## Innovative Drive

Regional Growth Innovative Drive

Markets

Energy & Healthcare Environment

Regional Gro

Environment

Process Optimisation
Healthca

Optimisation Innovative Drive

Regional Cowth Process

Markets Optimisation

Regional Growth

Markets Process

Optimisation

Regional Growth Markets

Leading Technologies

Capital Markets Days 2014

Workshop Linde Engineering

Lead**Ing.** 



Prof. Dr Aldo Belloni Jürgen Nowicki 31 October 2014

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# **Linde Engineering**

A unique set-up



3,000+

ASUs contstructed in more than

80

Countries

4,000

Completed plants

7,200

**Employees** 

Core hubs

Years of experience

25

**Entities** 

Procurement

400+

Major plants constructed for the Gases Division

1,000

Patents & applications

3,400

Engineers

Construction

echnology

Engineering

# **Linde Engineering**

135 years of experience | A broad range of technologies



### Internal use & sales to external parties

## Air separation plants



for production of oxygen, nitrogen, argon & rare gases

25%

Sales by plant type FY 2013

22%

29%

24%

# Sales to external parties

### Natural gas plants



for purification, fractionation & conditioning of gas mixtures, recovery, liquefaction & storage of natural gas

## Hydrogen & synthesis gas plants



for production of hydrogen, carbon monoxide, ammonia & methanol

# Petrochemical plants



for production & recovery of olefins, acetylene, butadiene, aromatics, poly- & alpha-olefins, polyethylene & polypropylene

# **Air Separation Plants**

3,000 plants in 80 countries | 300 plants owned & operated by Linde Gases



#### Market trends

- Coal gasification to produce clean fuels (synthetic natural gas) / Coal-to-X-processes
- US Petrochemical industry enhancing capacity and developing new clusters

#### **Key features**

- Highly energy efficient plants
- High safety and quality standards
- Superior plant availability and low life-cycle cost

#### **Product portfolio**

- Standardised, pre-fabricated package plants
- Customised tonnage air separation units
- Mega and multi-train plants for gasification processes and EOR/EGR

Example: ADNOC | Linde Gases benfits from Engineering's long-term customer relationship

Supply of olefin plants to ADNOC

Foundation of JV to produce and supply industrial gases

Offering of Enhanced
Gas Recovery (EGR)
to ADNOC

Long-term supply contract for EGR

Engineering supplied olefin crackers to ADNOC and built long-term relationship

JV ADNOC Linde Industrial
Gases Company Ltd
(ASU - Elixier I)

Linde Engineering's expertise and experience from previous project in Mexico offered to ADNOC Linde Gases awarded long-term supply contract to deliver nitrogen for EGR (2 ASUs - Elixier II)

# Hydrogen & Synthesis Gas Plants

500 plants built worldwide | More than 100 plants operated by Linde Gases



#### Market trends

- Shale gas will increase synthesis gas demand in USA
- Upgrade of refineries in CIS countries triggers demand for hydrogen
- Expanding petrochemical industry in the Middle East

### **Key features**

- Entire process chain for large scale production and treatment of synthesis gas and H2/CO
- Utilisation of all petrochemical feedstock, from natural gas through heavy oil to coal
- Highly efficient process (e.g. ammonia)

### **Product portfolio**

- Production of hydrogen, CO, synthesis gas, ammonia and methanol from hydrocarbon feedstock
- Gas processing plants (gas separation and purification)

Example: Project Sadara | efficient ammonia process enables Linde to enter a new and important cluster

World-scale integrated chemical complex in Jubail, Saudi Arabia

Linde Engineering supplies sophisticated technology

Linde awarded to produce and supply industrial gases

Linde Gases supplies carbon monoxide, hydrogen & ammonia

Sadara produces aromatics, MDI & TDI, amines and hydrogen peroxide Highly energy efficient ammonia process enables very competitive offering

Linde's largest on-site petrochemical project in this region

Linde invested USD 380 million in the rapidly expanding petrochemical industry in Saudi Arabia

### Petrochemical & Natural Gas Plants

Proprietary technology & know-how | Delivering complex, large-scale plants.



