



Linde Engineering Company Presentation

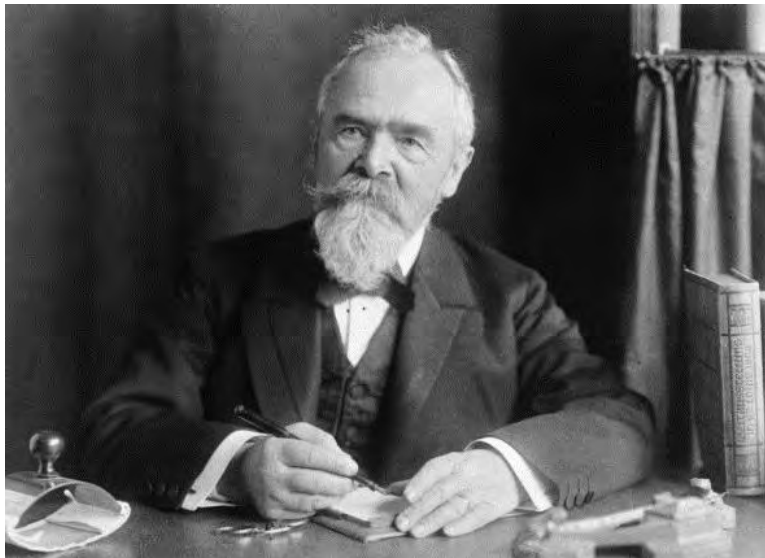
Dr. Marc Schier
Vancouver, September 2014

