LINTECH LIQUEFIED GAS CARRIER

The LINTECH Liquefied Gas Carrier (LGC) is primarily designed for the transportation of all sorts of liquefied (cryogenic) gasses, such as methane, propane, ethylene and vinyl chlorid - monomer. With the LGC, Lintech offers a vessel which fulfills the latest market demands.

THE LINTECH LIQUEFIED GAS CARRIER IS AN OPTIMAL VESSEL FOR THE TRANSPORTATION OF GASES IN ENVIRONMENTALLY FRIENDLY WAY

VARIOUS TYPES AVAILABLE

LINTECH LPG CARRIER

The Lintech LPG Carrier is deliverable as a fully pressurised and semi-refrigerated vessel.

LINTECH ETHYLENE CARRIER

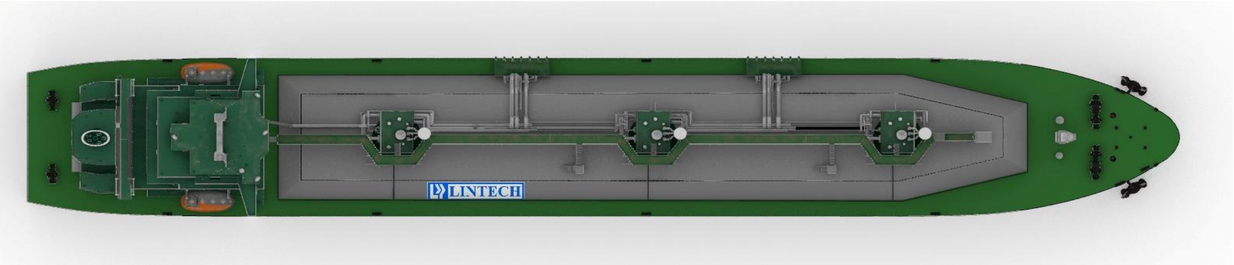
Ethylene has an atmospheric boiling point of -104ºC. In this design, the vessel has the ability to carry most other liquefied gasses. In combination with LPG cargoes increases the flexibility of the vessel.

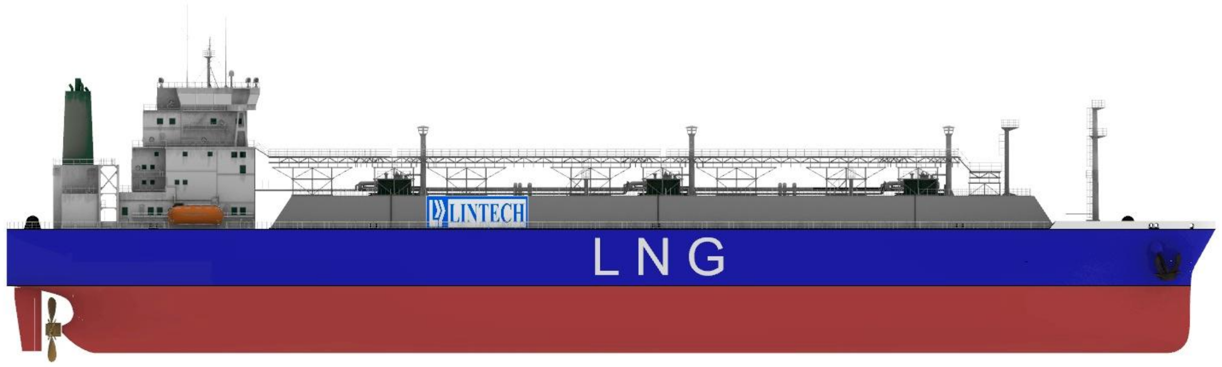
LINTECH LNG (BUNKER) CARRIER

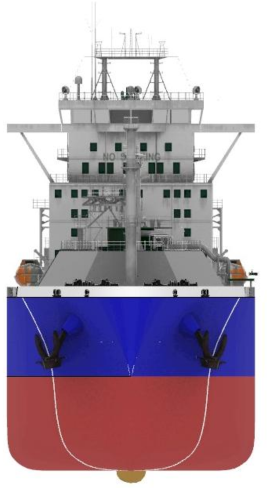
Methane has an atmospheric boiling point of -162ºC. Equipped with an LNG bunkering arm, this vessel fulfil the latest market demands. The main engine and generator sets can use the boil of gas (BOG).

LINTECH COMBINATION CARRIER

Combined cargoes such as LPG, Ethylene, VCM and LNG.







LINTECH DESIGN FEATURE for LIQUEFIED GAS CARRIER

PROPULSION CONFIGURATION

The LGC can be installed with dual fuel main engine(s) which are running on a combination of MGO and LNG (methane). The boil off gas (BOG) will be used as a fuel for the main engine or other consumers such as generator sets. This allows the vessel to use BOG in a clean and environmentally friendly way.

DRASTIC REDUCTIONS IN FUEL CONSUMPTION

With an excellent endurance, economic fuel consumption and the possibility to run on MGO, HFO380 or LNG (dual fuel), the LGC is a very efficient vessel.
Lintech set out to create a vessel that was able to carry various liquefied gasses, in line with the demands of today's market.

DESIGN OF WHEELHOUSE AND CREW ACCOMMODATION

The layout of this LGC includes a wheelhouse giving an optimal view of the deck only for cargo operations, but also when sailing at sea and manoeuvring at close quarters.
The crew accommodation is modern, comfortable and efficient, with the well-being of the crew key consideration.

PROVEN TANK DESIGN AND LAYOUT

The cargo tanks are self-supporting pressure vessel, cylindrical or bilobe with outside insulation, no secondary barrier required, no restriction concerning partial filling. For the vessel this is the backbone of successful operations with minimum downtime and optimal economy in operation.
The LGC will be equipped with cylindrical IMO tank type C tanks. This solid tank type allows high loading rates and needs little maintenance.

EXCELLENT SEAKEEPING BEHAVIOUR

In the design process particular attention was paid to the bow and hull. The new distinctive, sleek bow and slender hull enables the vessel to sustain its speed and course in head seas, as well as helping to reduce fuel consumption. The bow design leads to less acceleration and slamming has been reduced to a very low level, improving comfort and safety.

Special attention is paid to high comfort levels which are obtained by noise and vibration reduction and by use of high quality materials. The LGC series is designed to the latest ergonomic and comfort standards.

Principal Particulars

VESSEL DIMENSION & TECHNICAL PARAMETERS

Specification Parameter	Target Value (Standard Class)	Strategic Operational Advantage
Cargo Capacity	Approximately 5,000 - 20,000 m^3	Optimized Size Best for small-mid scale logistics
Length Overall (LOA)	110 m to 160 m (Customizable)	Easily berths at smaller regional non-major ports
Design Draft	4.5 m to 8.05 m	Highly optimized for shallow water & inland river paths
Main Propulsion	Dual-Fuel Engine (LNG & MGO)	Uses Boil-Off Gas (BOG) as fuel, cutting carbon footprint
Service Speed	13.5 - 15.5 Knots	Exceptional performance-to-fuel consumption balance
Classification	IACS Member (e.g. ABS / BV / DNV / RINA)	Meets strictest international marine criteria

LINTECH LIQUEFIED GAS CARRIER PRODUCT SERIES

CRYOGENIC VESSEL SERIES

LGC 7500 LNG

Length overall (m)	: 115	Draught design(m)	: 5.60
Length p.p. (m)	: 110.85	Speed (kn)	: 13.0
Beam (mld)	: 18.60	Deadweight (t)	: 4.358
Depth to main deck (m)	: 11.75		

LGC 6500 LNG

Length overall (m)	: 105.90	Draught design(m)	: 5.60
Length p.p. (m)	: 103.10	Speed (kn)	: 13.0
Beam (mld)	: 18.60	Deadweight (t)	: 4.086
Depth to main deck (m)	: 11.75		

LGC 3000 LNG

Length overall (m)	: 105.55	Draught design(m)	: 3.25
Length p.p. (m)	: 104.10	Speed (kn)	: 10.0
Beam (mld)	: 11.3	Deadweight (t)	: 1.900
Depth to main deck (m)	: 5.41		

LGC 5000 LNG

Length overall (m)	: 99.90	Draught design(m)	: 5.65
Length p.p. (m)	: 94.70	Speed (kn)	: 13.0
Beam (mld)	: 18.60	Deadweight (t)	: 3.000
Depth to main deck (m)	: 10.80		