## Natural gas plants

#### **Key features**

- Leading in the area of small- to midscale LNG plants
- Covering the full LNG value chain
- Manufacturer of cryogenic key equipment

#### Market trends

 Great potential for small- to mid scale LNG plants due to new environmental regulations and price spread between oil & gas, especially in USA, Northern Europe and China

### Linde Engineering as door opener for Linde Gases

- Engineering has early involvement in US shale gas trend;
- Engineering grants access to future gases customers

## Petrochemical plants

### **Key features**

- Linde olefin technology accepted as leading
- Excellent market position; key cracker references
- Portfolio expansion; new product development

#### Market trends

- With shale gas revolution market shifts to USA
- Gas based alternative routes to olefins gaining importance

### Linde Engineering as door opener for Linde Gases

- Engineering paving the way for long-term supply contracts (e.g. ADNOC)
- Engineering has early involvement in downstream chemicals resulting from US shale gas
- Engineering involvement in new clusters includes early access to future on-site supply contract opportunities

# Opportunities resulting from US shale gas



Engineering business

Shale gas opportunities

Shale gas

**Exploitation** 

Gases business Global shale gas resources\*

Supply of gas processing plants

Supply of LNG plants,

(since 2010 order intake USD ~1.9 bn)

Utilising natural gas

**Processing** 

LNG

GTL

Chemical Clusters

Supply of CO2, N2 and LNG

Merchant LNG for selected markets

Supply of 02

Supply of O2, N2, H2, NH3 (USD 250m investment into largest synthesis gas cluster in La Porte)

3,100 America

> 1,300 China

600 Europe

900 others

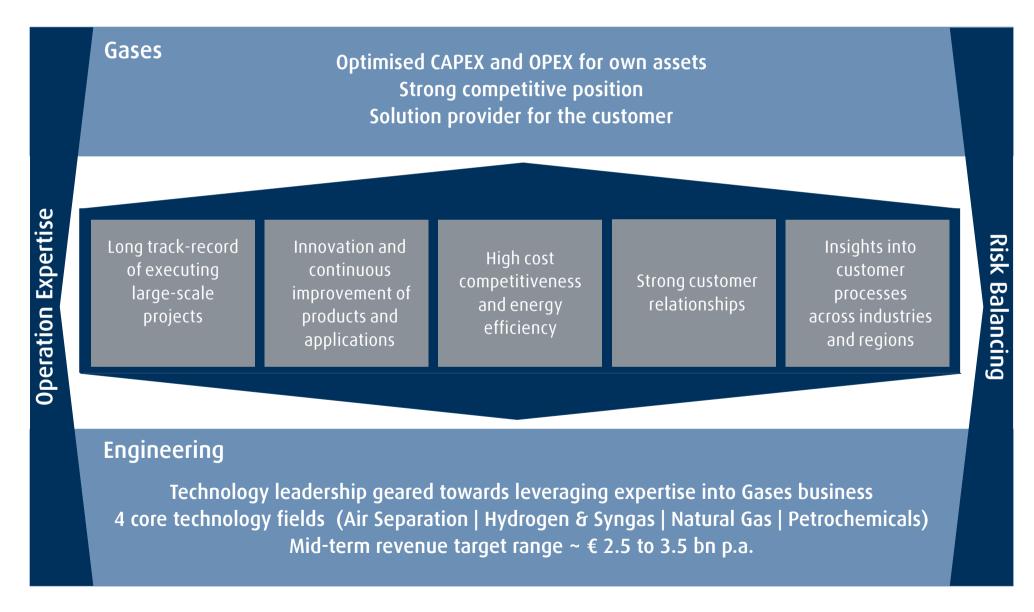
Supply of air separation units

terminals

Supply of syngas and petrochemical plants (since 2012 order intake USD ~2.9 bn)

# Linde Group | Integrated Gases & Engineering setup Leveraging a unique synergetic setup





## **Investor Relations**



#### Financial calendar

Full year report 2014: 13 March 2015 Report Q1 2015: 30 April 2015 AGM 2015: 12 May 2015 Dividend payment: 13 May 2015

#### Linde share information

Type of share: Bearer shares

Stock exchanges: All German stock exchanges

Security reference number: ISIN DE0006483001

CUSIP 648300

#### **Linde ADR information**

Ticker Symbol: LNEGY

DR ISIN: US5352230204
Depositary Bank: Deutsche Bank

Structure: ADR Level I, Sponsored

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