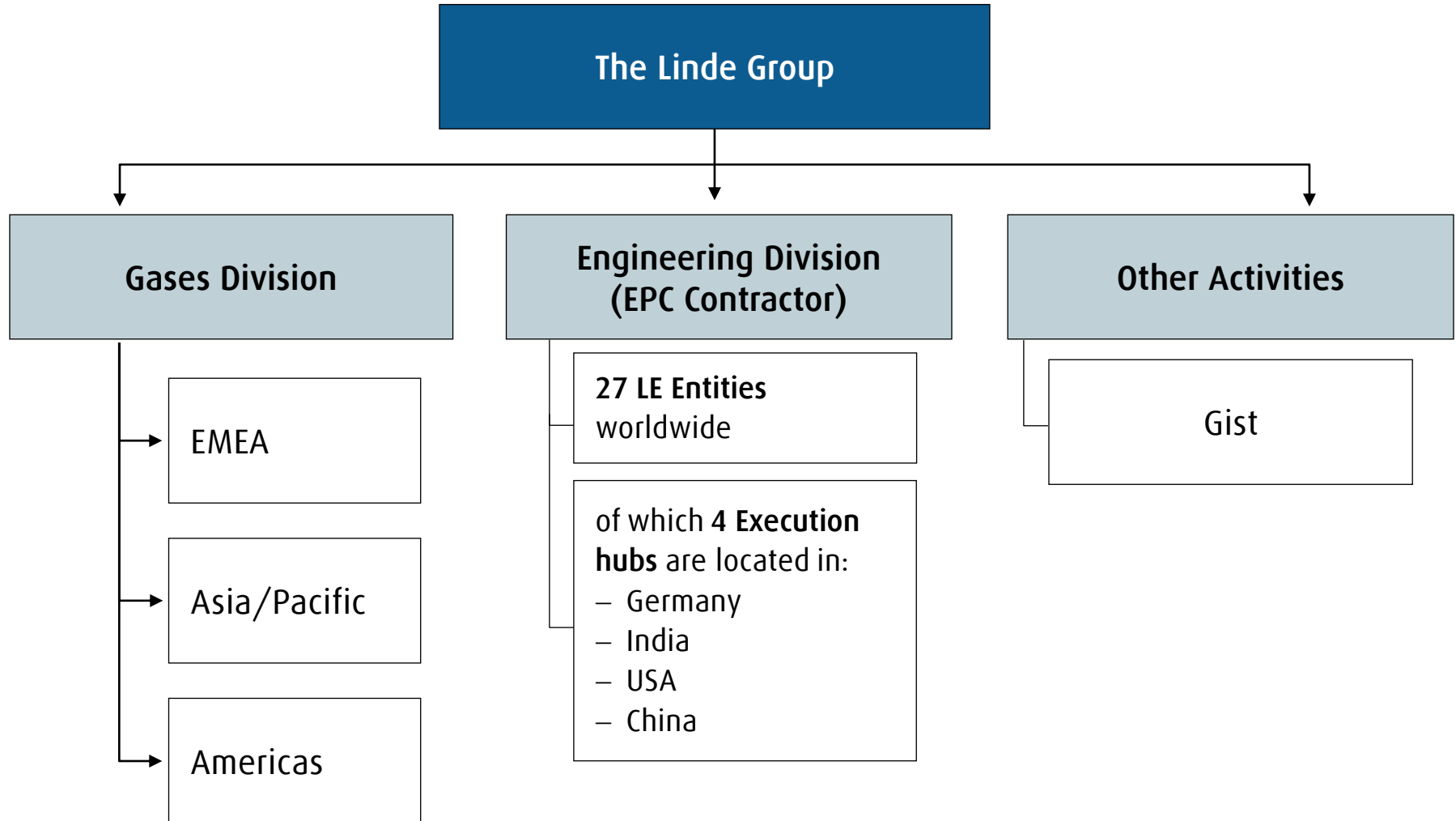
THE LINDE GROUP

Linde

- Company Profile
 - The Linde Group
 - Linde Engineering
 - Product Line Natural Gas Plants
- Woodfibre LNG Plant
 - Technology Selection Process and Linde's design features
 - Safety & Environmental control philosophies
 - First impressions
- Discussion

- Linde was founded in 1879 by Dr. Carl von Linde who was a pioneer in the development of cryogenic systems, inventing for example the first air separation plant for production of oxygen
- Today we are the leading gases and engineering company with 63 500 people working in more than 100 countries worldwide. The company is committed to technologies and products that unite customer value and sustainable development.





The Linde Group

Financial highlights

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Gases Division (in € million)	2013	2012	Change
Revenue	13,971	13,214	+5.7%
Operating profit ¹	3,846	3,566	+7.9%
Operating margin	27.5 %	27.0%	+50 bp ²
Number of employees as at 31.12.	51,536	51,405	+0.25%
Engineering Division (in € million)	2013	2012	Change
Revenue	2,879	2,561	+12.4%
Operating profit ¹	319	312	+2.2%
Operating margin	11.1%	12.2%	-110 bp ²
Number of employees as at 31.12.	6,997	6,564	+6.5%
Other Activities (in € million)	2013	2012	Change
Revenue	563	596	-5,5%
Number of employees as at 31.12.	4,954	4,796	+3.3%

¹ EBITDA including share of profit or loss from associates and joint ventures.

² Basis points.

Gases Division

Activity areas



Tonnage
Global #2

- 15-year take-or-pay contracts (incl. base facility fees)
- Add. growth in JVs & Embedded Finance Lease projects

Healthcare
Global #2

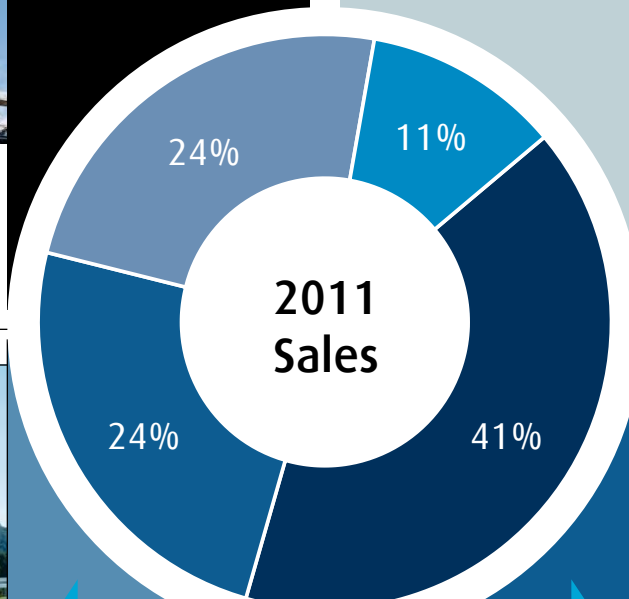


- Hospital care & Homecare
- Bulk & cylinder gases
- Structural growth



Bulk
Global #1

- Multi-year contracts
- Application-driven



> 70% of revenues from
> 30% market share



Cylinder
Global #1

- High customer loyalty
- Includes specialty gases
- Cylinder rentals

Synergies Between Gases and Engineering

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- Gases Division is the Engineering Division's biggest customer.
- Position as technology leader in international plant engineering an advantage over other gases companies.
- The Gases Division with its operating experience provides feedback for improving the design of LE's plants.