LGC 1500 LNG

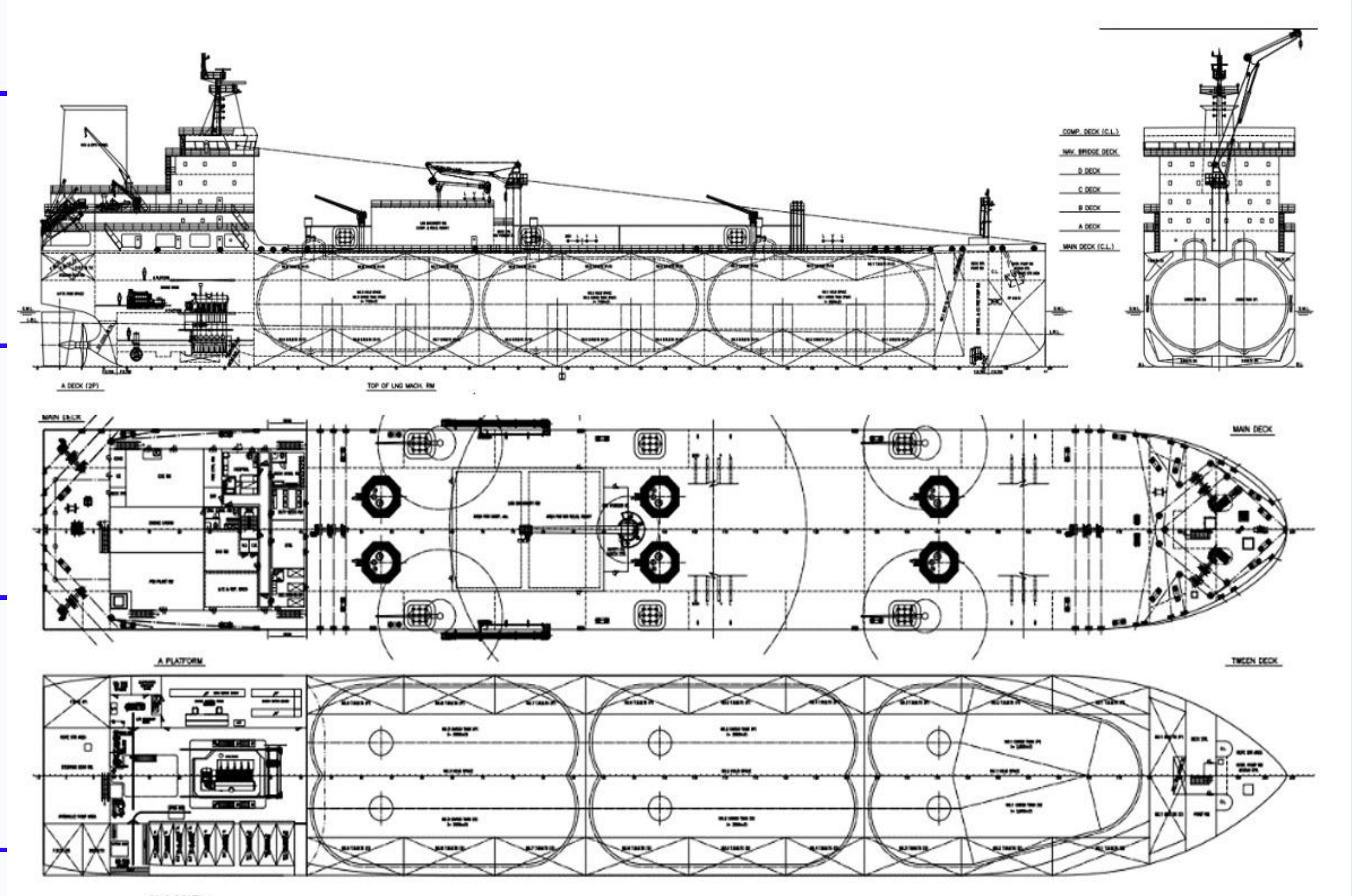
Length overall (m)	: 72.27	Draught design(m)	: 3.05
Length p.p. (m)	: 67.70	Speed (kn)	: 10.0
Beam (mld)	: 11.30	Deadweight (t)	: 900
Depth to main deck (m)	: 5.540		

LGC 500 LNG

Length overall (m)	: 49.92	Draught design(m)	: 2.20
Length p.p. (m)	: 47.70	Speed (kn)	: 9.0
Beam (mld)	: 9.50	Deadweight (t)	: 300
Depth to main deck (m)	: 3.80		

CONCEPTUAL DESIGN & GENERAL ARRANGEMENT

LINTECH develops comprehensive General Arrangement (GA) drawings that serve as the foundation for vessel construction. These detailed plans encompass every critical aspect of the ship's design and layout.



01

Hull Dimensions

Precise specifications for length, beam, and draft calculations

02

Tank Placement

Strategic positioning of LNG cargo containment systems

03

Propulsion Layout

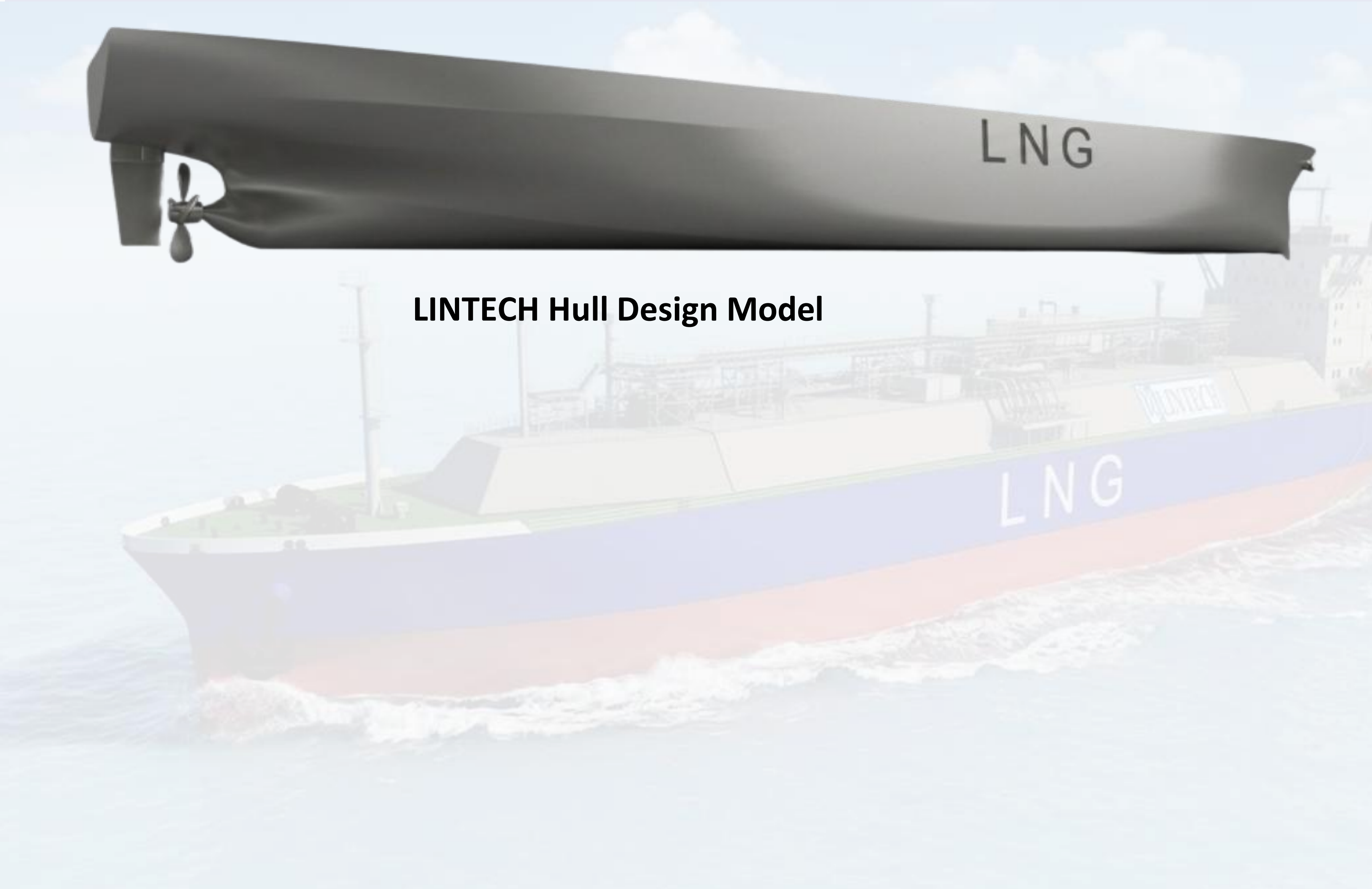
Engine room and propulsion system configuration

