TGTC-3

Date: 05.06.2014

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OUTLINE

1. Small-Scale LNG Market Introduction
2. The Connect LNG technology (the UBS)
3. Preliminary results from Sintef Energy Research

ENABLING LNG TERMINALS

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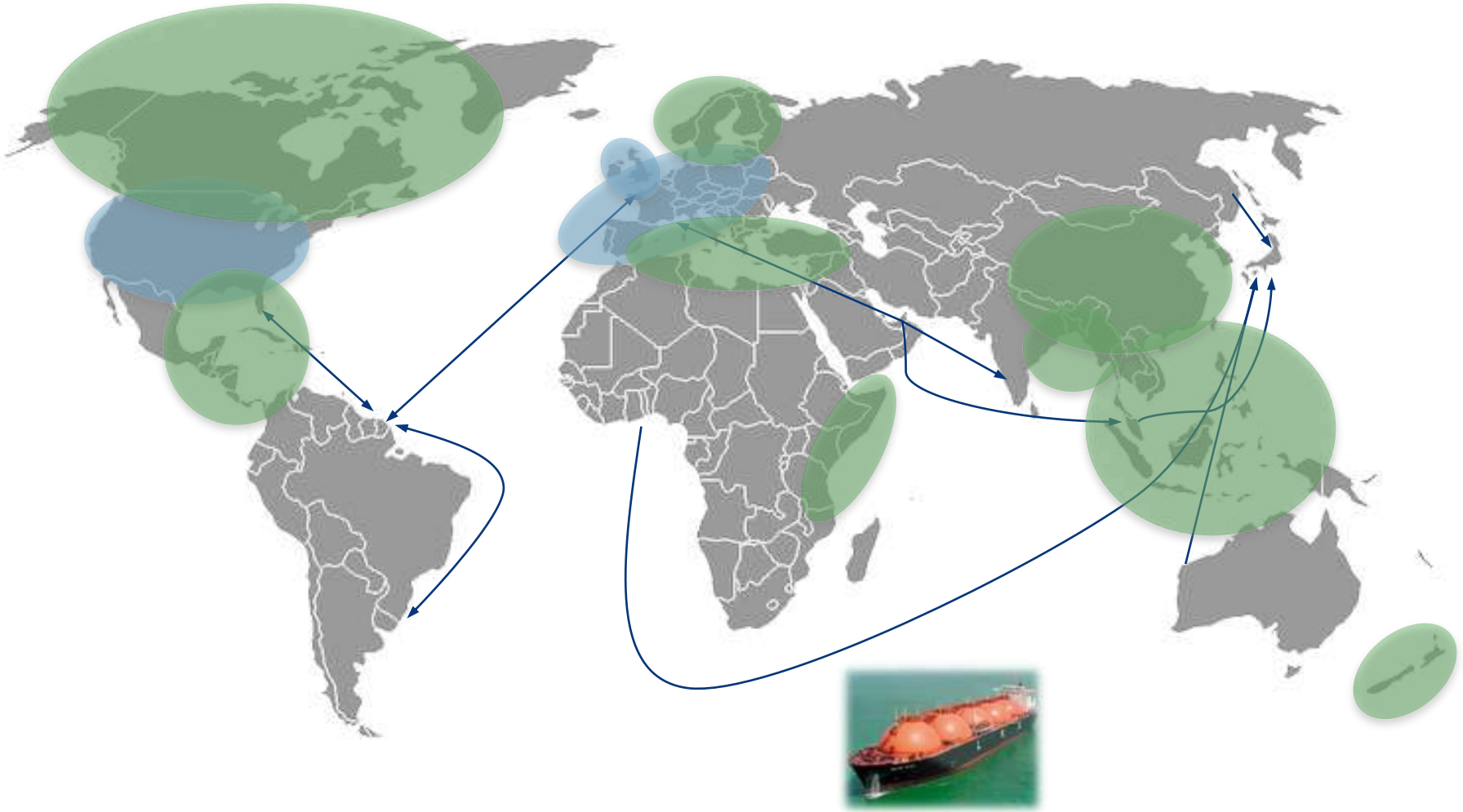
TRADING ROUTE



For illustration purposes only. Not necessarily actual trading routes.

