

KIVI Kring Caribbean & KIVI HT-NL  
31-08-2023

# The development of the Eemshaven LNG Project



**EemsEnergyTerminal**

A thick, green, wavy line graphic that starts with a horizontal segment on the left, followed by three rounded humps, and ends with a horizontal segment on the right.

# About me

Claudio Patricio

48 years

Married

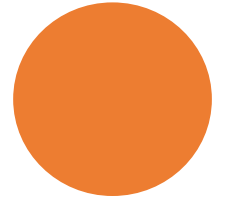
2 Daughters

Portuguese

Living 10 years in the Netherlands

Mechanical Engineer

Over 20 years experience in LNG



# What is LNG

- Liquid Natural Gas
- Main component is methane CH<sub>4</sub>



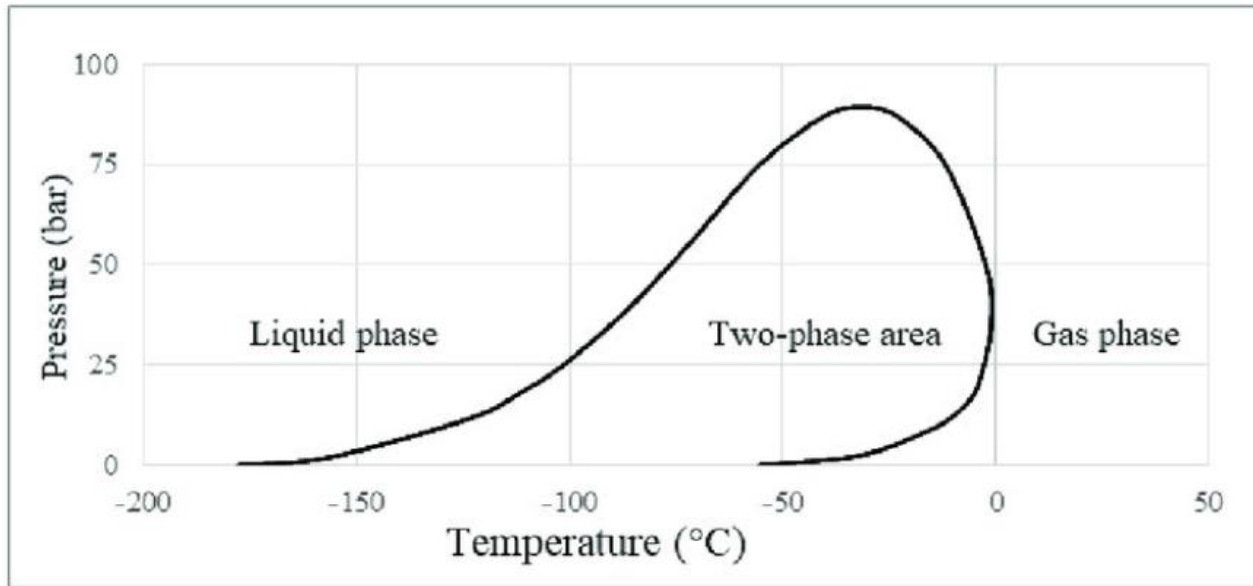
Component	Short symbol	Light LNG	Heavy LNG	LNG with high nitrogen content
		(%mol)	(%mol)	(%mol)
methane	C <sub>1</sub>	96.15	89.52	93.95
ethane	C <sub>2</sub>	2.46	6.89	2.65
propane	C <sub>3</sub>	0.91	2.42	0.78
iso-butane	i-C <sub>4</sub>	0.24	0.62	0.16
n-butane	n-C <sub>4</sub>	0.22	0.47	0.19
nitrogen	N <sub>2</sub>	0.02	0.08	2.27
Latent heat of vaporization	(kJ/kg)	508.82	505.58	502.04
Boiling temperature at normal pressure	(K)	112.0	112.5	104.9

Typical compositions of liquefied natural gases from various sources with basic parameters.