Linde Engineering

Leading market position in all segments

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Air Separation Plants



Hydrogen and Synthesis Gas Plants



Petrochemical Plants



Natural Gas Plants



Production of plants for Linde Gas and 3rd party customers

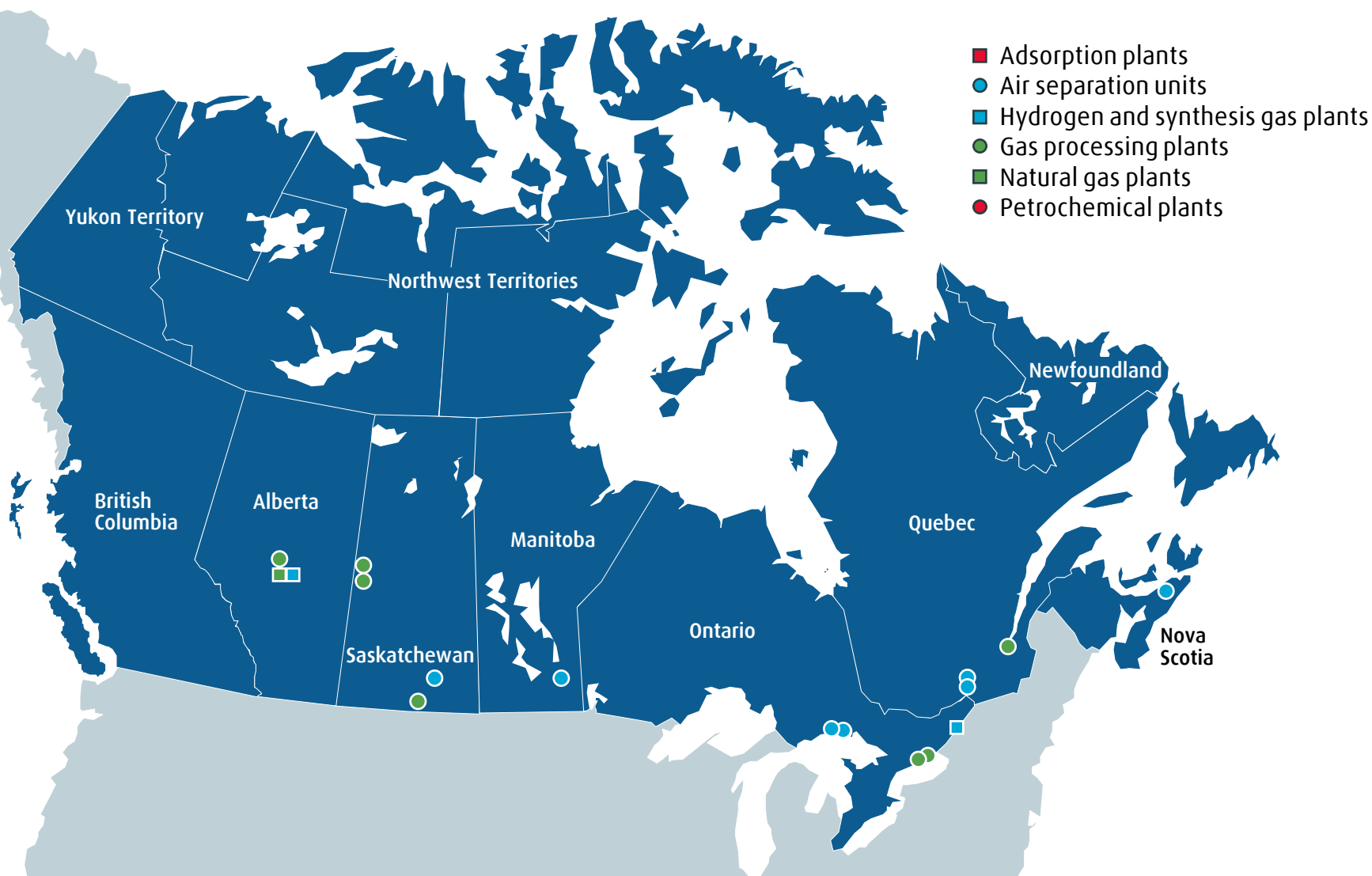
Providing chemistry and energy related solutions to 3rd party customers