04

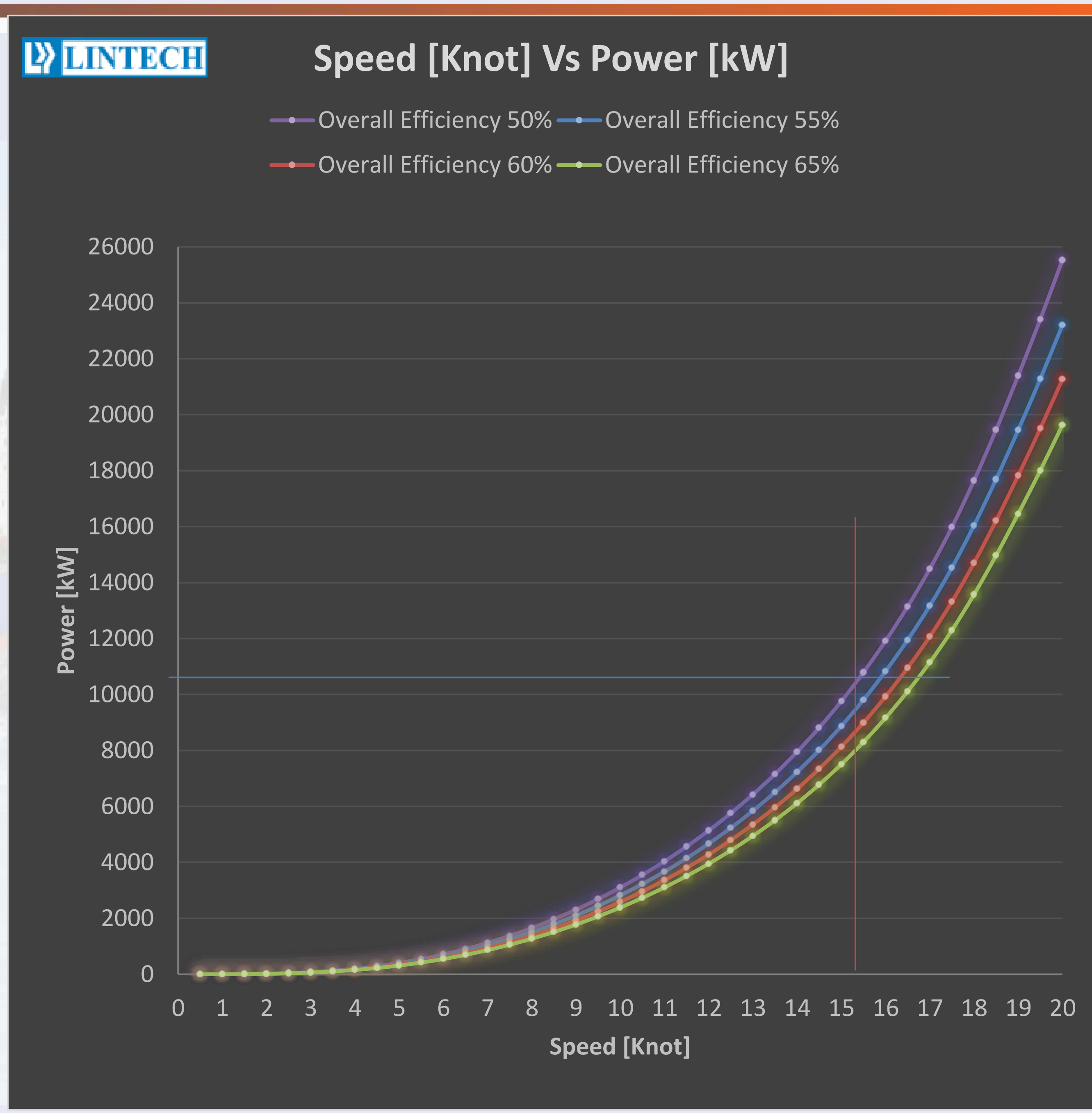
Accommodation

PERFORMANCE RATING

Hull Form : MONO HULL

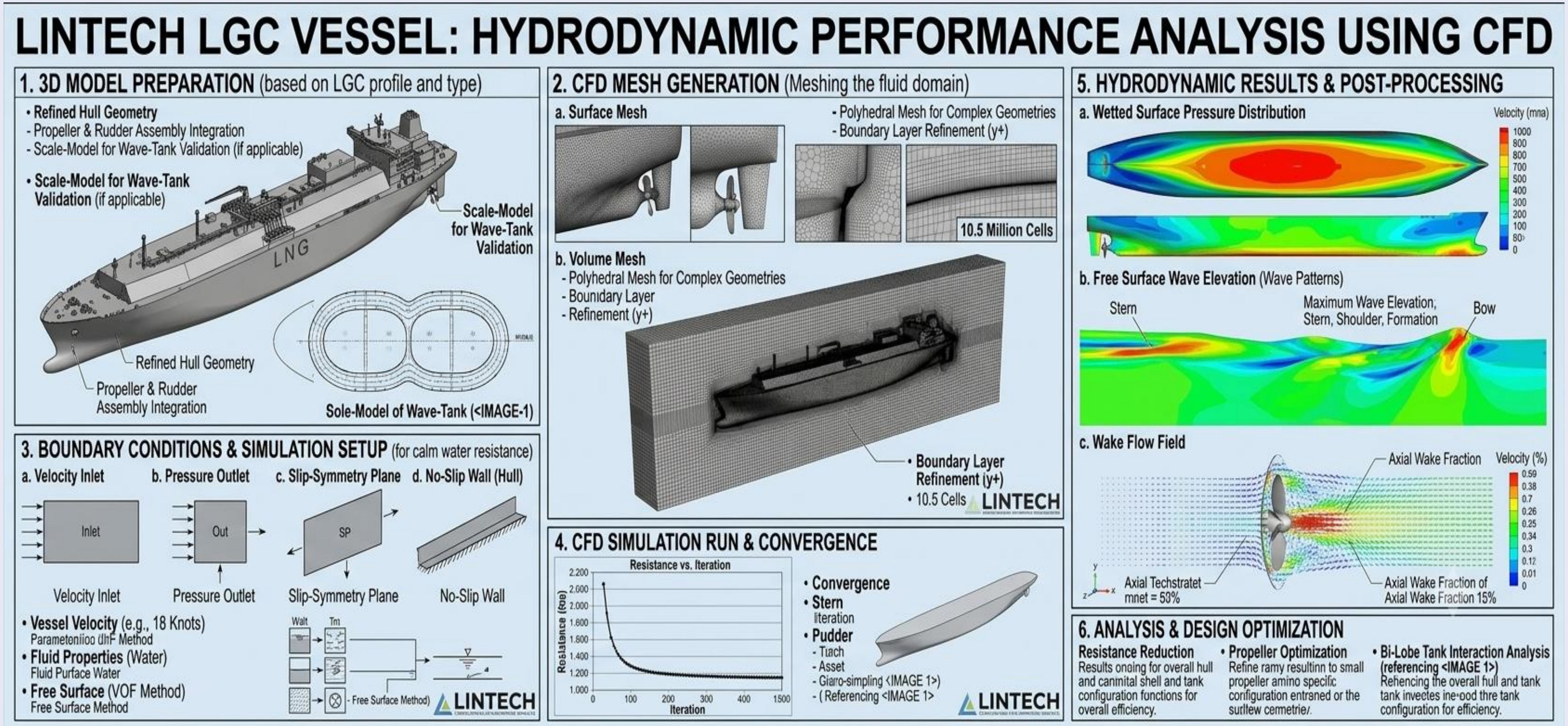


LINTECH Hull Design Model



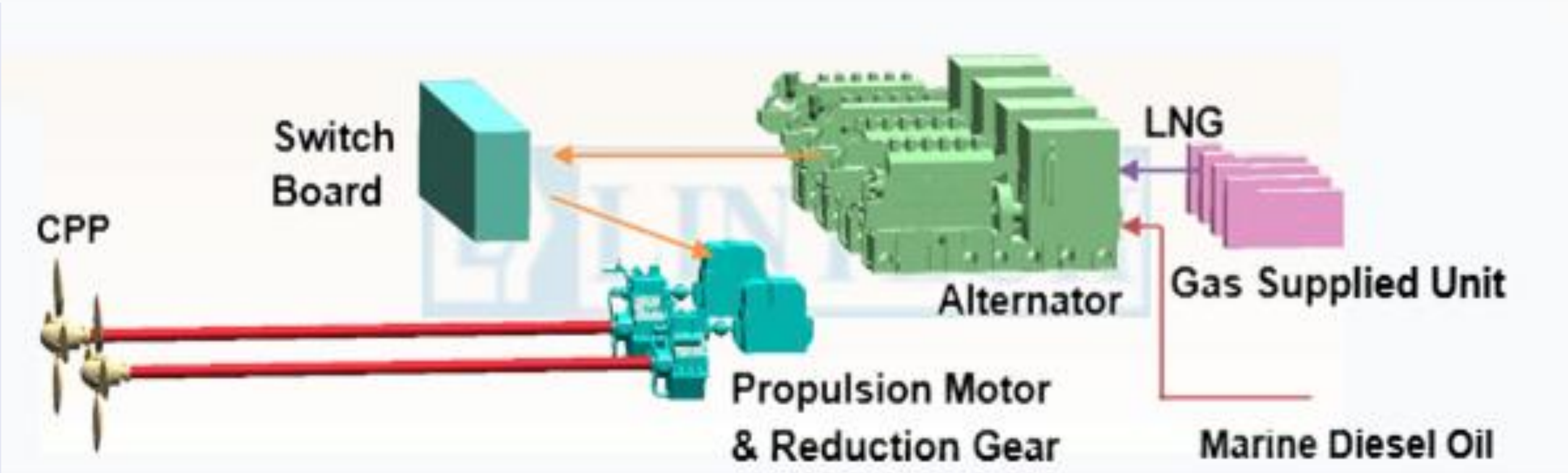
"The vessel's hydrodynamic performance is optimized at the Continuous Service Rating (CSR), establishing an efficient balance between fuel consumption and transit speed. The power-speed curve demonstrates strict adherence to the cubic law at transit ranges between 12 to 16 knots. However, approaching the Maximum Continuous Rating (MCR) introduces an exponential rise in wave-making resistance, signifying the boundary of efficient hull operation under standard sea margin conditions."

HYDRODYNAMIC PERFORMANCE ANALYSIS



LINTECH performs advanced **CFD hydrodynamic analysis** to optimize LGC vessel performance. This robust, multi-stage process simulates complex fluid dynamics—from wave elevation to wake flow fields—enabling data-driven **resistance reduction and propulsion optimization**—*Engineered for Excellence by LINTECH*

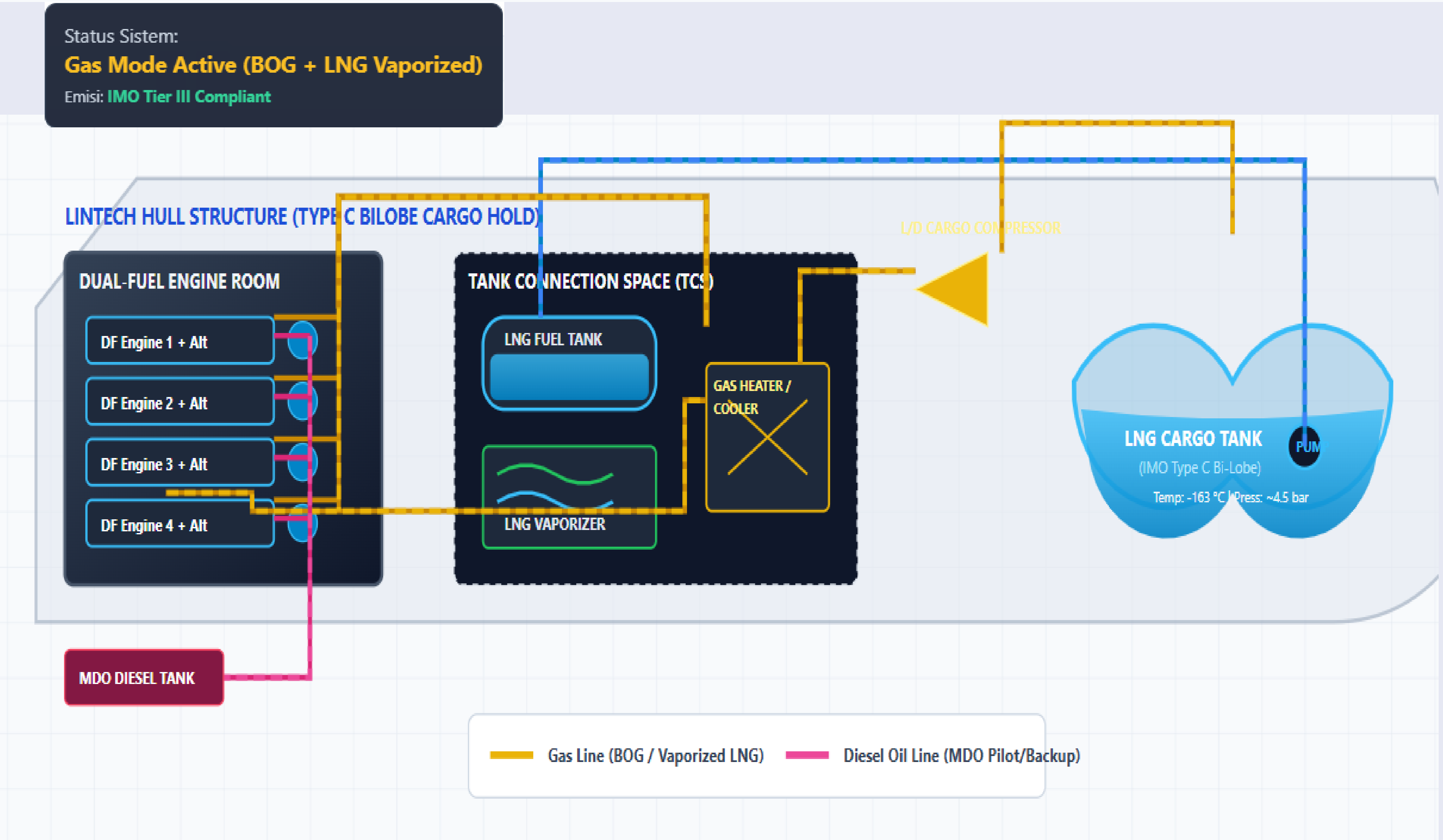
MACHINARY SYSTEMS



Machinery Systems	
Propulsion System	Electrical Propulsion System