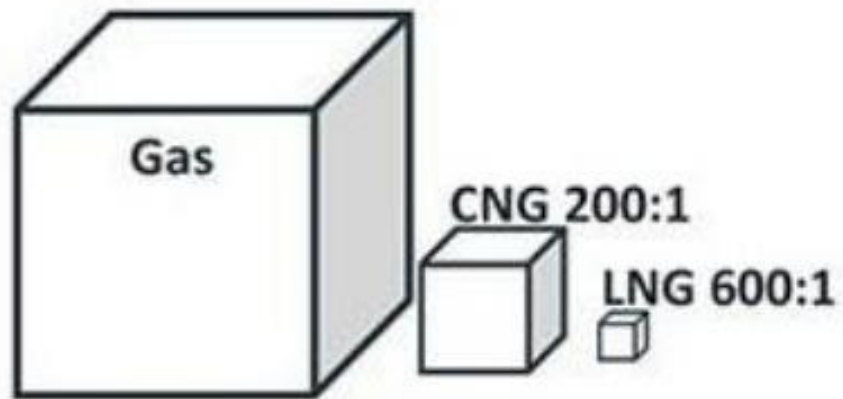
# What is LNG

- Temperature: -162 degrees Celsius.



# What is LNG

- The volume of LNG is around 1 to 600 of its volume in gas.



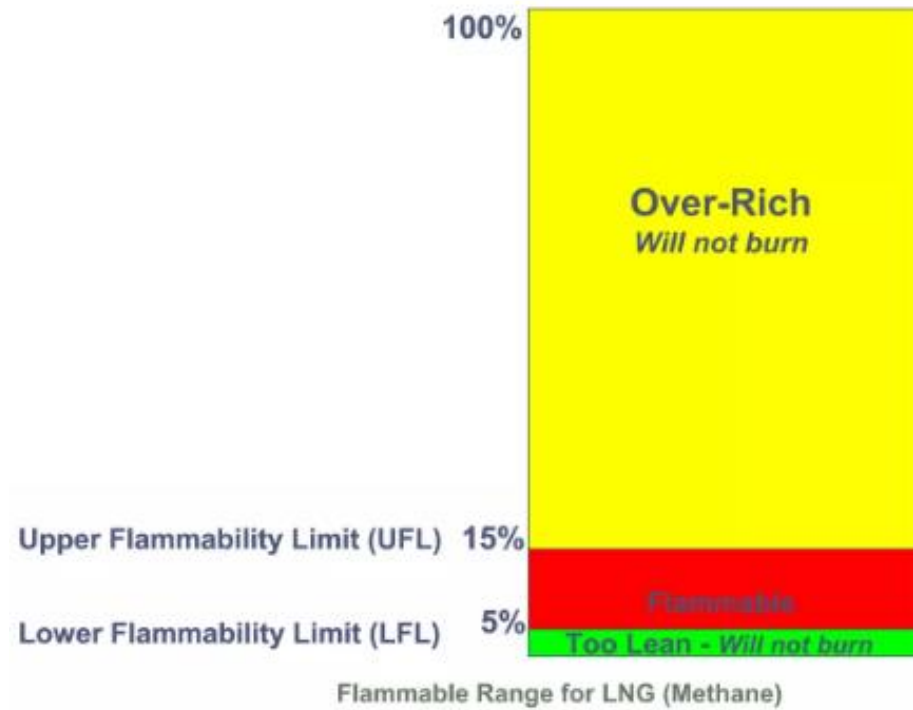
# What is LNG

- LNG is :
- Odorless
- Non-toxic;
- Non-corrosive
- colourless liquid.