Linde Engineering owns around **1,000 process engineering patents/applications** and has built around **4,000 process plants worldwide**

Linde Engineering Plants in Canada

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Linde Engineering

Engineering offices and research facilities (LEHQ)

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- The engineering offices, research facilities and the Selas-Linde GmbH offices are located at Pullach about 10 km south of Munich
- The office buildings comprise a floor space of 41,000 m² and offices for around 2,000 engineers and other specialists



Linde Engineering

Engineering offices, research and production facilities

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- The fabrication facilities are located at Schalchen about 100 km east of Munich
- 200,000 m² total floor space, 63,000 m² manufacturing area in 22 shops; 7,000 m² office area
- Sales, engineering and production of plant components
- Around 800 skilled craftsmen and engineers
- Highly qualified material is being processed



Natural Gas Plants

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Worldwide Track Record & Footprint

EPC Capabilities

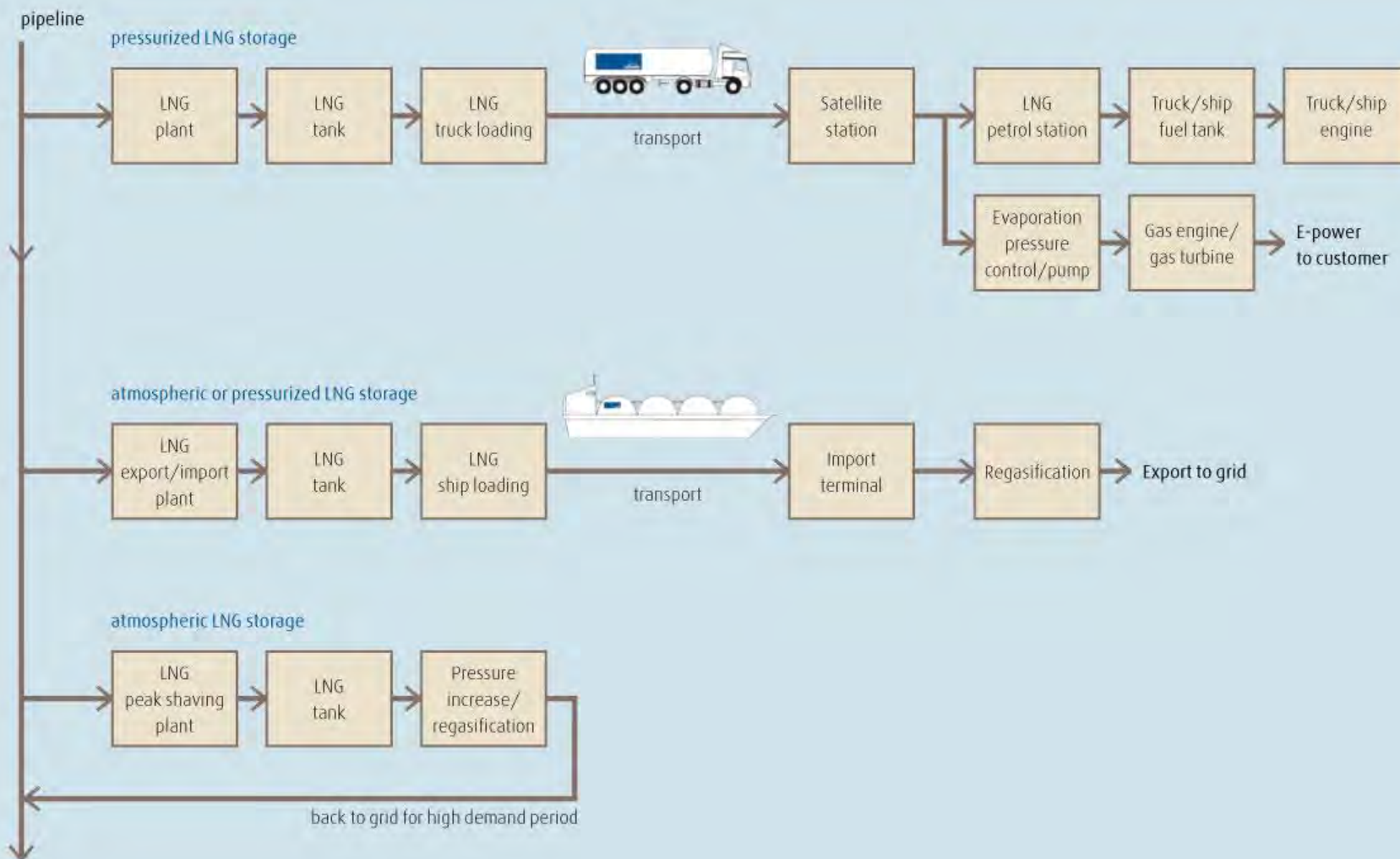
Proprietary Processes

Core Cryogenic
Equipment

- Presence along the complete LNG value chain using proprietary and proven technologies
- Leading Manufacturer of Core Cryogenic Equipment including Plate Fin & Coil Wound Heat Exchangers, Cold Boxes, Cryogenic Pumps and Expanders