Main Generator Engine	Dual Fuel Engine Output：796 kwm x 900min-1 x 4sets
Alternator	3ϕAC 440V Brushless Alternator Output：757kwe x 8P x 900min^{-1} 60Hz x 4sets
Propulsion Motor	3ϕAC 450V Induction Motor Output：950kw x 6P x 1200min^{-1} 60Hz x 2sets
Reduction Gear	2 sets
Propeller	**Controllable Pitched Propeller x 2 sets**

Dual-Fuel Diesel Electric (DFDE) propulsion system where multiple engine-alternator sets generate electrical power by burning either natural gas from the **Gas Supplied Unit (LNG)** or **Marine Diesel Oil**. This high-voltage electricity is routed to the **Main Switchboard** for optimal load distribution, which then drives the **Propulsion Motor & Reduction Gear** assembly. Finally, this mechanical torque turns the twin shafts of the **Controllable Pitch Propellers (CPP)**, allowing for precise speed and maneuvering control by adjusting the blade pitch without changing the shaft's rotational direction.

Dual-Fuel Propulsion System



The vessel's innovative dual-fuel propulsion system represents a breakthrough in maritime efficiency and environmental compliance. This advanced system is designed to normally operate on boil-off gas (BOG), while maintaining the capability to alternatively run on distillate fuel.

