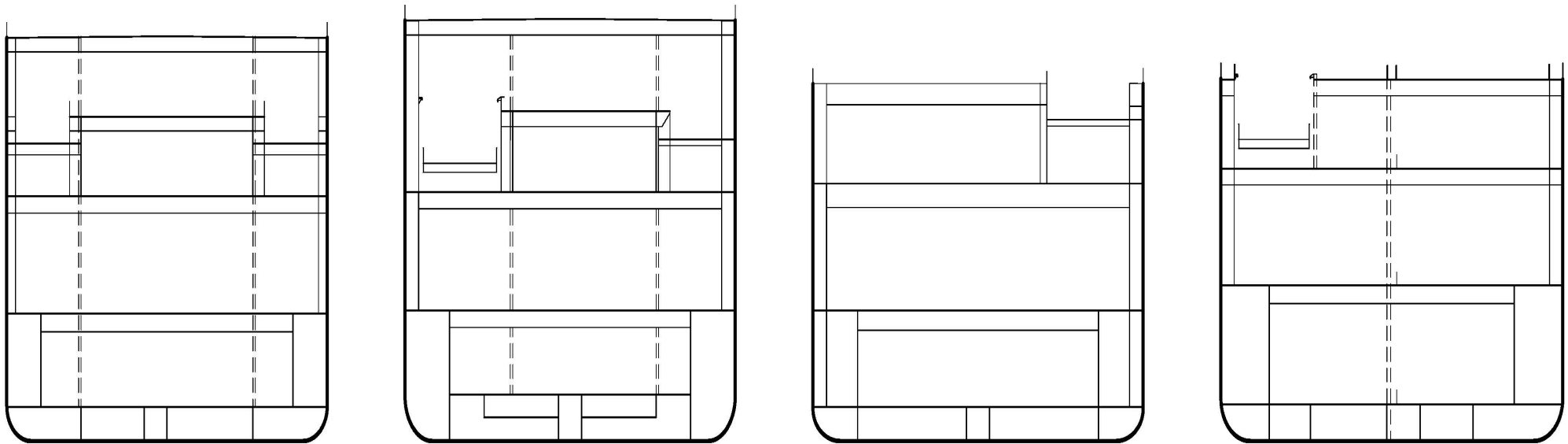
Selected design considerations

- Cassette carrier
- 4 deck (3 closed)
- Single pillar line
- Twin skeg
- LNG
- Ice 1A Super



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PRINCIPLE TRANSVERSE SECTIONS

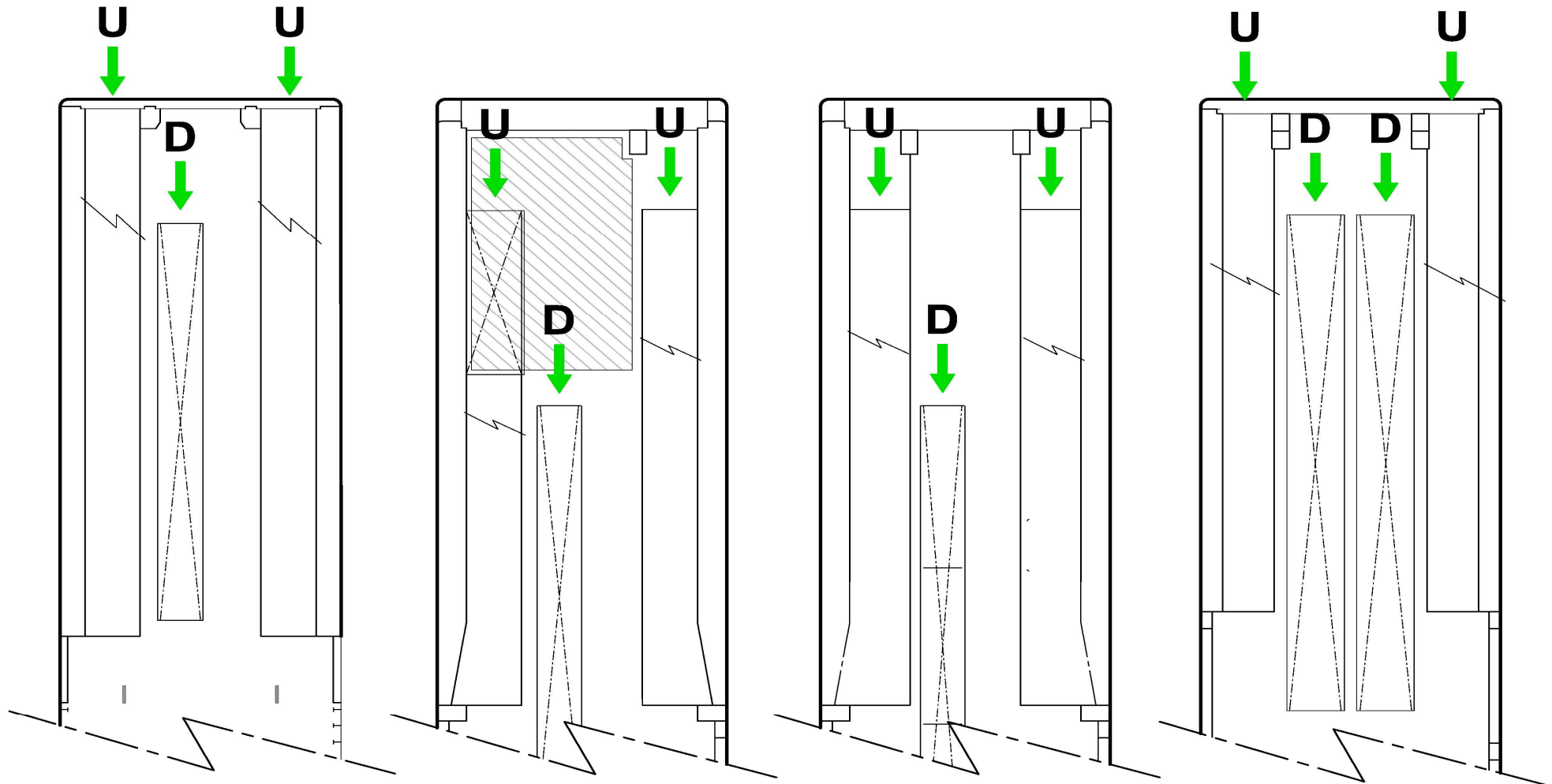


Different concepts:

- Pillar system
- Deck heights
- Fixed vs. hoistable ramps
- Tank arrangement
- Hoistable decks

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PRINCIPLE RAMP LAYOUTS



Ramp positions at main deck

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MAIN DATA

		DFDS	Grimaldi	Finnlines	Wall-SOL
LOA	m	237.4	238.0	238.0	241.7
Beam	m	33.0	34.0	34.0	35.2
Draught	m	7.1	7.2	7.2	8.7
Speed*	kn	21.0	20.8	20.7	20.0
Power*	kW	2x11,800	2x12,780	2x12,780	2x10,500
DWT	t	15,900	17,000	17,400	27,000
LM	m	6,700	7,800	5,800	5,800
Others		EEDI Phase1	Hybrid	1A Super Hybrid No pillars	1A Super LNG

*Speed and installed power are not directly comparable due to different design conditions

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