- Worldwide Proven EPC Track Record

Product Line Natural Gas

Typical examples of LNG distribution chains



Presence Along the Complete LNG Value Chains

A case study in Scandinavia



LNG Plant in Stavanger operated by Skangass



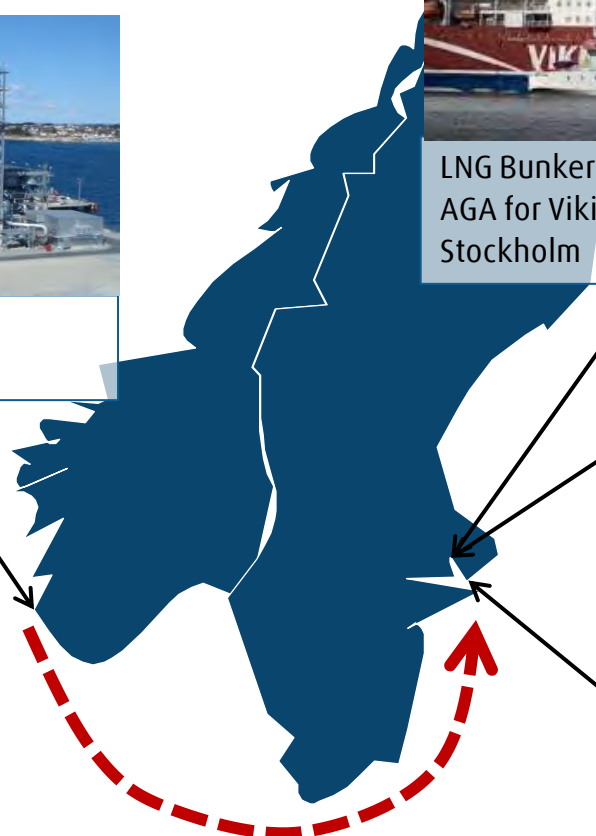
LNG Bunkering operated by AGA for Viking Line in port of Stockholm



LNG Fuelling Station in Stockholm



LNG Import Terminal in Nynäshamn operated by AGA



LNG Plant, Stavanger, Norway

Challenging Norwegian permitting

- 900 tpd LNG plant with full containment LNG storage
- Qualitative Risk Assessment and Environmental Sensitivity Study conducted
- Located on old refinery site within industrial zone
- Challenging environment with nearby traffic, industrial and residential buildings



Small to mid-scale LNG plants



Small-Scale: 21 tpd, Altamond/USA



Small-Scale: 120 tpd, Bergen/Norway



Small-Scale: 175 tpd, Kwinana/Australia



Mid-Scale: 900 tpd, Stavanger/Norway

Small to mid-scale LNG plants in China



Customer:
Xinjiang Guanghui
Capacity: 0.43 MTPA
Location:
ShanShan, Xinjiang
Feedgas:
Reserve well-head
Commission:
2004

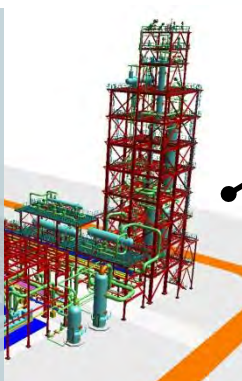
Customer: Huagang Gas (PetroChina)
Capacity: 0.45 MTPA
Location: Xinghe, Inner Mongolia
Feedgas: **Trunk line**
Award: 2013



Customer:
Xinjiang Guanghui
Capacity: 0.4 MTPA
Location:
Jimunai, Xinjiang
Feedgas:
Pipeline from Kazakhstan
Commission:
2013