Primary Fuel: BOG

Utilizes natural boil-off gas from cargo, maximizing efficiency and reducing waste

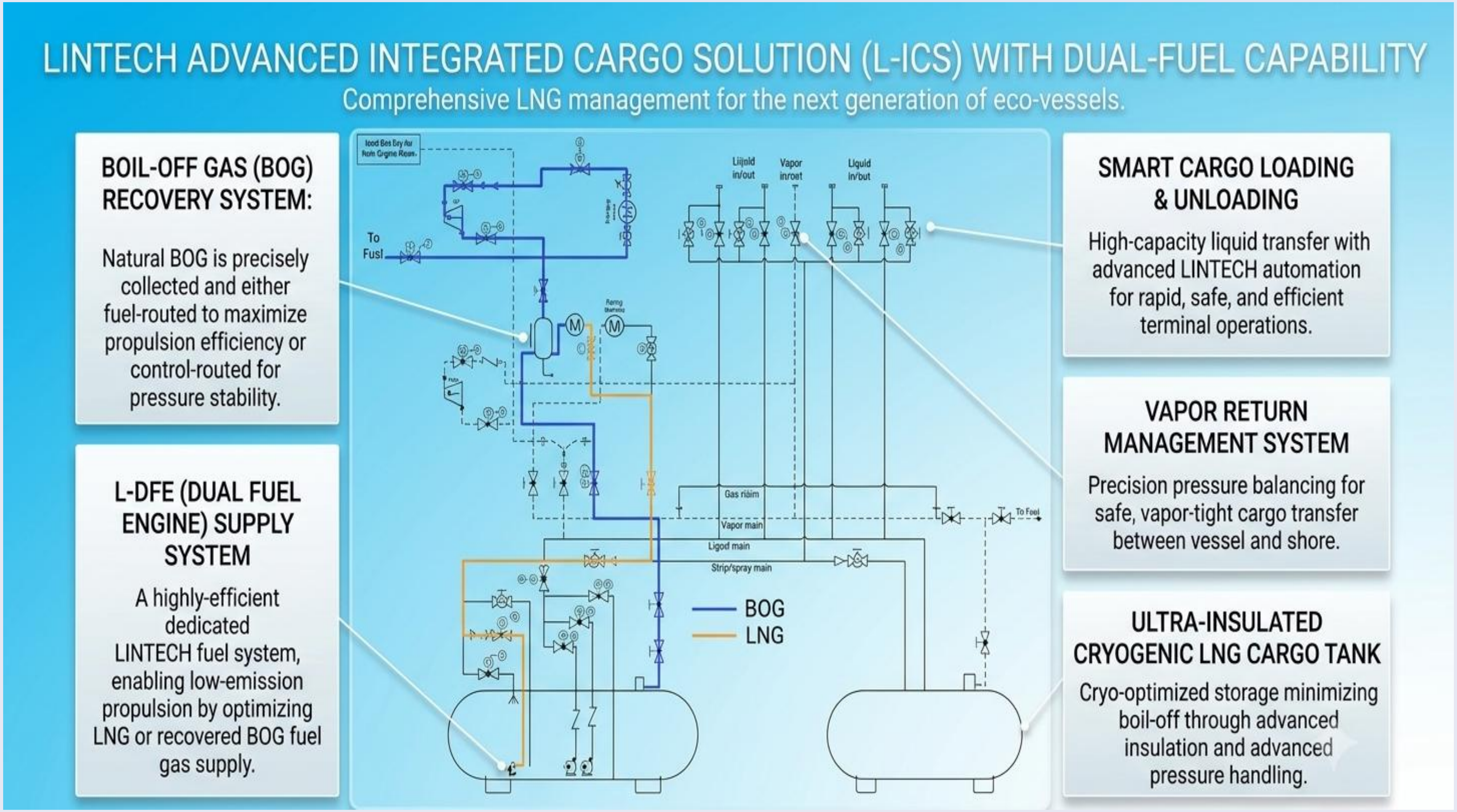
Alternative: Distillate

Backup fuel system ensures operational flexibility in all conditions

SECA Compliance

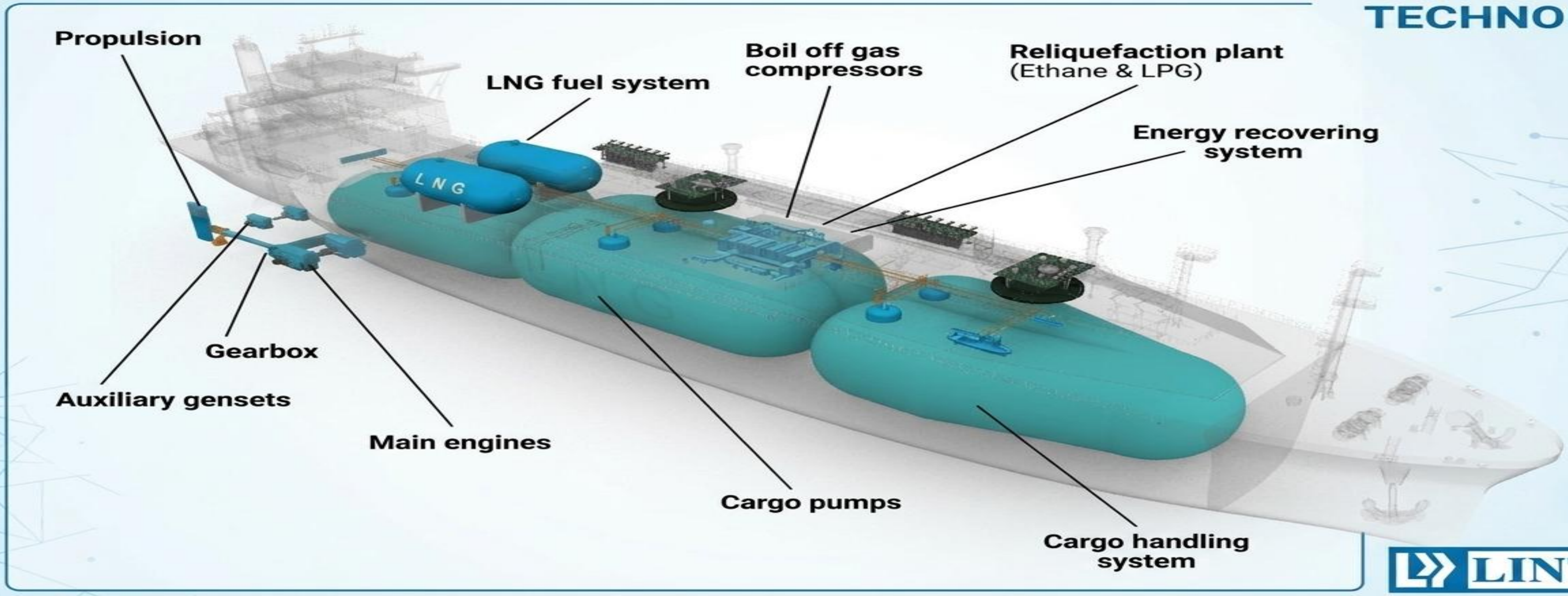
Meets sulfur emission control area Restrictions for environmental protection

PROCESS DIAGRAM & SYSTEM DESCRIPTION



INTEGRATED LNG CARRIER SOLUTIONS

LINTECH TECHNOLOGIES



Cargo Containment System

- **Twin Bilobe Type-C Tanks** Optimized geometry increases usable cargo volume in the hull by up to 30% compared to conventional single cylindrical tanks.

- **Superior Cryogenic Insulation** Built with high-strength 9% Nickel Steel or Stainless Steel, engineered to safely maintain cryogenic liquids down to -163°C.