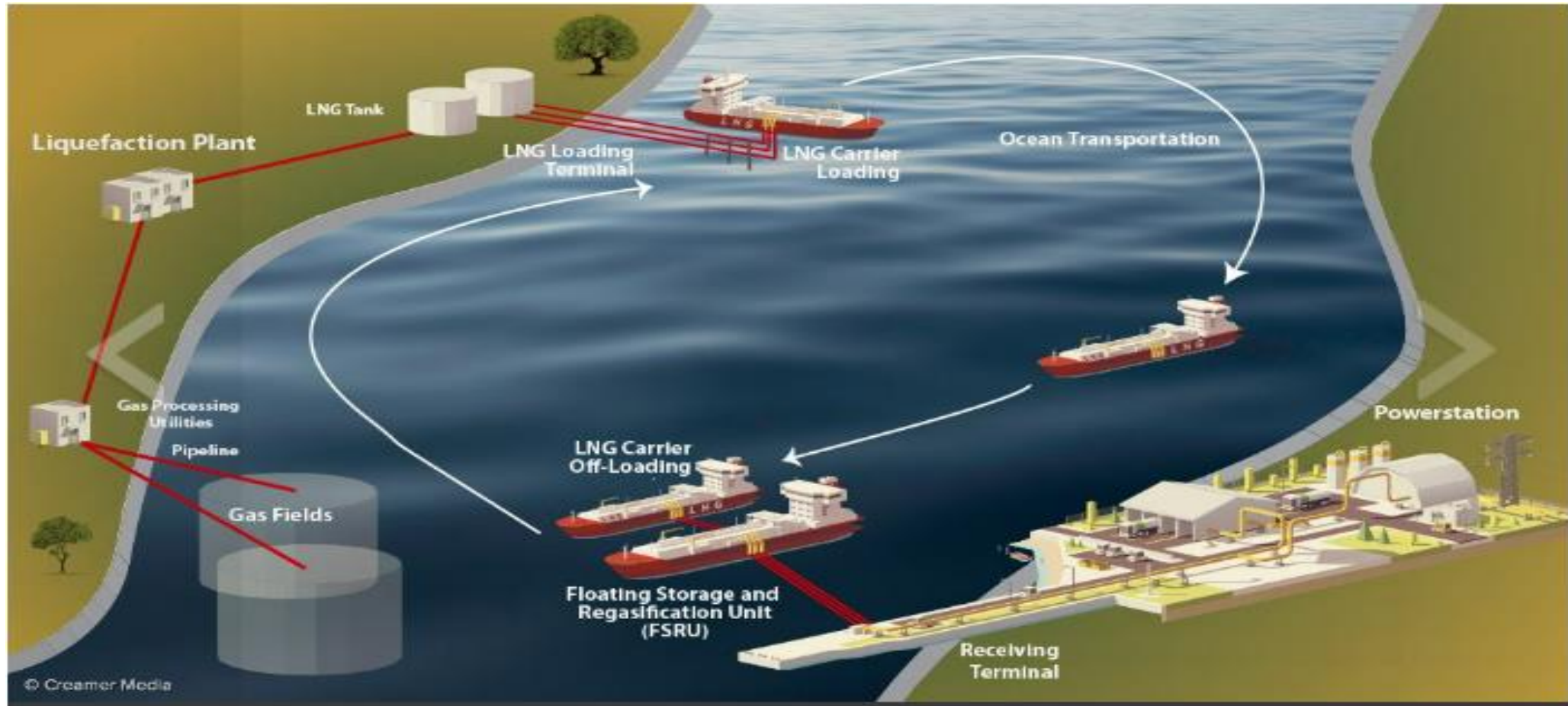


# What is LNG

- Flammable 5-15% concentration.