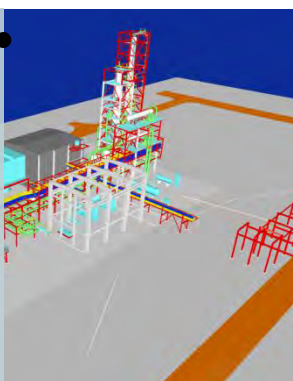


Customer:
Tongkai
Capacity: 0.32 MTPA
Location:
Bazhong, Sichuan
Feedgas:
Trunk line
Commission:
20014



Customer: Huagang Gas (PetroChina)
Capacity: 0.45 MTPA
Location: Jincheng, Shanxi
Feedgas: **Coal Bed Methane**
Award: 2013

Customer:
Huineng Coal
Capacity: 0.28 MTPA
Location:
Beiniuchuan,
Inner Mongolia
Feedgas: **SNG**
Commission:
2013



World's largest Re-liquefaction plant, Bintulu, Malaysia

Customer:

MLNG

Liquefaction capacity:

0.8 mtpa

Liquefaction process:Linde's LIMUM® process
with CWHE**Location:**

Bintulu, Malaysia

Scope of work:

EPC turnkey

Start-Up:

Q1 2015



World Scale LNG Plant in Hammerfest, Norway (Snøhvit)

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Location of Snøhvit LNG Plant next to Hammerfest



Snøhvit LNG Plant

A unique series of challenges and firsts

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- 1st world scale all electric drive system of refrigerant cycle compressor applying direct sea water cooling
- 1st CO₂ capture from natural gas, clean-up, liquefaction and sequestration
- World scale LNG plant on smallest plot space ever
- Full modularization and use of largest process module ever
- Near island mode power plant with highly efficient aero derivative GTs and heat integration, resulting in minimal CO₂ emission
- Strong focus by Norwegian government on use of best available environmental friendly technologies