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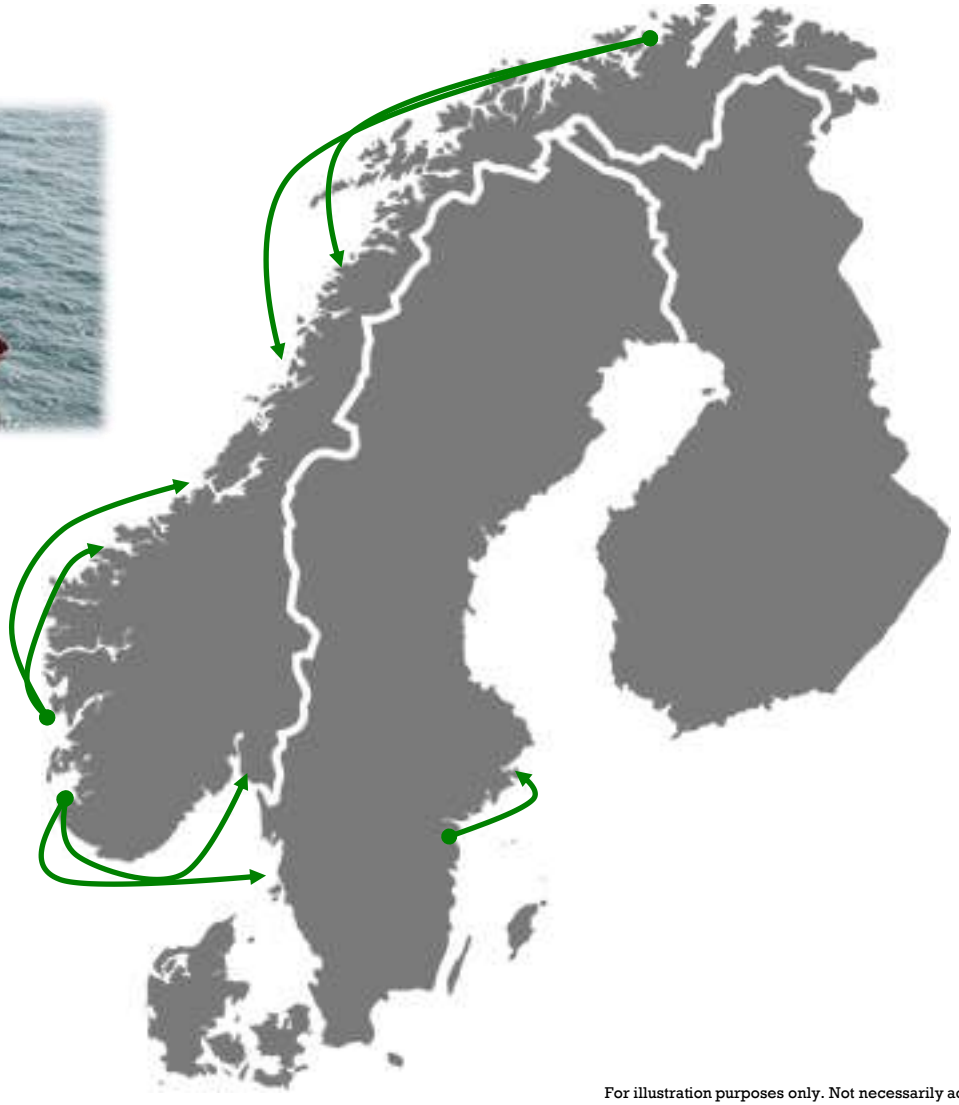
Small-Scale



For illustration purposes only. Not necessarily actual trading routes.