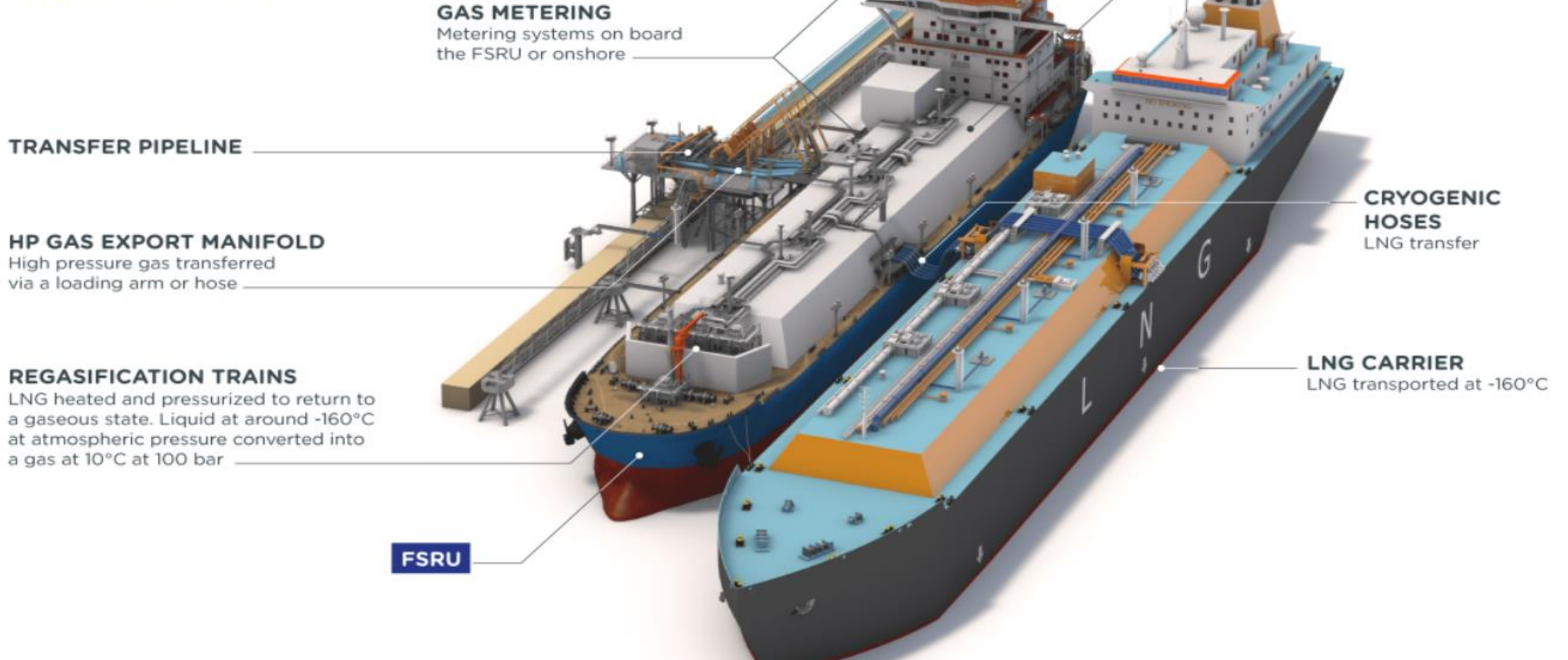
# LNG value chain



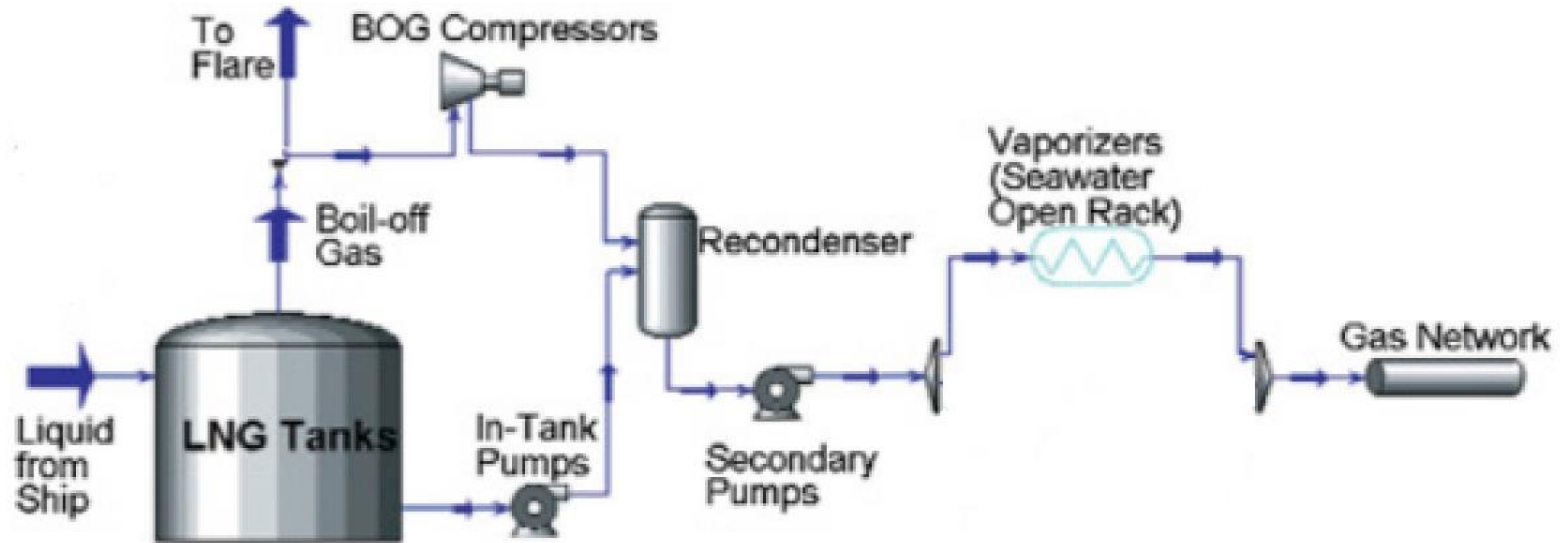


# How an FSRU operates

(Floating Storage Regasification Unit)



# LNG regas process



# EemsEnergyTerminal project

- War Russia – Ukraine.
- Independence of Russian natural gas and security of supply in the Netherlands and Europe.
- Floating Storage Regasification Unit (Two FSRUs).
- Eemshaven suitable because of its strategic location = sea in connection with supply.
- Possible feasible connection to the national gas network GTS.