Snøhvit LNG Plant

Project execution approach



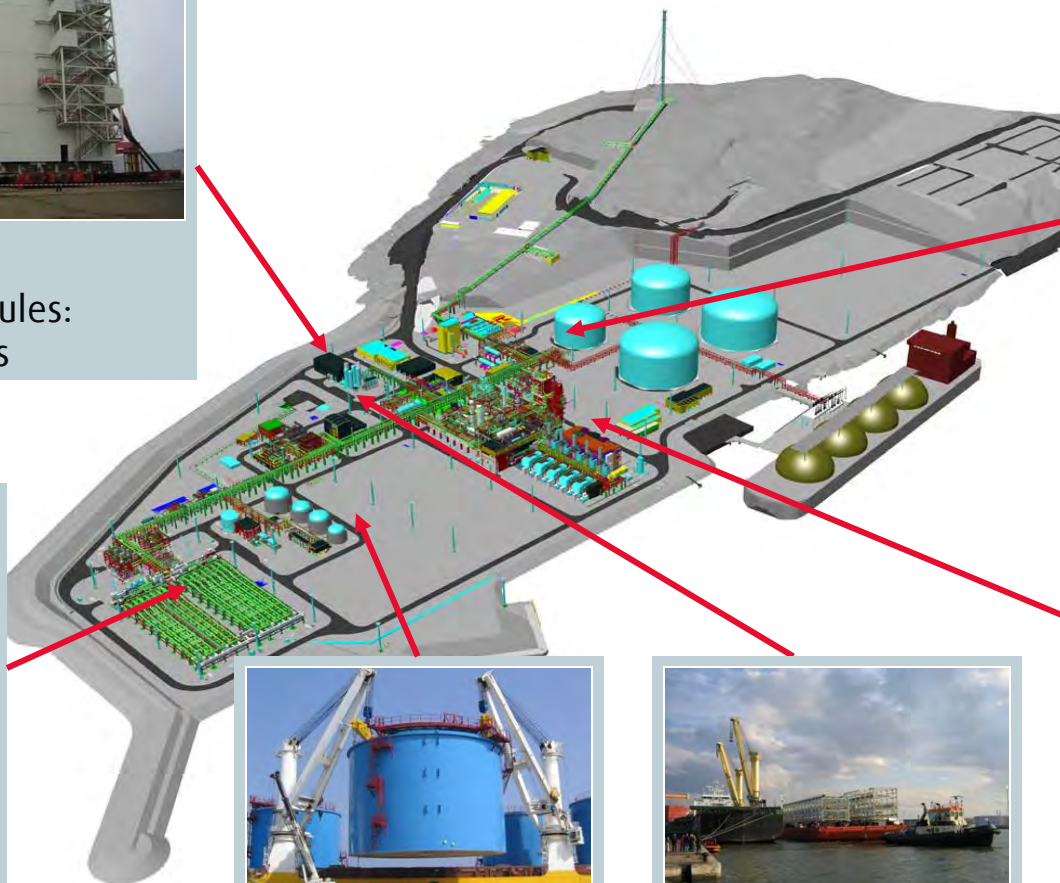
Heerema
MEG-Modules:
4 800 tons



Fabricom
Cold Box: 3 100 tons



Heerema
SC-Modules:
9 300 tons



Tanko Italia
MEG-Tanks:
1 300 tons



Fabricom
PAUs+PARs:
10 600 tons



Dragados
Process plant 35 000
tons

Snøhvit LNG Plant

Cold box transport

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Snøhvit LNG Plant

Process barge transport

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Snøhvit LNG Plant

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Worldwide Track Record & Footprint

EPC Capabilities

Proprietary Processes

Core Cryogenic
Equipment

- Presence along the complete LNG value chain using proprietary and proven technologies
- **Leading Manufacturer of Core Cryogenic Equipment including Plate Fin & Coil Wound Heat Exchangers, Cold Boxes, Cryogenic Pumps and Expanders**
- Worldwide Proven EPC Track Record

Manufacturer of Cryogenic Key Equipment Supplied along the LNG value chain

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- Coil-wound and plate-fin heat exchangers
- Cold boxes
- LNG storage tanks
- LNG loading facilities for ship, truck and rail
- LCNG fuelling stations
- LNG fuelling systems
- LNG tanker trailers for road and rail
- Submerged combustion vaporizers
- LNG carrier boil-off gas re-liquefaction systems



Manufacturer of Cryogenic Key Equipment

Selected References for Coil Wound Heat Exchangers

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Linde Engineering successfully designed, manufactured and supplied spool wound heat exchangers to new LNG plants:

- 4 units for North West Shelf Australia LNG
- 2 units for Snøhvit LNG
- 2 x 4 units for Sakhalin LNG
- 2 units for Pluto LNG Project
- 1 unit for Guanghui LNG (mid scale plant in China)
- 1 unit for Stavanger LNG (mid scale plant in Norway)