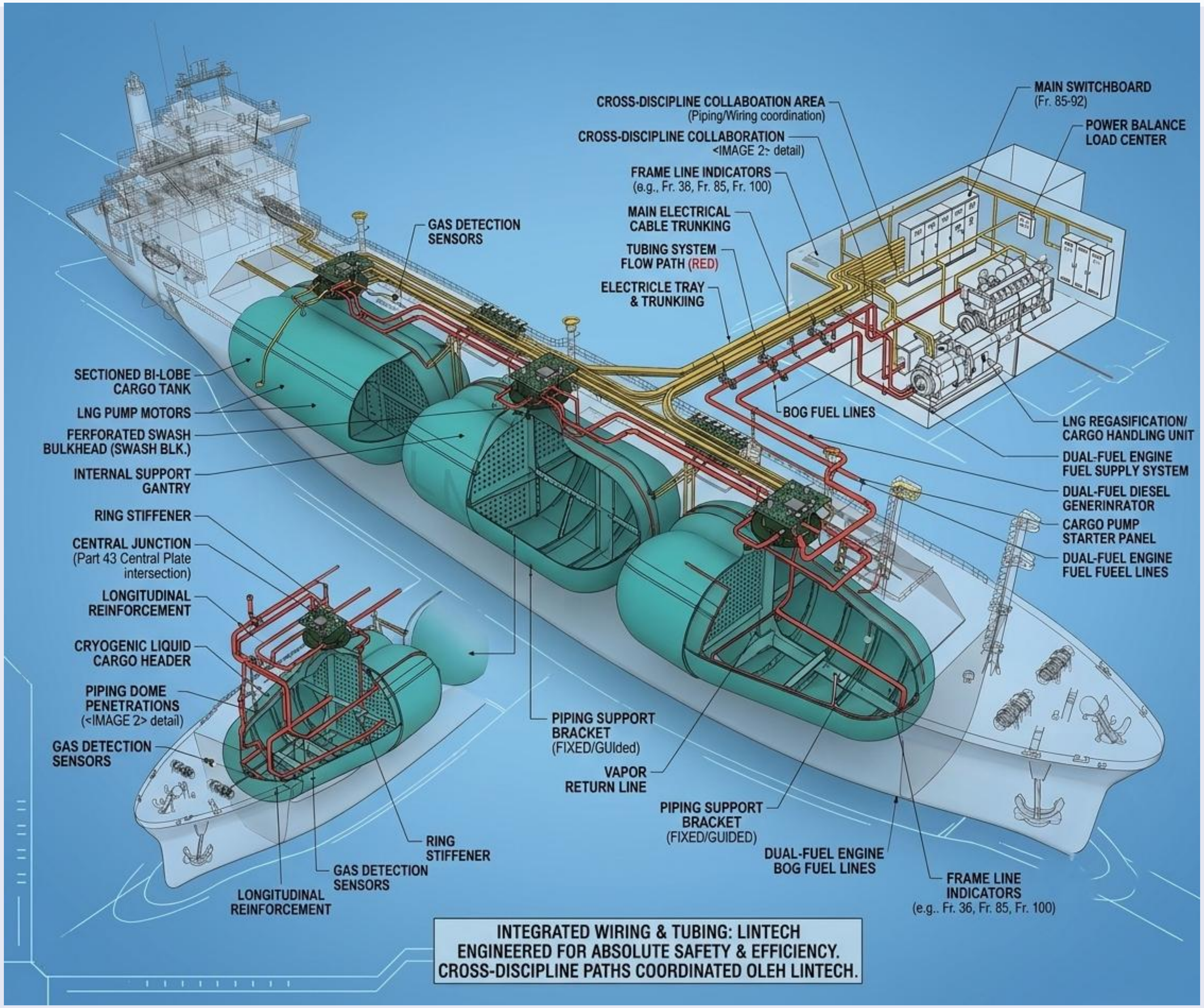
- **High Working Pressures** Prevents sloshing issues entirely and eliminates boil-off gas (BOG) venting during short voyages.

Anti-Sloshing Advantage

Unlike membrane systems, the pressurized Bilobe Type-C system is fully certified for **partial-filling levels**. This gives operators extreme flexibility for regional milk-run cargo operations without structural damage risks.

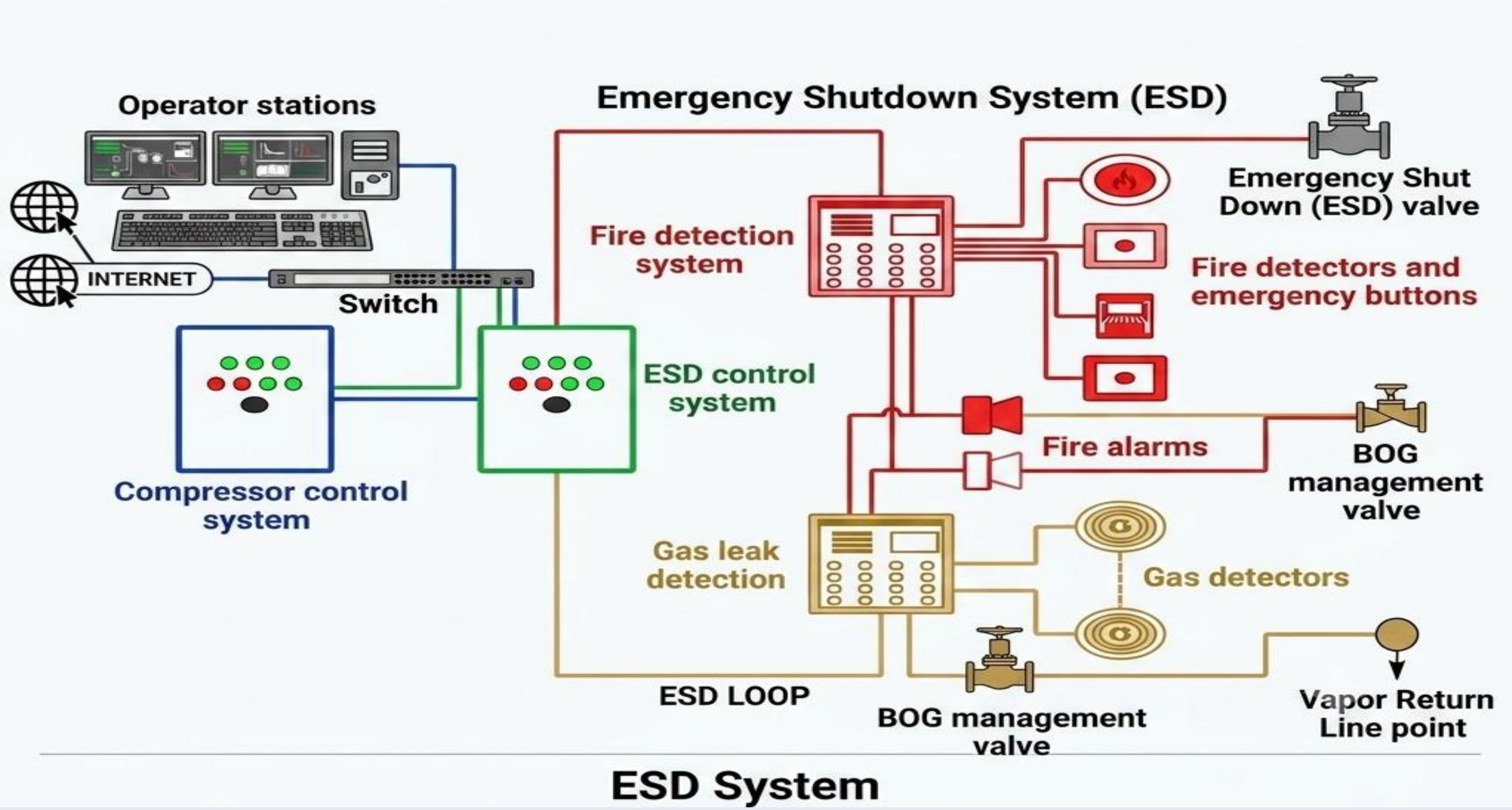
Design Pressure: Up to 4.5 bar g
Holding Time: Extended holding time with vacuum insulation technology.