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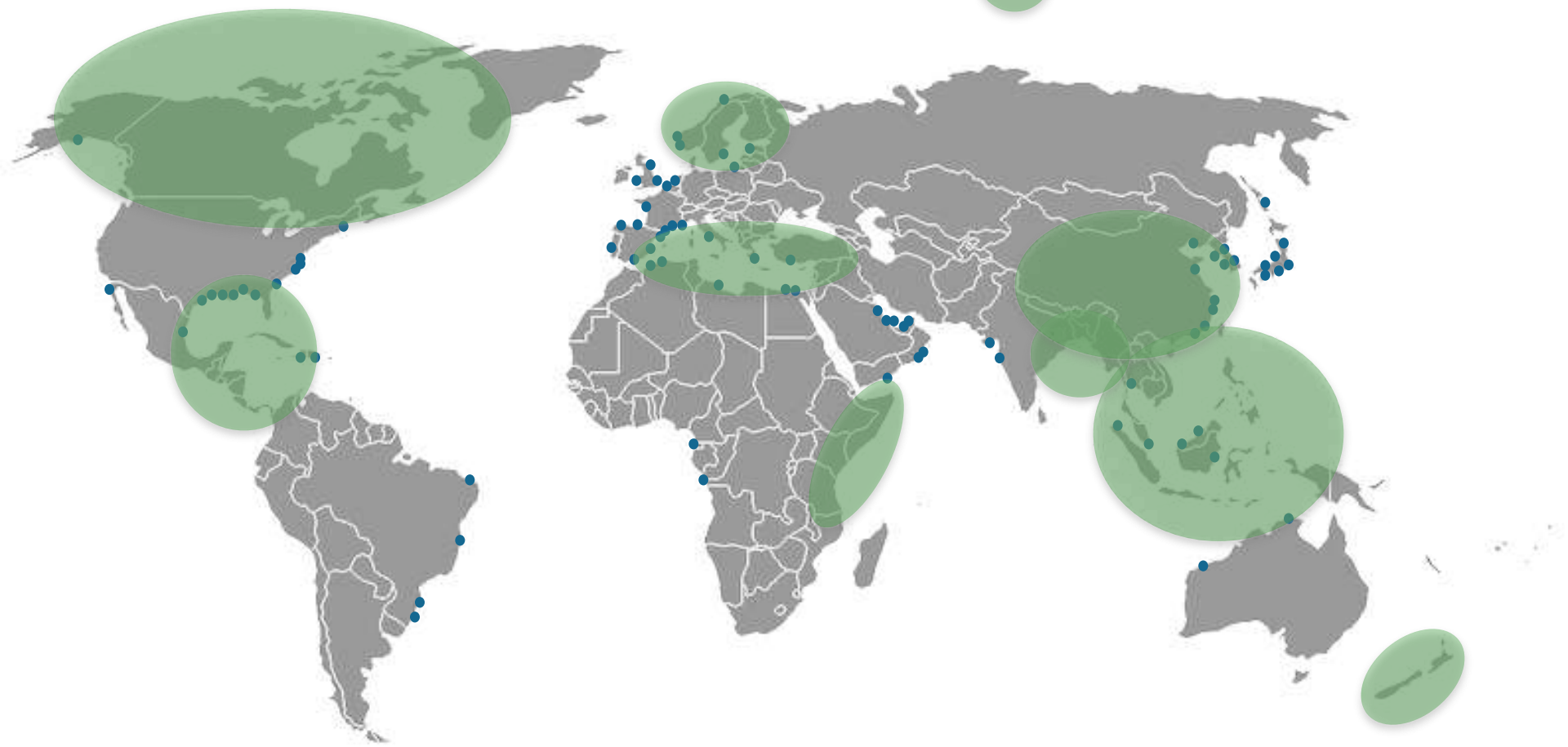
EMERGING MARKET