Worldwide Track Record & Footprint

EPC Capabilities

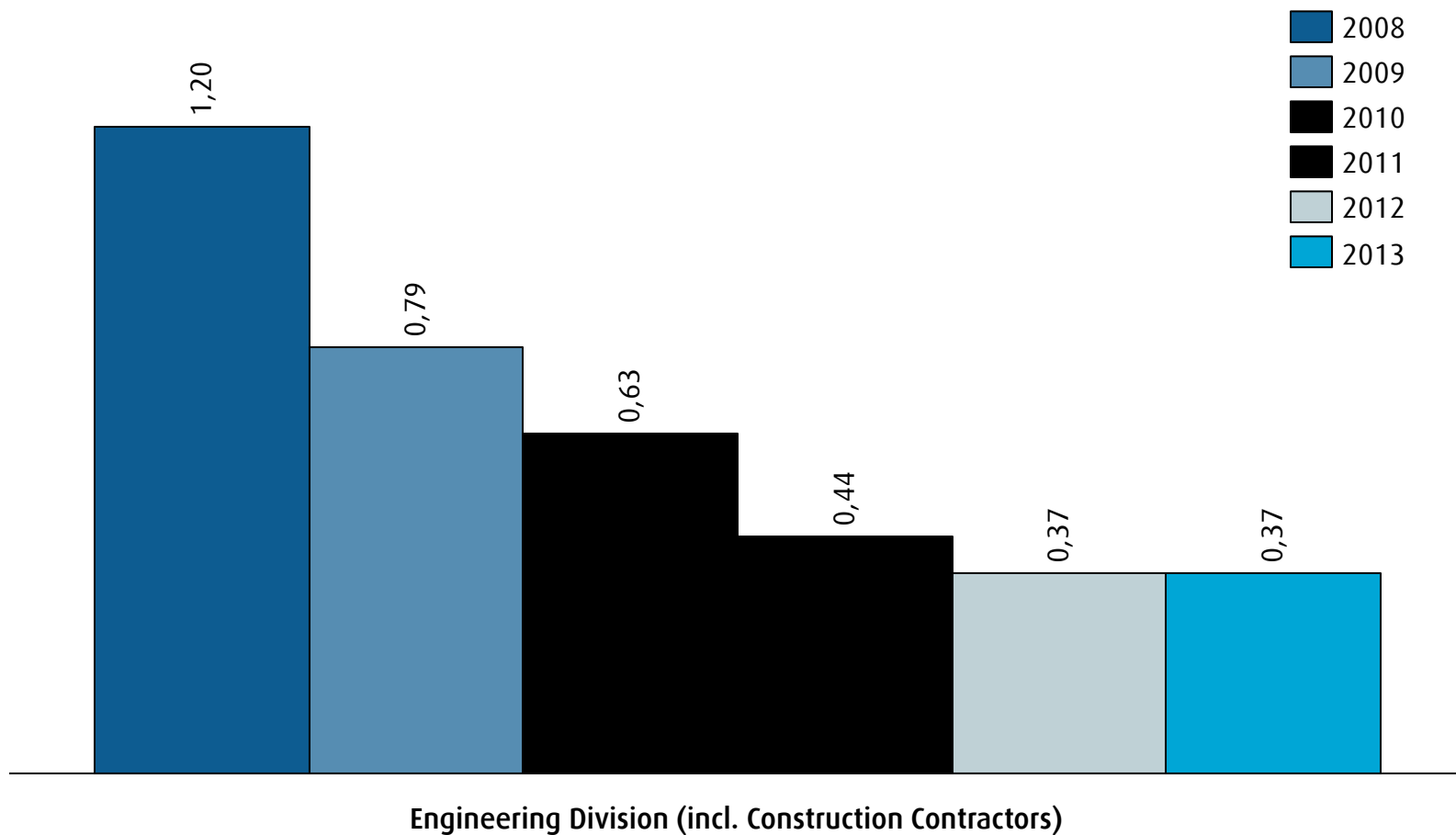
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Worldwide EPC Track Record

Lost Time Injuries per 1.000.000 man hours (LTI Rate)



Status 31.12.2013

Recently Completed Major Projects

Selected major projects (in total around 4000 plants)

Project/Plant Type	Location	Plant Capacity	Year Completed	Linde Eng. Hours
Kollsnes/NGL Separation	Norway	1,000 kta C3+	2004	265,000
TVK/Ethylene	Hungary	250 kta C2H4	2004	330,000
OMV Expansion/Ethylene	Austria	500 kta C2H4	2005	210,000
BASF Antwerp Exp ./Ethylene	Belgium	1,080 kta C2H4	2007	250,000
Hammerfest/LNG	Norway	4.3 MTPA LNG	2007	2,500,000
Tasnee/Ethylene	Saudi Arabia	1,000 kta C2H4	2008	145,000
BP Gofer/Ethylene	Germany	500 kta C2H4	2007	95,000
Dushanzi/Ethylene	China	1,000 kta C2H4	2009	145,000
Stavanger/LNG	Norway	0.43 MTPA LNG	2010	170,000
Ruwais 2/Ethylene	UAE	1,500 kta C2H4	2010	835,000
Polinter/Ethylene	Venezuela	1,000 kta C2H4	2011	670,000
Pearl/Air Separation	Qatar	28,800 tpd O2	2011	450,000
Dahej/Ethylene	India	1,100 kta C2H4	2012	195,000

Recently Completed Major Projects

World largest Ethane Cracker (1.5 MTPA) in Abu Dhabi

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Customer:
Borouge

Capacity:
1.50 Mio t/a Ethylene
0.06 Mio t/a Propylene

Scope of work:
EPC (Consortium with CCC)

Order:
12/2006

Completion:
07/2010

World largest Ethane Cracker (1.5 MTPA) in Abu Dhabi HSE Record



HSE Statistics:

Man-hours spent (direct and indirect): 37 million

Number of LTIs (Lost Time Incidents): 1

Awards:

Borouge HSE Recognition and awards: 9
Linde Corporate Site Safety award in 2008 & 2009
ADNOC Environmental award in 2010



Recently Completed Major Projects

8 Air Separation Units for the Pearl GTL Project

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Customer:
Shell

Capacity:
8 x 3,600 MTPD Oxygen

Scope of work:
EPC

Order:
08/2006

Production Started:
01/2011

Thank you
for your attention.

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