ELECTRICAL AND TUBING SYSTEM



LINTECH ensures absolute operational safety through a highly optimized, cross-discipline **Electrical and Tubing System**. The high-integrity cryogenic piping stream (red) manages extreme thermal loads via specialized support brackets, while the robust electrical stream (yellow) seamlessly connects the main switchboard to critical LNG pump motors and gas detection sensors to safely route Boil-Off Gas (BOG) to the dual-fuel engine—*Engineered for Excellence, Quality Assured by LINTECH.*

EMERGENCY SHUTDOWN SYSTEM (ESD)

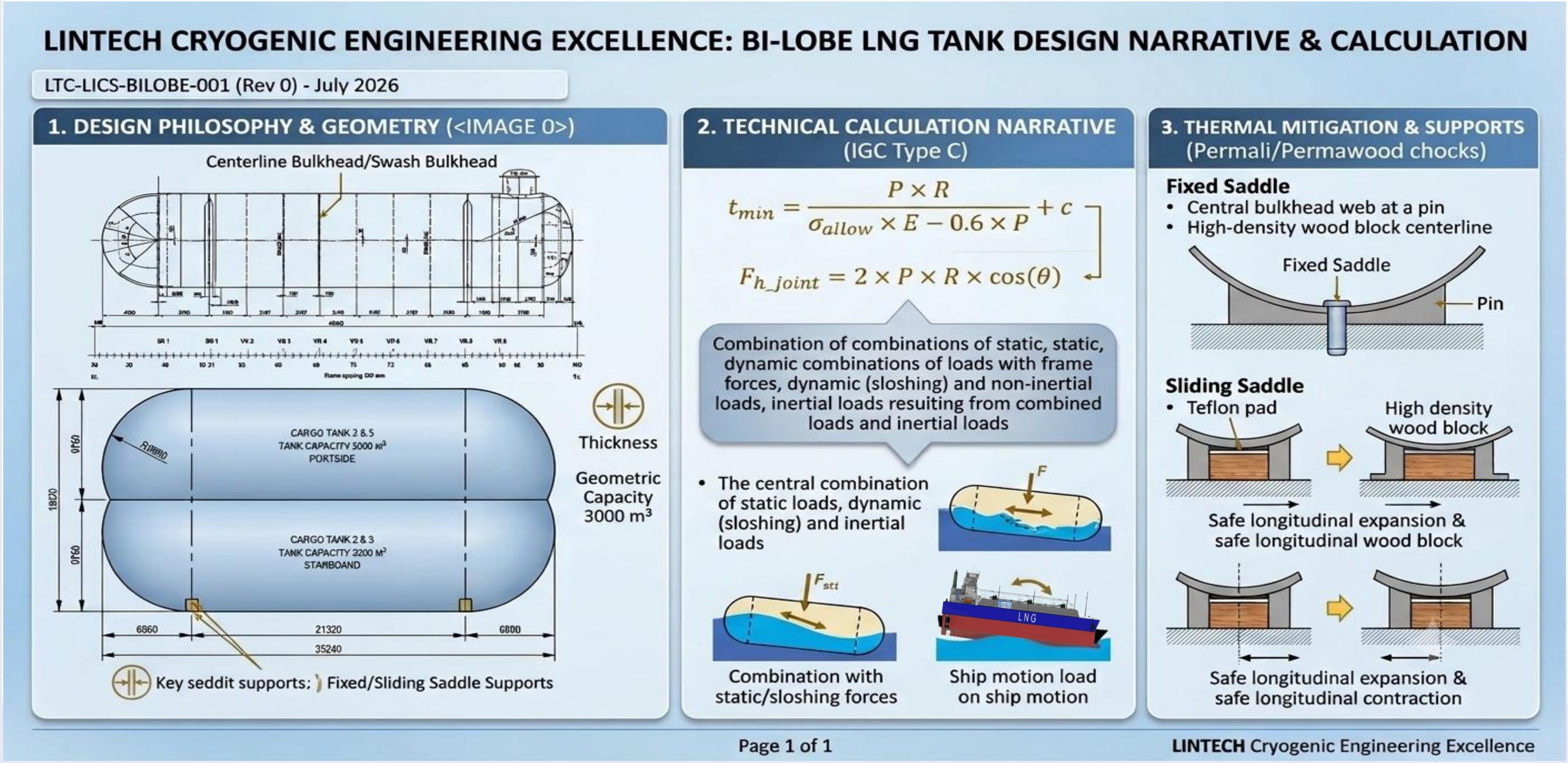


LINTECH provide design cryogenic piping and vapor return systems, install Emergency Shut Down (ESD) valve for rapid response, implement Boil-Off Gas (BOG) management to utilize excess gas as fuel, ensure compliance with IGF Code (International Code of Safety for Ships using Gases or other Low-Flashpoint Fuels)

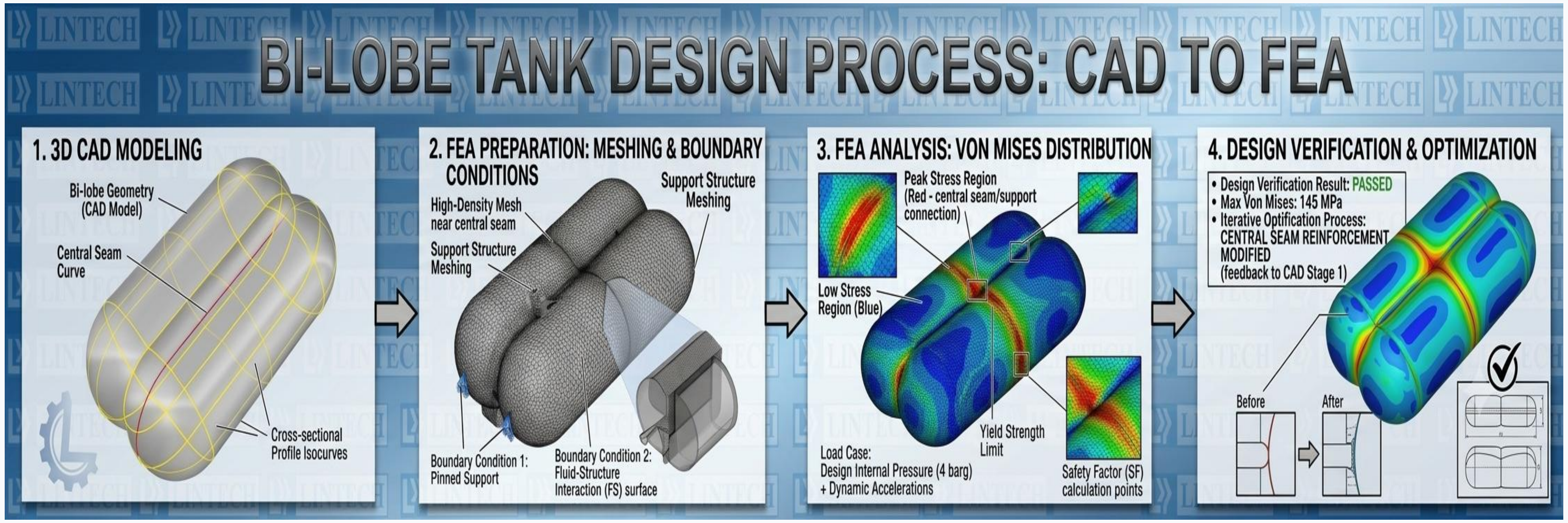
Design Parameter (6,000 m3 Tank)