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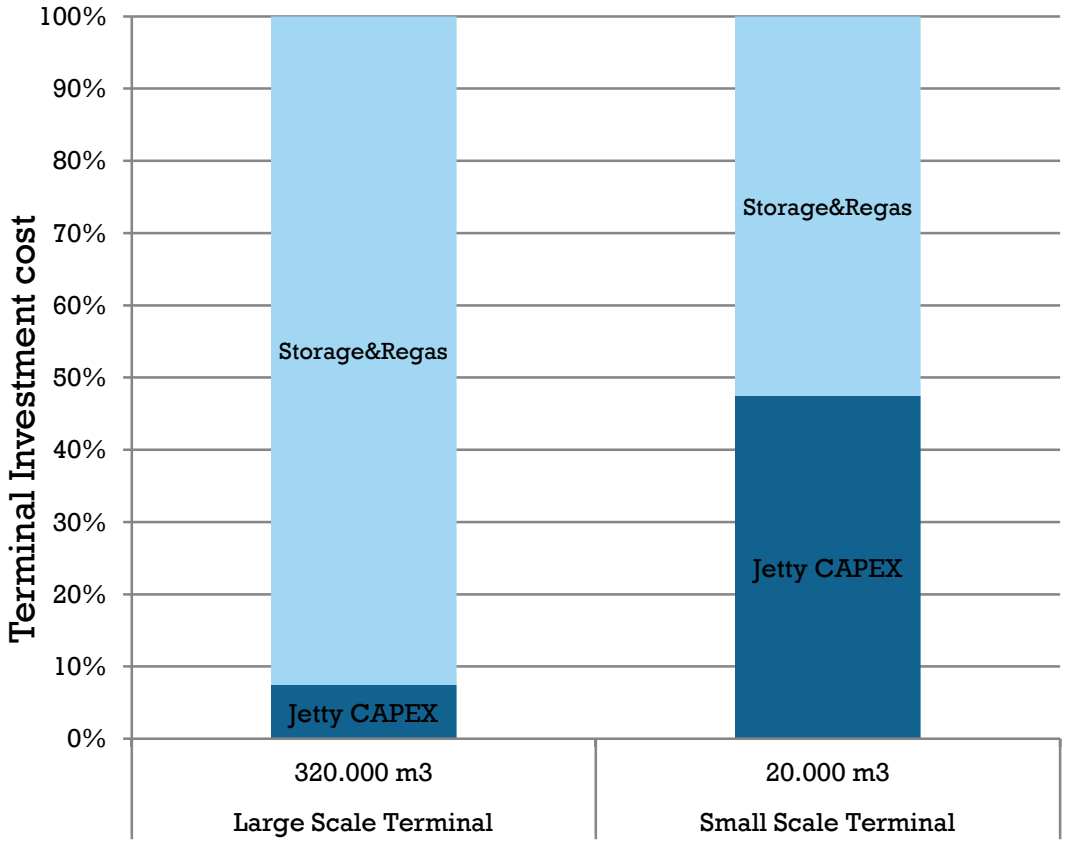
TOO LONG PAYBACK TIME



Payback time: 8 years | 12 years

Source: EU Feasibility Report (2011) & Energy and Power (2012)

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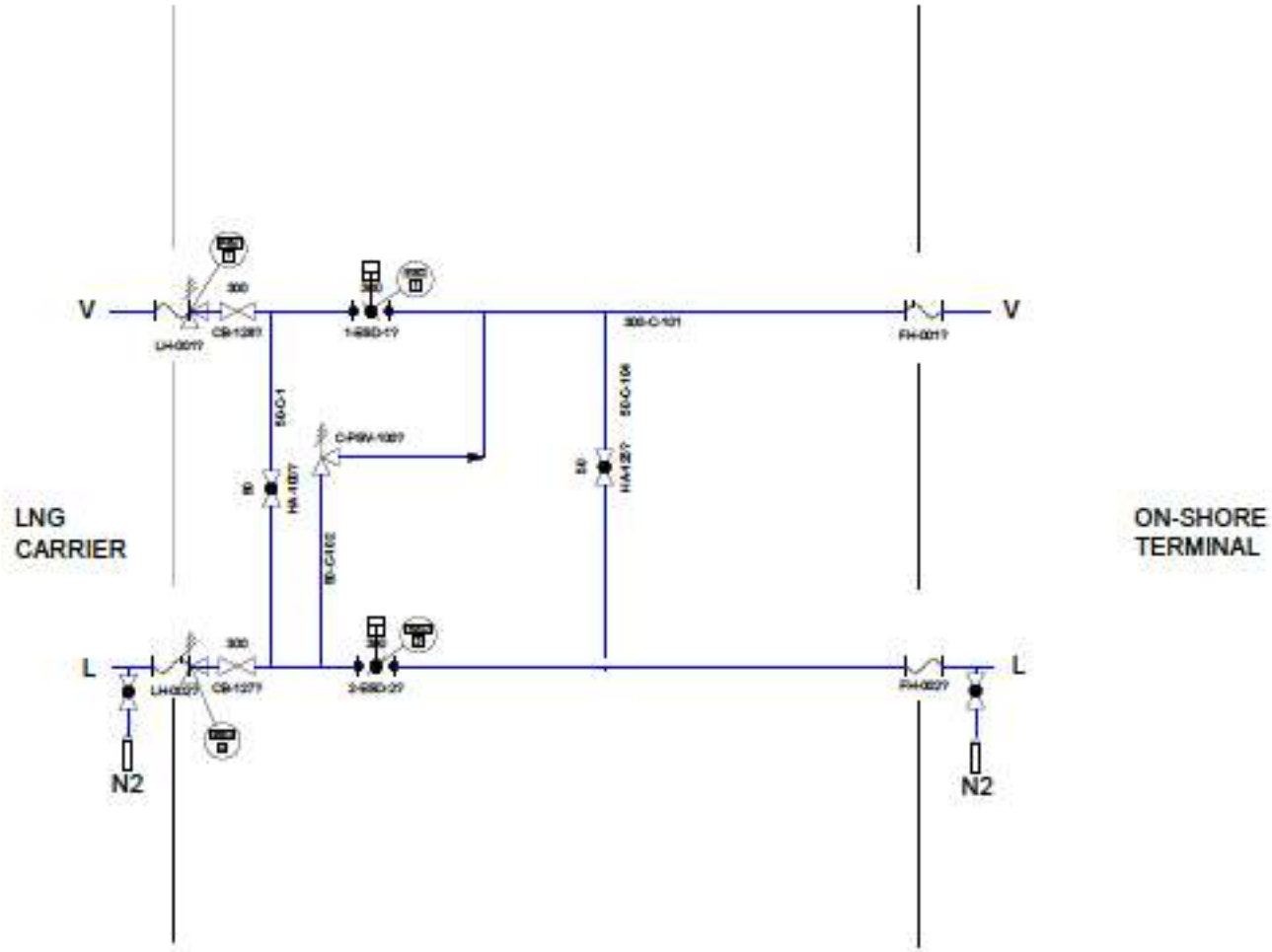
Reduce Payback Time

