

## GAS CARRIER EXPERIENCE

LNGC “Excalibur” interconnected with an FSU “Tango” forming a floating LNG export terminal for Eni Congo.

**ICE Scope of Work:**

Onboard survey including laser scanning, basic design, MTO, detail design, yard supervision, inclining tests, various Class and regulatory matters, etc.

Client: Exmar, Belgium

Shipyard: Drydocks World, Dubai

Year: 2022 -24



**Project for afloat production of green H2 and Ammonia for an international consortium.**

Year: 2024 -25

Picture courtesy SwitchH2 B.V.



**20,000 cbm Shallow Draft LNG Carrier**

Year: 2017 -18

Client: Marine Project Department of an Oil Super-major

**ICE Scope of Work:**

Concept design for hull and marine systems for distribution of LNG in restricted ports.





*Class: DNV*

### 400,000 cbm Generic Ammonia FSO Vessel (NH3-400-SM)

Year: 2023

Developed by ICE as a platform for high-capacity ammonia storage and offloading.

Effective management of BOG (boil of gas) either via reliquefaction or by using it as fuel.

Low-pressure IMO type A containment system.

### 84,500 cbm LPG & Ammonia Carrier

Year: 2010

Client: Weir LGE Process; Shipyard: Sasebo Heavy Industries (SSK), Japan

#### *ICE Scope of work:*

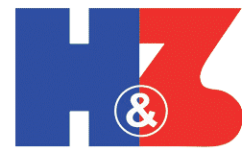
Basic design for hull and cargo tanks and detail design for independent cargo tanks for a 84,500 cbm LPG carrier

2017: Design updated to new IGC Code rules and Class NK: NS\* (LGC 2G, SPC-WBT) (ESP) (IWS) (PSCM), MNS\*, NOx-III

2022 -23: ICE has developed versions of 30,000 and 50,000 cbm of this design.



*Class: ABS*



### Large LNG Carrier Study

Year: 2009

Client: Hudong-Zhonghua Shipbuilding Co. Ltd., China

#### *ICE Scope of work:*

Type evaluation and propulsion configuration studies for a new class of LNG Carriers.

In cooperation with Bernhard Schulte Shipmanagement (BSM) Isle of Man & Shanghai.



### 154,500 cbm dual-fuel-electric LNG Carrier

Year: 2004 -05

Shipowner: Gaz de France

Shipyard: Alstom Chantiers de l'Atlantique, France

(hull N32)

Class: BV

#### *ICE Scope of Work:*

Workshop drawings (Hull) - Tribon



### 7,500 cbm LNG/Ethylene/LPG Carrier

2006

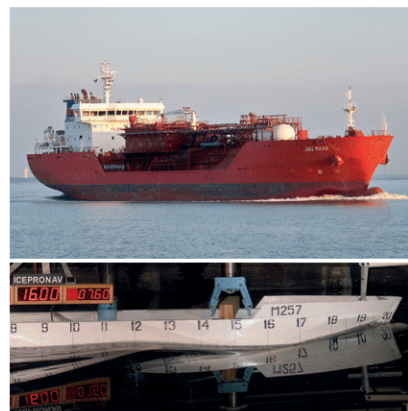
Client: Tractebel Marine Engineering  
Germany  
Owner: Anthony Veder, Netherlands  
Shipyard: Remontowa Shipyard,  
Gdansk

#### ICE Scope of work:

Basic design for steel structure, piping  
Tank test (resistance & selfpropulsion  
tests, wake measurements - azimuth  
thrusters)



*Coral Methane. The LNG carrier was converted to bunkering vessel in 2019.*



### 8,000 cbm LPG/Ethylene/Ammonia/VCM Carrier

2005

Client: Tractebel Marine Engineering Germany  
Shipyard: Sekwang Heavy Industries Co. Ltd., Korea  
Owner: Lauritzen Kosan AS, Denmark  
Class: BV

#### ICE Scope of work:

Basic design for hull & superstructure (machinery and piping systems)  
Local vibration analysis - superstructure & ER area.



