About Liquiline

- LNG Midstream operator
  - Leading LNG container operator
  - Designer and supplier of terminals
- Technology developer
  - 20% of resources used on R&D
  - Provided as part of our LNG services
- Independent of LNG suppliers
- ISO 9001:2008 certified by DNV

Photo courtesy: Liquiline
An LNG Midstream partner
LNG from point-of-source to point-of-use

LNG Wholesaler
LNG Sourcing
LNG Transport
Receiving Station
Gas use

Wholesaler X
Wholesaler Y
Wholesaler Z

Bunkering solution
Shipping

Filling station solution
Transport

Regasification solution
Industry
Head office

Regional offices

Bergen (HQ)

Geographical presence

North America

Europe

Asia Pacific

Singapore

Vancouver

Geographical focus areas

Head office

Regional offices

Geographical focus areas
Some reference projects
LNG supply and LNG Logistics
Some reference projects
LNG Terminals
Some of our clients
LNG Bunkering

From Idea to Operations
Liquiline’s LNG terminal process

1) FEED (Front-End Engineering & Design)
2) Turn-key delivery/EPCIC-contract
   i. E – Engineering
   ii. P – Procurement
   iii. C – Construction
   iv. I – Installation
   v. C – Commissioning
3) Operations
   i. Training and LNG exercise
   ii. Daily operations
   iii. Service and Maintenance
FEED
Front-End Engineering & Design

- PFD: Process Flow Diagram
- EFD: Electrical Flow Diagram
- MCL: Mechanical Component List
- ECL: Electrical Component List
- GA: General Arrangement/2D
- CL: Conceptual Layout/3D
- CCE: Complete Cost Estimate
- EX: Ex zones
- RA: Risk Analysis
- DB: Design Basis
Detailed Engineering

- PID: Piping & Instrument Diagram
- Hazop: Hazardous Operations
- GA: General Arrangement/2D
- GA: General Arrangement/2D
- CL: Conceptual Layout/3D
- EX: Ex zones
- TCL: Total Component List
Procurement
Construction

- Civil Work
- LiquiStation™/ Process building
Installation

- Mechanical installation
- Electrical installation
Commissioning

- Testing of LiquiStation™ process system in work shop
- First time bunkering of LNG from the terminal
Take-Over
Bunkering solutions
Direct loading
Bunkering solutions
Multiple loading facility

• Engineered solution for direct loading from containers/trailers to ship
• Can fill from two containers/trailers simultaneously
• Designed by Liquiline
Bunkering solutions
Onsite storage tank

• Bunkering terminal with onsite storage tank
• Civil work and process system etc built for tank no 2
• Turn-key delivery by Liquiline, i.e Engineering, Procurement, Construction
• Liquiline has maintenance contract for facility
• Liquiline provides LiquiSys for all parties involved
LNG Operations
Training and LNG exercise
LNG Operations
Daily operations

- Monitoring of terminal by use of LiquiSys® Terminal system
- Planning logistics by use of LiquiSys® Logistics system
- Daily operations normally done by trained local company or customer
- Prepare and carry out the bunkering work
- Look through the terminal (see, smell, hear)
LNG Operations
Service and Maintenance

- Monthly Service
- LiquiSys Terminal System
Terminal possibilities
Supply gas locally

- Set up vaporisation solution in connection with bunkering terminal
- Deliver natural gas to local consumer
- Deliver natural gas to local gas distribution pipeline
Terminal possibilities
Supply CNG and LNG as fuel

- LCNG station in Häggvik Stockholm, Sweden
- Delivering CNG to cars, taxis and garbage trucks
Summary

- LNG for ships is a proven concept
- It is a thorough process to go from idea to operations
- There are various solutions for setting up a bunkering solutions
- With a bunkering terminal in place, one can also supply gas locally, supply CNG or LNG as fuel for cars, taxis, buses, trucks etc.
Thank you!

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