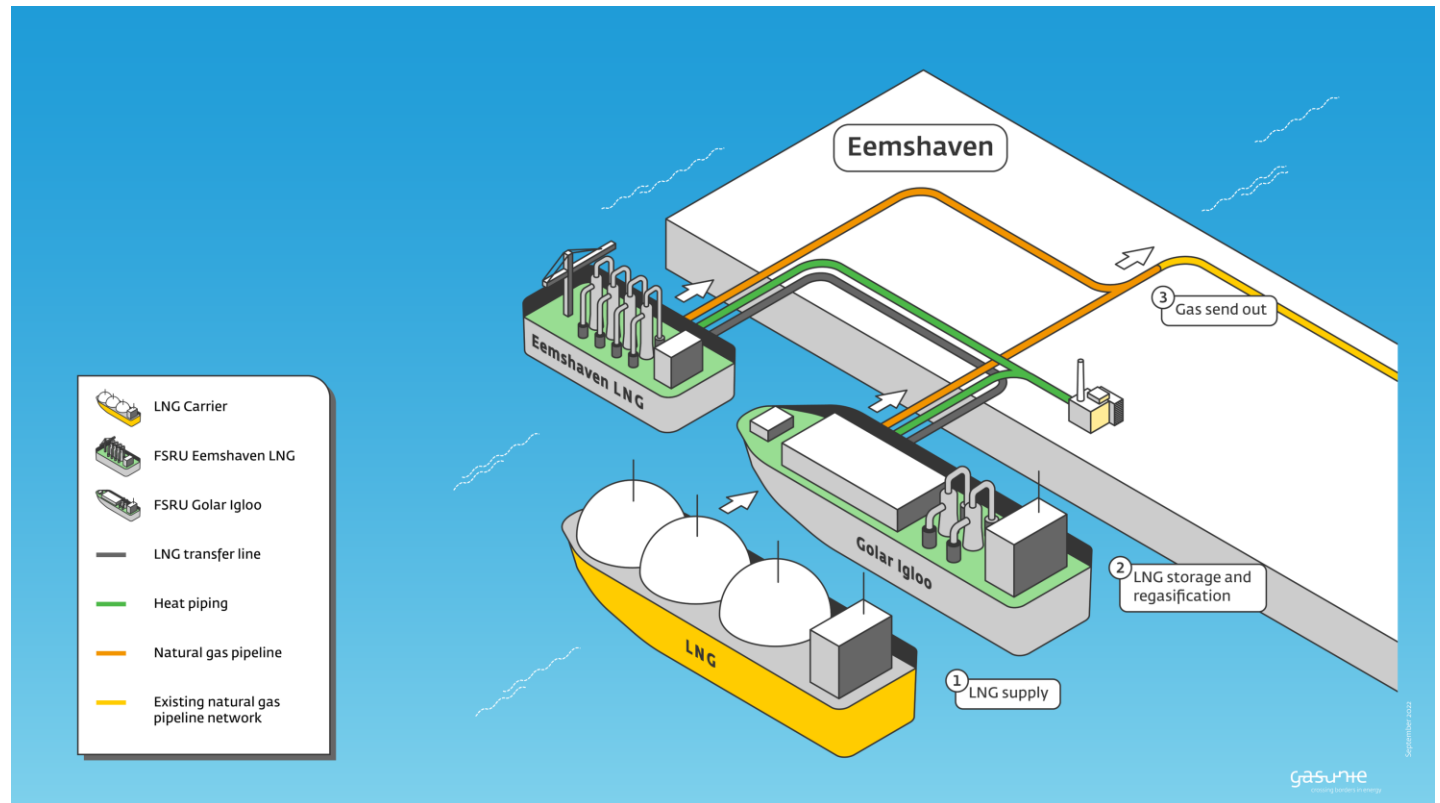


## Why LNG?

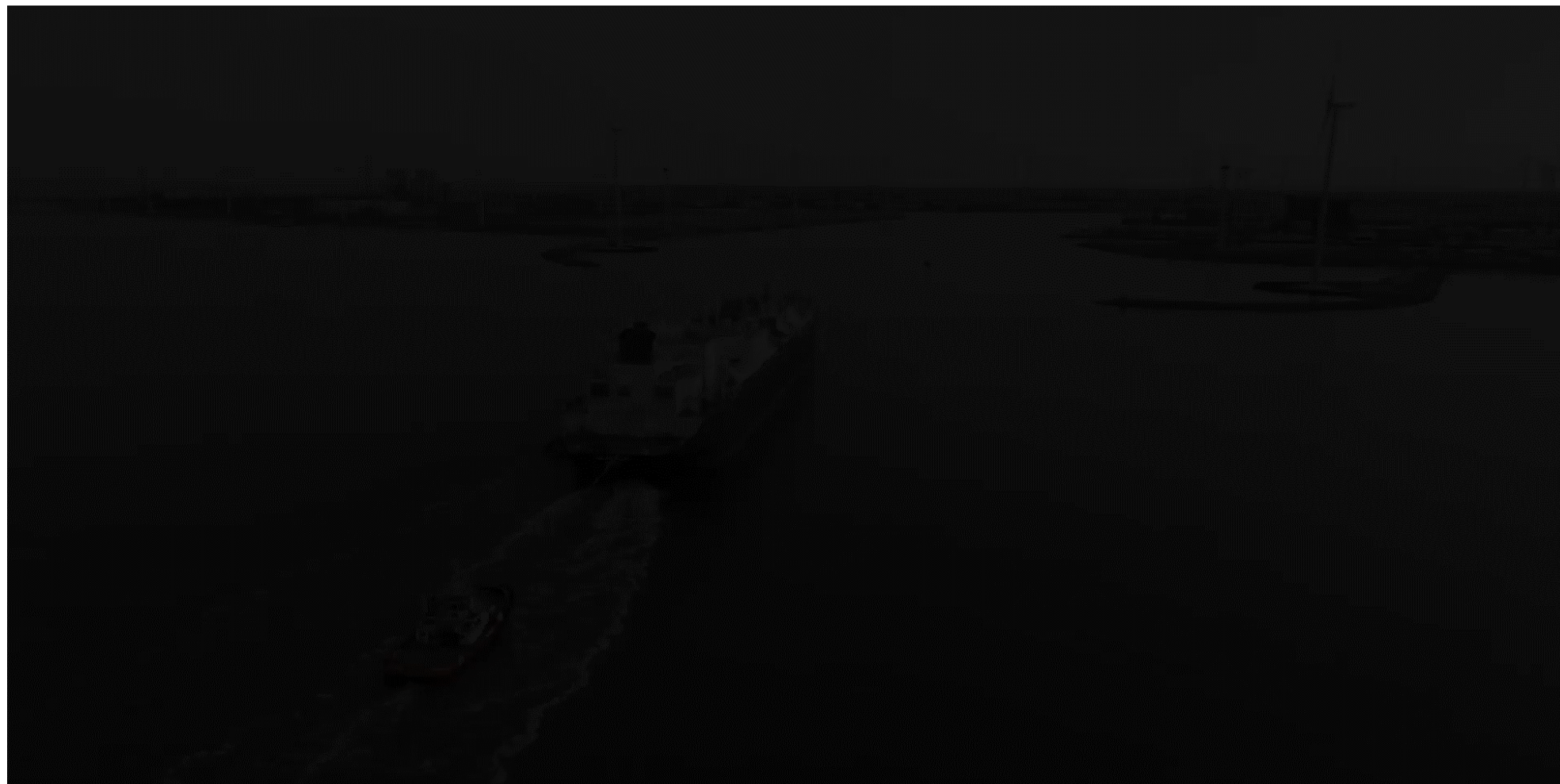
- Gasunie technical knowhow in NG and LNG.
- Market for delivery LNG.
- LNG safety track record.