Available Solution: Jetty or dredging of large seabed volumes

UNIVERSAL BUOYANCY SYSTEM (UBS)



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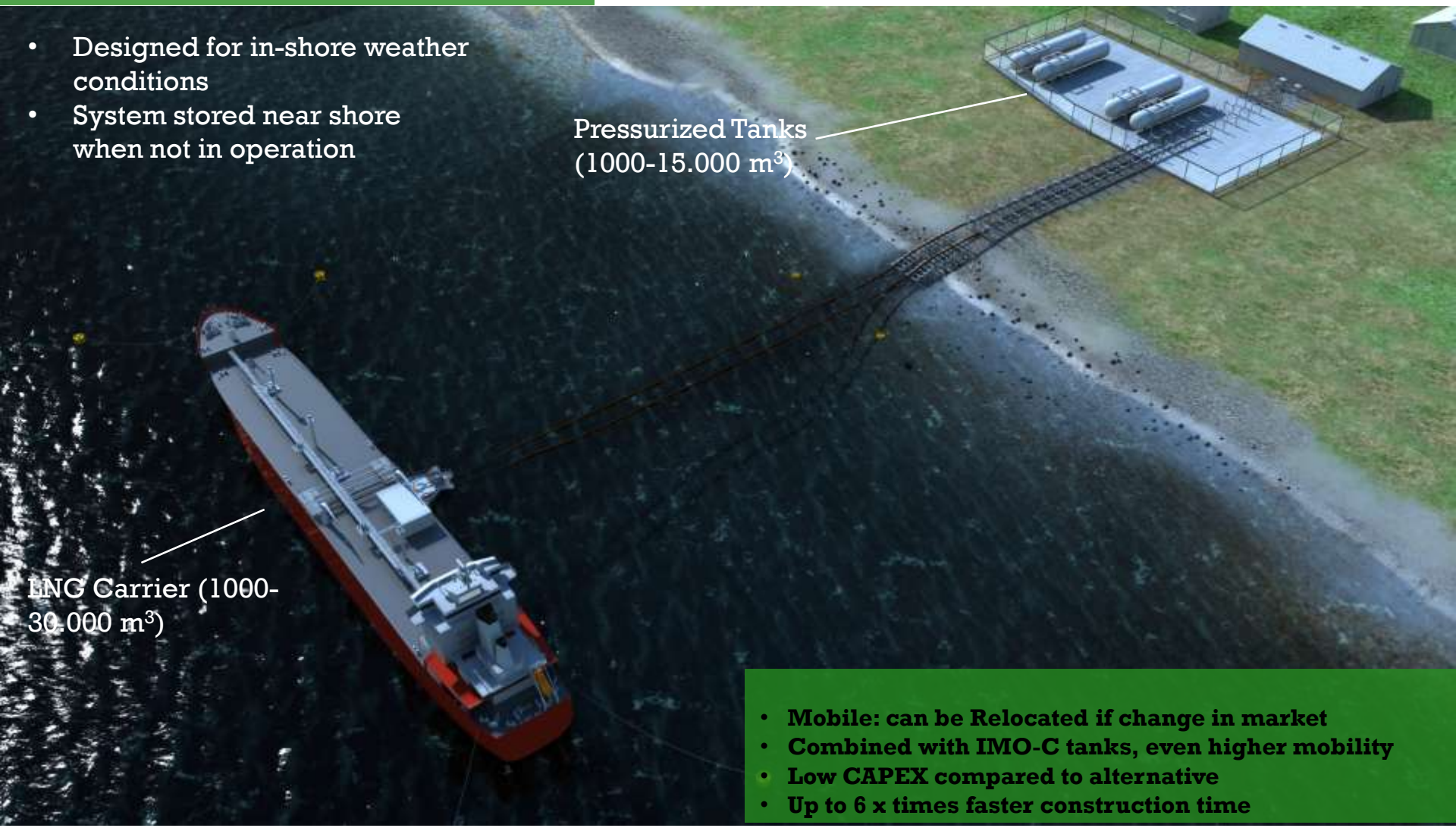
FLEXIBLE TERMINALS