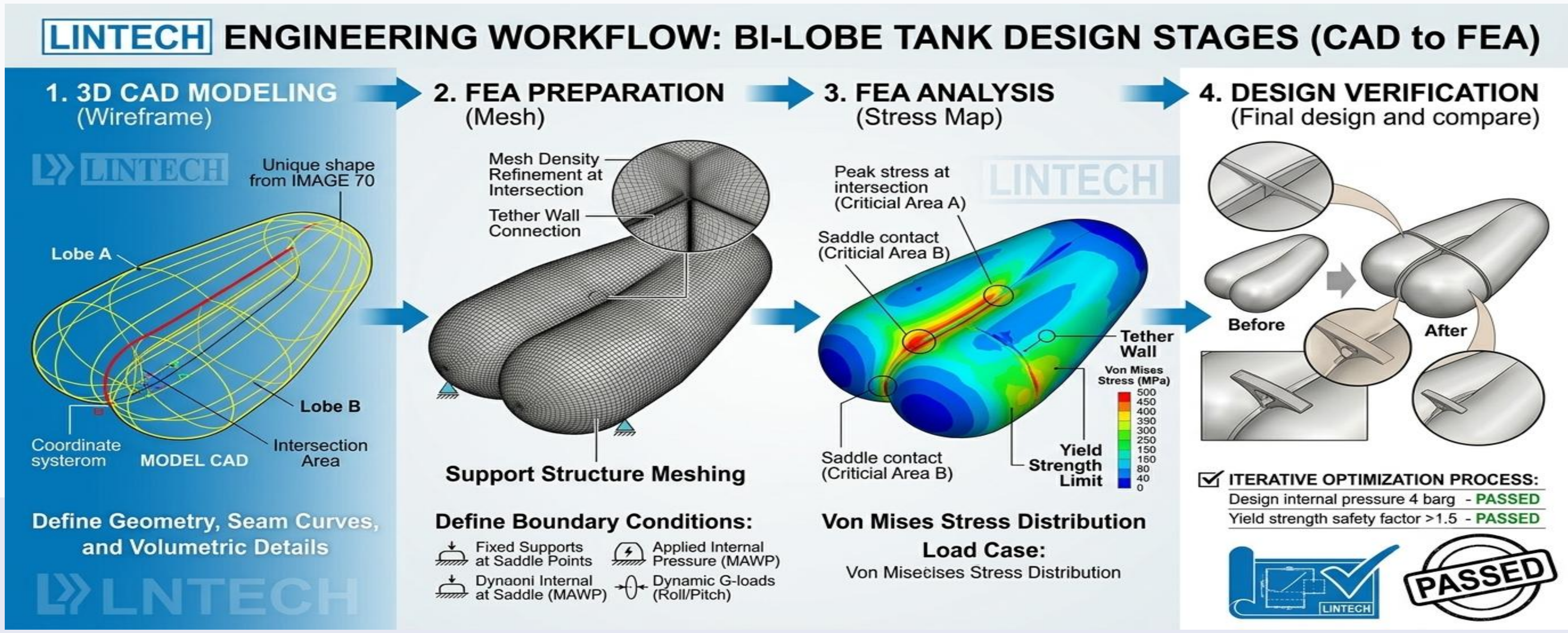
Cryogenic Inner Tank			Outer Tank		
Design Press. In/ext		5 bar / -	Design Press. In/ext		- / FV
Design Temp. In/ext		-192 / -192	Design Temp. In/ext		-10 / 60
Dimension	ID	16400 mm	Dimension	ID	17200 mm
	TL-TL	19200 mm		TL-TL	19200 mm
Tank Material		SUS A 240 Gr. 304	Tank Material		A 516 Gr.70
Thickness	Shell	36 mm	Thickness	Shell	32 mm - PWHT
	Elips. Head	30 mm (min. after forming)		Elips. Head	30 mm (min. after forming) - PWHT
Empty Weight			Empty Weight		
Max Allow Working Press.			Max Allow Working Press.		
Radiography		Full RT	Radiography		N/A
Geometric Capacity		6082 m3	Testing		Pneumatic Test

STRENGTH ASSESSMENT OF INDEPENDENT TYPE BI-LOBE TANKS



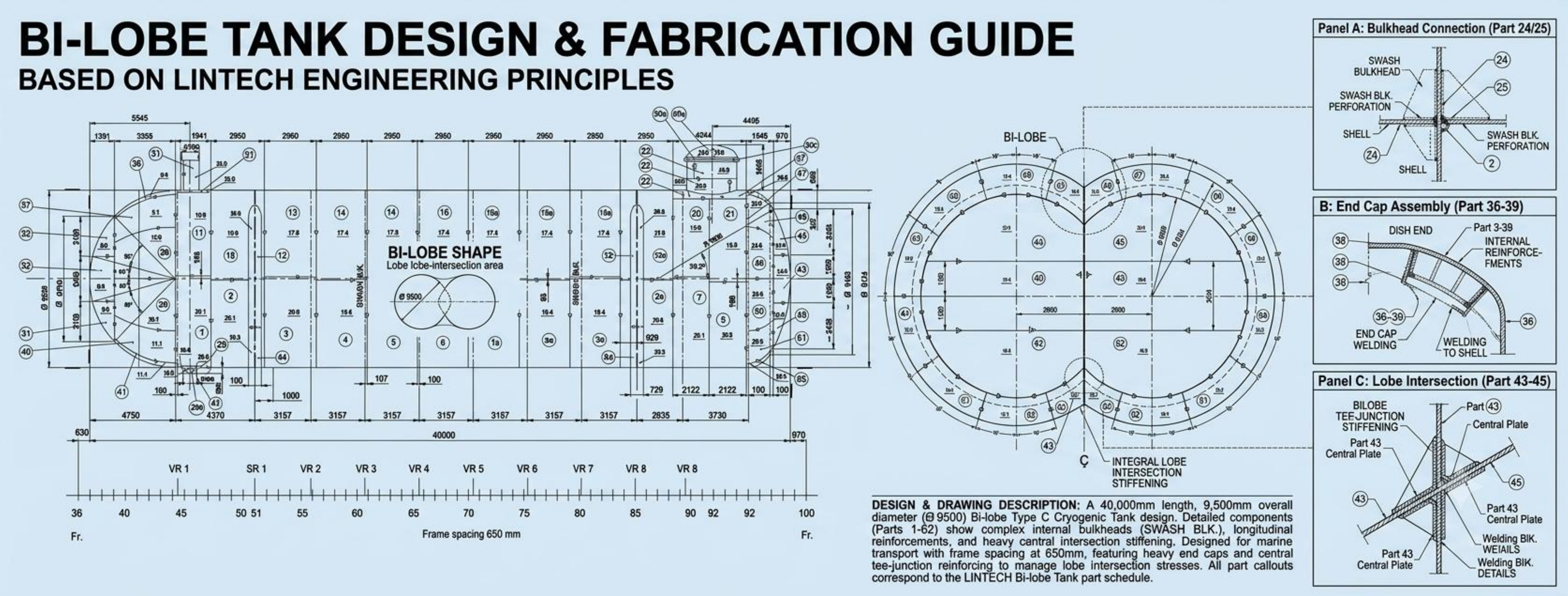
STRENGTH ASSESSMENT OF INDEPENDENT TYPE BI-LOBE TANKS





The bi-lobe tank design process begins with defining the complex geometry and volumetric details in a **3D CAD Model**. This model is then discretized into a refined finite element mesh with applied operational loads for **FEA Preparation**, allowing **FEA Analysis** to simulate structural behavior and map Von Mises stress distribution. Finally, iterative feedback loops use these results to optimize reinforcement and shell thickness during **Design Verification**, ensuring the finalized design passes all pressure and safety criteria.

LINTECH Engineering: Bi-Lobe Tank Design & Drawing



Every dimension, frame spacing, and internal bulkhead intersection shown is mathematically optimized to handle extreme thermal gradients and dynamic marine environments—engineered for absolute structural integrity by LINTECH.

BI-LOBE TANK PRODUCTION UNIT FABRICATION PROCESS

BI-LOBE TANK FABRICATION PROCESS AT LINTECH

CRITICAL STAGES: Dish End Forming, Beveling, Segment Assembly, Bulkhead Installation, SAW & TIG Welding, RT/UT Testing, Final Hydro-Testing.

MATERIAL SPECIFICATIONS (AS USED):

1. 5% NICKEL-STEEL (for lowest temperature zones)
2. 0.5% NICKEL-STEEL
3. HIGH STRENGTH STEEL (for saddles/supports)
4. STAINLESS STEEL

STAGE 1: MATERIAL PREPARATION

Materials: high-strength steel plates are prepared. Cutting paths are optimized for plasma cutting. Material sorting and stacking for fabrication steps. **Material:** steei plates are cut using a multi-torch CNC plasma table. Automated systems ensure precise tolerances. **Material:** after cutte, plates are stacked and prepared for forming operations.

"Delivering Precision, Ensuring Safety. Every Bi-Lobe tank fabricated is engineered for excellence and quality assured by LINTECH."

ENVIRONMENTAL CARE

PT LINTECH DUTA PRATAMA

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E-MAIL : admin@lintech.co.id   WEBSITE:
http://www.lintech.co.id ; http://www.lsf.co.id

LINTECH is fully committed to environmental sustainability through the provision of a **Green Passport** and **Zero Dumping** certification. Driven by our "Engineered for Excellence" approach, we integrate **Dual-Fuel** technology that utilizes **Boil-Off Gas (BOG)** from cargo tanks, alongside robust **protective cofferdams**, to deliver safe, highly efficient, and sustainable maritime solutions—*Delivering Sustainable Performance by LINTECH.*

Innovating Marine Solutions

We build highly customized cryogenic vessels and transport equipment tailored to your exact fleet operational footprint. Contact our engineering team to schedule a technical consultation.

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