# EET Eemshaven design February 2022



# Arrival FSRU September (video)

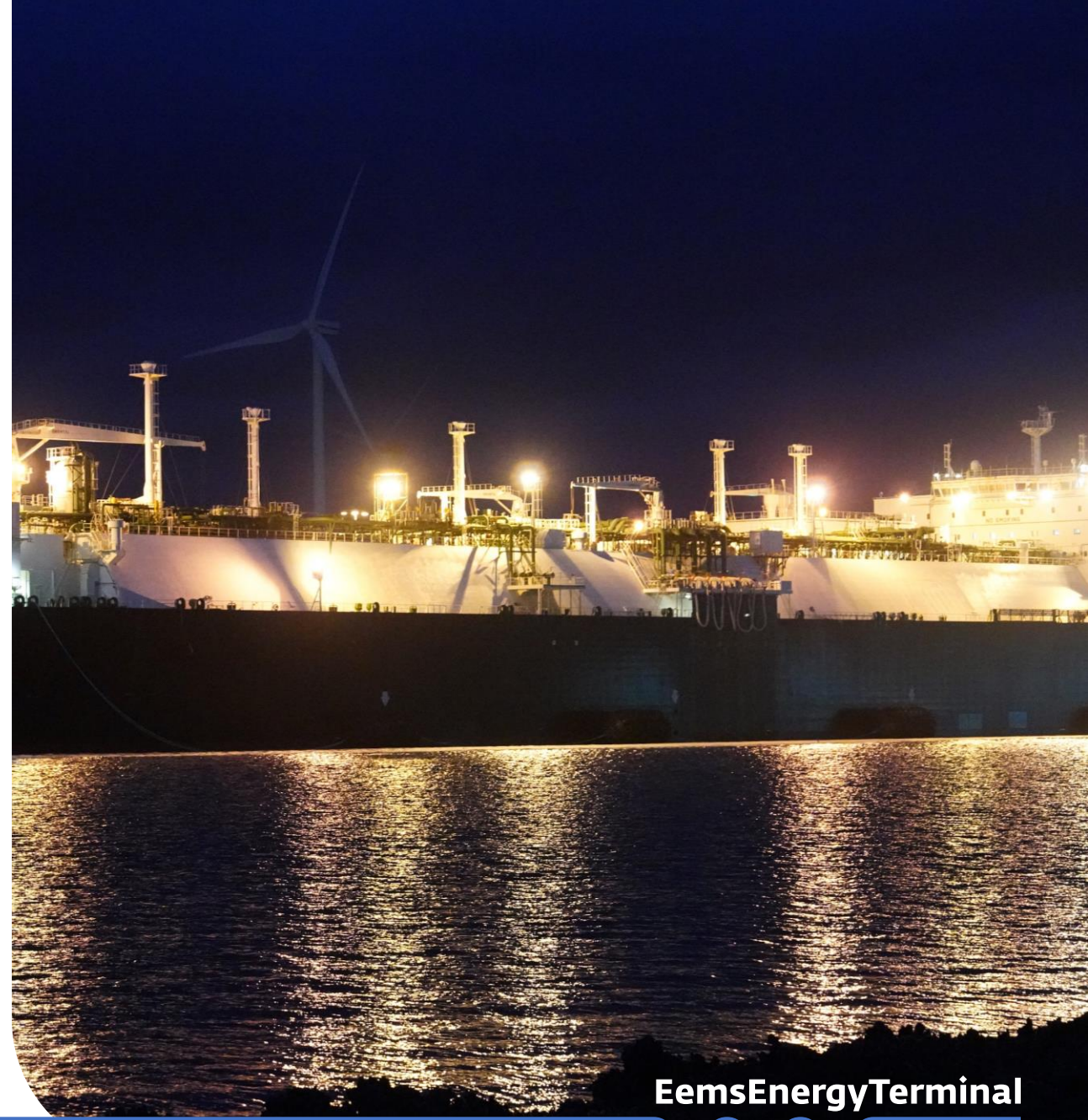


# EET project Phases

- Phase 1 - Export of Gas from Energos Igloo FSRU
- Phase 2 - Heat provision to Energos Igloo FSRU
- Phase 3 – Exmar Eemshaven LNG Gas send out and hot water supply
- Phase 4 - Power connection to Enexis of Energos Igloo and Eemshaven LNG FSRU's

# Facts and challenges

- From idea to realization in 6 months (record time)
- More than 50 partners and 500 contractors
- 2.5 km underground natural gas pipeline towards the existing network
- 170,000 m<sup>3</sup> LNG (storage capacity)
- Annually capacity 8 bcm (10 bcm near future)
- Rental Period FSRU's
- Contracts w/customers
- Prepare quay / regas / SIMOPS
- Permitting
- 8 September 2023 festive ceremony
- First gas in the network in mid-September
- End of November / beginning of December full capacity





# EET 50<sup>th</sup> cargo

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The World's Premier LNG Platform

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## Gasunie: Eemshaven LNG terminal gets 50th cargo

By LNG Prime Staff

August 10, 2023


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*Image: EemsEnergyTerminal*

Dutch gas grid and LNG terminal operator, Gasunie, said that the FSRU-based LNG import facility in the port of Eemshaven has received its 50th shipment since September last year.

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gasunie  
crossing borders in energy

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Thank  
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