- Designed for in-shore weather conditions
- System stored near shore when not in operation



- **Mobile: can be Relocated if change in market**
- **Combined with IMO-C tanks, even higher mobility**
- **Low CAPEX compared to alternative**
- **Up to 6 x times faster construction time**

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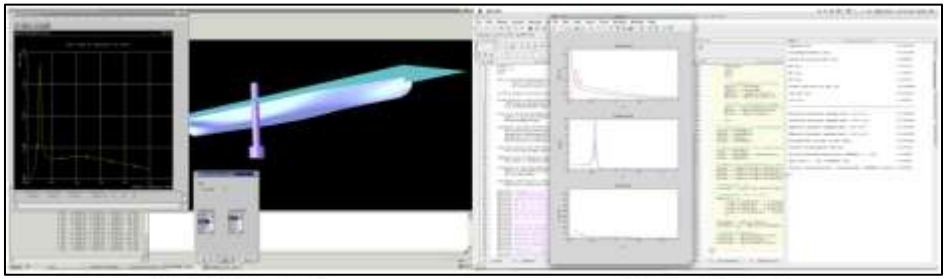
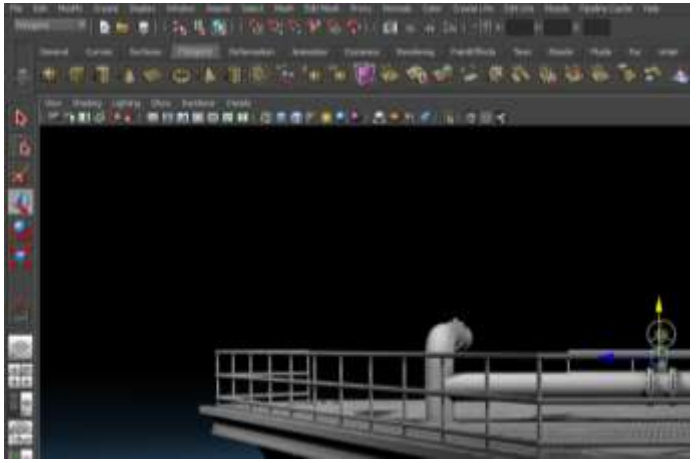
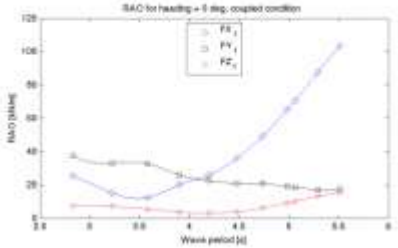
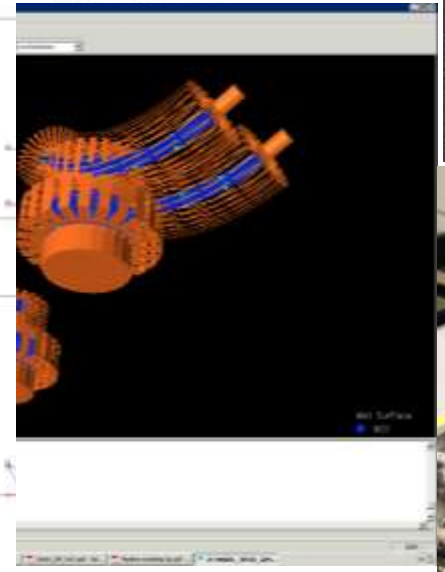
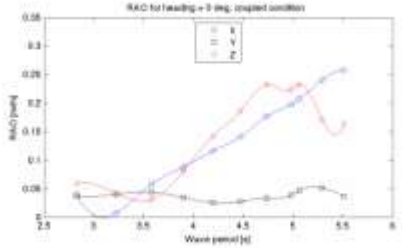
FOCUS ON HYDRODYNAMIC SIMULATIONS