*Isabella Kosan - 8,000 cbm LPG/Ethylene/Ammonia/VCM Carrier*

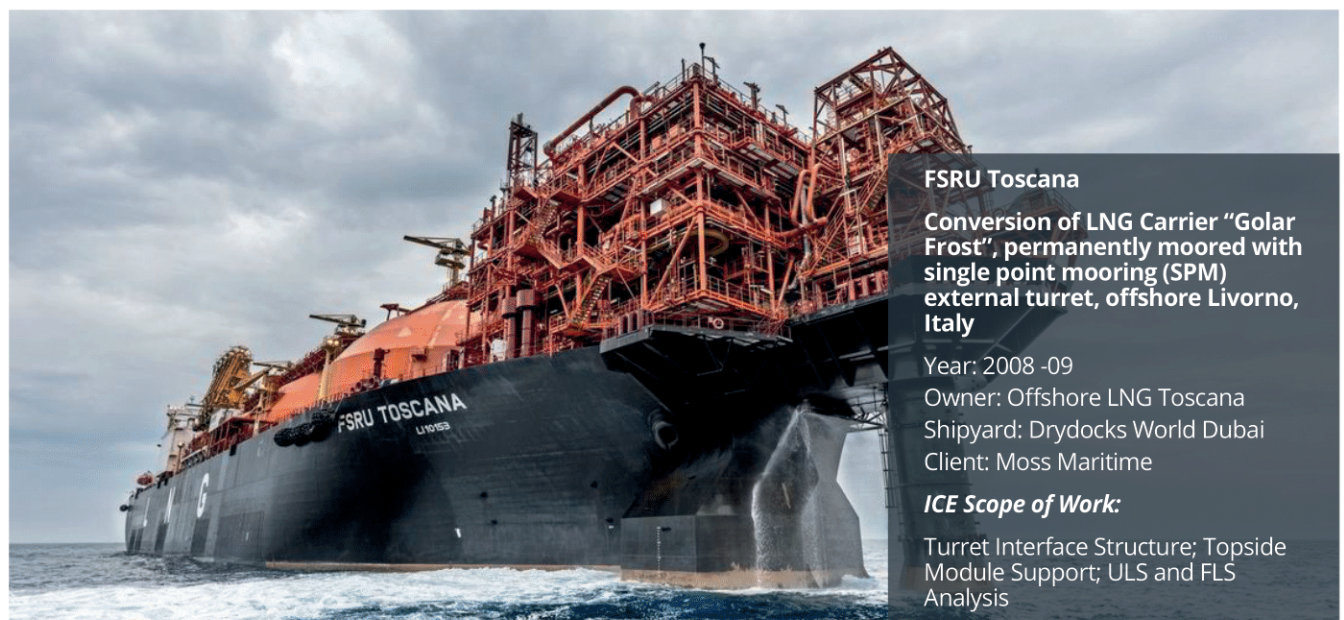
### 10,000 cbm LPG Carrier

2006

Shipyard: INP Heavy Industries,  
Korea

#### ICE Scope of work:

Full basic design for steel structure -  
AutoCAD  
Towing tank tests



#### FSRU Toscana

Conversion of LNG Carrier "Golar Frost", permanently moored with single point mooring (SPM) external turret, offshore Livorno, Italy

Year: 2008 -09

Owner: Offshore LNG Toscana

Shipyard: Drydocks World Dubai

Client: Moss Maritime

#### ICE Scope of Work:

Turret Interface Structure; Topside  
Module Support; ULS and FLS  
Analysis



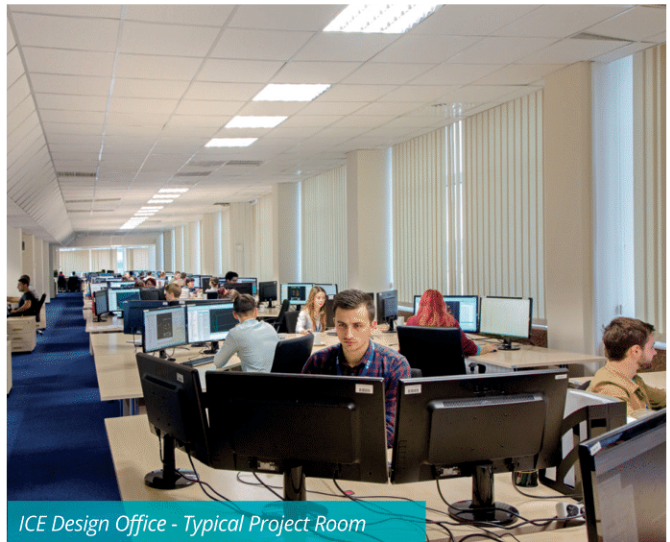
# ICE GROUP CAPABILITIES AND RESOURCES

As a leading European ship design company, ICE has been involved in various LPG and LNG projects including conversion of LNG carriers to Floating Storage and Regasification Units ("FSRU").

The role of ICE is to stay abreast of leading technologies and to integrate the systems and products of specialist suppliers of process and containment technology into a holistic ship design to provide a safe and cost-effective solution for its clients. This includes ships using LNG for propulsion, as well as "LNG ready" vessels.



ICE Main Design Office



ICE Design Office - Typical Project Room



10,000 cbm LPG model undergoing tests in ICE's 280 m long ITTC-approved towing tank. The tests were part of a project developed in 2006 in cooperation with Tractebel Marine Engineering.



## ENGINEERING CERTAINTY

International Contract Engineering Limited, 19-21 Circular Road, Douglas, Isle of Man, IM1 1AF British Isles  
Tel: +44 (0)1624 623 190 | Fax: +44 (0)1624 628 297 | [www.icedesign.info](http://www.icedesign.info)  
ICE Engineering Services UK Limited, UK Registration no. 05981929/2006

With a 55-year track record and an annual output having exceeded 700,000 professional engineering man-hours, the International Contract Engineering (ICE) Group is Europe's largest independent ship design consultancy. We provide high-calibre multi-discipline design services to yards and owners in the commercial shipping, defence and offshore energy industries, ranging from conceptual studies and Class drawings to detail design and production information. We cover a full range of naval architecture and marine engineering disciplines such as hydrodynamics, structural, mechanical, piping, electrical, instrumentation, outfit and HVAC. Our experience includes gas carriers, passenger vessels, navy and coast guard ships, chemical tankers, drill ships, FSO/FPSOs and a range of other vessels. We also have available proprietary designs that can be adapted to clients' requirements.

With our head office in the Isle of Man and engineering facilities in Romania and Croatia, we provide high quality design and engineering at very competitive prices.