Innovation for Growth and Performance

Emilie Mouren-Renouard
Member of the Executive Committee
VP Innovation, Digital & IT, IP and GM&T
A World Leader in Gases, Technologies and Services for Industry & Health

- 80 Countries
- 67,000 Employees
- >3.7 m Customers and Patients
- ~€22 bn of Sales in 2019
- >€2 bn Net Profit in 2019
- ~€5 bn Cash Flow in 2019*
- >€60 bn Market Capitalization**

* cash flow from operating activities before changes of working capital
** on December 31, 2019
A Balanced Footprint

Gas & Services revenue in 2019

- Healthcare: 17%
- Industrial Merchant: 48%
- Large Industries: 27%
- Electronics: 8%

- Asia-Pacific: 43%
- Americas: 20%
- Africa Middle-East: 3%
- Europe: 34%
Regular and Sustained Performance

CAGR over 30 years (1)

Revenue (in €m) +5.6%

EPS (2) (in €) +6.7%

Cashflow (in €m) +6.5%

Dividend (2,3) (in € per share) +8.7%

(1) Calculated according to prevailing accounting rules over 30 years. (2) Adjusted for the 2-for-1 share split in 2007, for attributions of free shares and for a factor of 0.974 reflecting the value of the rights of the capital increase completed in October 2016. (3) Dividend 2019 subject to the approval of shareholders during the General Meeting on May 5, 2020.
Innovation: a Global Network

- 4,300 employees contributing to innovation
- 330 new patents

>€300 M Innovation expenses

€100 M to reduce carbon footprint (Incl. in Innovation expenses)
Innovation to Create New offers
Qlixbi: a Breakthrough Packaged Gas Offer

- Designed with welders, for welders
  - Collaboration with 700 welders
  - 300 partners
- Convenient: instant click-on connector
- Efficient: gas reserve indicator
- Safe: ergonomic wheel and 360° rotating connector
- With a digital tool to optimize gas stocks: remote tracking of gas consumption
- Patented innovation
Chronic Care Connect: Support Patients With Chronic Disease at Home

Patient uses connected devices defined by the health practitioner

Analyzed remotely by qualified medical staff

Predictive alerts generated by algorithms

With the aim to:

- **Provide personalized care** from home and **improved quality of life** for patients
- **Allow doctors to** remotely **monitor changes** in their patients’ clinical condition
- **Prevent hospitalization** and help control healthcare costs
Turbo-Brayton Solutions for LNG Carriers

- Developed for and used initially in the International Space Station (ISS)
- Reliquefy LNG boil-off during maritime transport on LNG carriers
- Prevents the environmental and economical impact of LNG losses and gas flaring
- Other promising applications also emerging in the field of renewable energy

Read: A tale of success in the maritime sector

€180 million in orders recorded over the past two years
Biomethane at the Heart of a Circular Economy
the Example of The Magic Factory

Key figures worldwide:
- >€200m Capex
- 19 Biomethane production sites
- ~70 Bio CNG/LNG stations
- >1 TWh/yr

Biomethane also used as a feedstock for the production of renewable H2
Innovation to help deliver > €400m of efficiencies annually
Technology Roadmaps to Improve the Competitiveness of our Assets

- **Efficiency (ASU)**
  - R&D programs to further optimize efficiency
  - *Ongoing on 10 ASUs*

- **Efficiency (SMR)**
  - New generation SMR without excess steam production with high energy efficiency
  - *Covestro contract. Start-up Q4 2020*

- **Carbon Capture**
  - New Cryocap™ product family to reduce CO2 capture costs on SMR and on a wide range of industrial processes
Smart Innovative Operations: LI Digital Transformation

Digital technologies
Leveraging 1bn data-points in Operations daily

Centralized remote control
of LI plants in all key industrial basins

Enhanced relationship with our customers

A step change in OPERATIONAL EXCELLENCE

SIO
Predict

SIO
Optim

SIO
Perform

SIO
Drive

SIOs

Drive
Optim
Perform
Predict
IBO to Optimize Bulk Supply Chain for IM

**IBO.CONNECT**
End to end digitization of assets for a seamlessly executed process.
- Planning
- Loading
- Transport
- Delivery

**IBO.PERFORM**
Analyze operational performance to act and improve processes.
- Loading Performance
- Decision making tools to optimize supply chain with targeted actions

**IBO.OPTIM**
Decision making tools to optimize supply chain with targeted actions.
Launch of Major Innovative Projects for Tomorrow

**CCS**
- MOU with Northern Lights
- Consortia with Ports of Antwerp and Rotterdam

**Green H₂**
- Electrolyzer in Quebec
- HyGreen Provence

**Low CO₂ Production**
- thyssenkrupp
- ArcelorMittal

**H₂ Mobility**
- California
- Paris
- China

(1) Carbon Capture and Storage
Innovation at the Heart of Energy Transition
Appendix
A Strong Business Model

1. Mutualize assets

2. Liquefaction piggyback

3. Distributors, bolt-on acquisitions

---

(a) SMR: Hydrogen and carbon monoxide production unit (Steam Methane Reformer)
(b) ASU: Air gases production unit (Air Separation Unit)
(c) On-site: Small local production unit
(d) ESG: Electronic Specialty Gases
Financial Objectives

+6% to +8%
CAGR 2016-2020\(^{(1)}\)

>10%
In 2021-2022

Efficiencies >€300m on average/year\(^{(2)}\)
+ Airgas synergies >$300m

(2) Upgraded from >€300m to >€400m as of 2019

Capex/Sales 2017-2020: 10% to 12%

(1) Including Airgas scope effect in 2017 contributing +2% to the CAGR
Greenhouse gas emissions within Air Liquide

**Greenhouse gas emissions**

- **Direct** 15.6 Mt (b)
  - 9.6 Mt from hydrogen production units
  - 5.1 Mt from cogenerations
  - 0.7 Mt from transportation activities

- **Indirect** 12.2 Mt
  - 93% for the supply of air separation units (11.4 Mt)

- **Avoided emissions**
  - 4.5 Mt
  - CO₂ 16.8 Mt avoided in total
  - Mainly by customers using oxygen for oxy-combustion process (12.1 Mt)

**Direct GHG: Scope 1**
- from Assets owned or controlled

**Indirect GHG: Scope 2**
- from Energy generated upstream (purchased electricity, steam...)

(a) In kg CO₂ equivalent/euro of operating income recurring before depreciation and amortization at 2015 exchange rate and excluding IFRS16 for greenhouse gas emissions scopes 1 and 2.
(b) Includes 0.2 Mt CO₂-eq. due to the Group’s other activities.
Climate Objectives

ASSETS
Reduce our carbon intensity in 2025 vs. 2015 by -30%

CUSTOMERS
Act for clean industry by developing low-carbon solutions

ECOSYSTEMS
Contribute to a new low-carbon society
Carbon intensity

Objective: Reduce carbon intensity by 30% by 2025 (4.4), based on 2015 emissions levels (6.3)

* -27% reduction in carbon intensity compared with the 2015 carbon intensity.