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Three Model Tests

MODEL TEST 1
UBS V 1.0

MC-LAB MARINTEK,
OCTOBER 2012

MODEL TEST 2
HOSE CONFIGURATION

DET NORSKE VERITAS
STATEMENT OF FEASIBILITY
Universal Buoyancy System (UBS)

OCEAN BASIN MARINTEK, MAY 2013

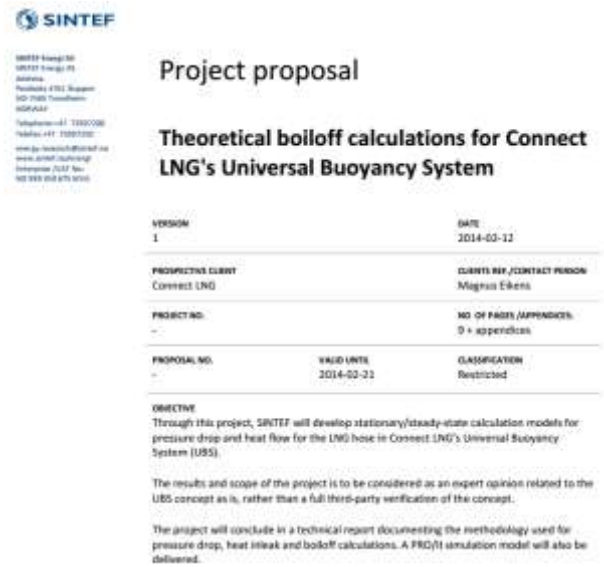
MODEL TEST 3
ATTACHMENT SYSTEM

MC-LAB, MARINTEK,
FEBRUARY 2014

NTNU CONNECTLNG MARINTEK

CRYOGENIC HOSE TECHNOLOGIES

Third party expert opinion:



SINTEF

Project proposal

Theoretical boiloff calculations for Connect LNG's Universal Buoyancy System

VERSION		DATE
1		2014-02-12
PROSPECTIVE CLIENT		CLIENTS REF./CONTACT PERSON
Connect LNG		Magnus Eikens
PROJECT NO.		NO. OF PAGES/APPENDICES
–		9 + appendices
PROPOSAL NO.	VALID UNTIL	CLASSIFICATION
–	2014-02-21	Restricted

OBJECTIVE

Through this project, SINTEF will develop stationary/steady-state calculation models for pressure drop and heat flow for the LNG hose in Connect LNG's Universal Buoyancy System (UBS).

The results and scope of the project is to be considered as an expert opinion related to the UBS concept as is, rather than a full third-party verification of the concept.

The project will conclude in a technical report documenting the methodology used for pressure drop, heat inleak and boiloff calculations. A PRO/II simulation model will also be delivered.

<u>Hose Alternatives</u>

Vacuum Insulated hoses

Composite Hoses

Cryogel Hoses

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INDUSTRY CONCERNS

a) How much boil-off will the UBS add during LNG discharge/loading?
b) What will the pressure loss through the UBS be?
c) What is the optimal flow-rate and inner diameter to minimize BOG?