


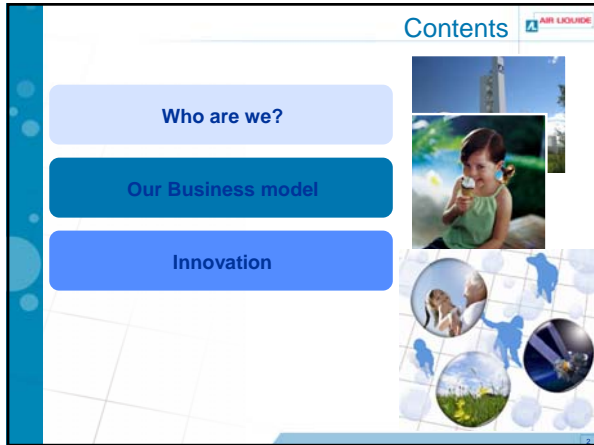
Air Liquide


Shekar Shetty
VP R&D-North America
March 14, 2007



Contents

- Who are we?
- Our Business model
- Innovation






Air Liquide key facts

- Total sales 2006 : \$13.7 billion
 - 80% outside France
- Serving more than 1 million customers ...
 - ... in 70 countries
- Over 2,600 protected inventions
- Over 250 patents filed annually
- 36,000 employees
- 360,000 shareholders
- 8 R&D centers (EU, USA, Asia)


A world leader in industrial and medical gases

A Business based on Simple Molecules... AIR LIQUIDE


From Air




N₂




O₂



Ar




Xe




Kr

... with unique properties


- ✓ Combustion
- ✓ Respiration
- ✓ Inerting
- ✓ Energy Content
- ✓ Cold
- ✓ Isolation
- ✓ Conductivity
- ✓ Reactivity




From Fossil Fuels




H₂



He



CO₂



CO

... where know-how makes the difference

Where we fulfill customer's needs... AIR LIQUIDE
 ...by bringing technologies into customer's process



Molecule provider



Technology provider



In depth knowledge of customer's process

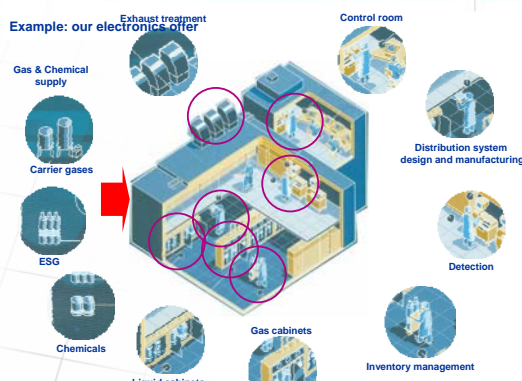
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Getting more and more into the customer's process ...

Getting more and more into the customer's process AIR LIQUIDE

Example: our electronics cluster



3 R&D axes ... AIR LIQUIDE

Healthier life

Sustainable environment

Communicating world

Healthier life AIR LIQUIDE

Healthcare

Food

- Innovate in healthcare
- Develop medical gases
- Guarantee food products quality
- Develop innovative products and processes

Xenon in anesthesia AIR LIQUIDE

Successful Market Approval granted for Xenon as an anesthetic

- Powerful analgesic effect
- Minimization of side effects due to anesthesia
- Improved post-surgery recovery

Anesthesia in Germany

2005

Taema

Clinical tests

Drug administration equipment development: XENIX

Communicating world

Electronics

- Developing new products and services for the **semi-conductor industry**
- Develop **manufacturing solutions** for flat plasma displays
- Improve our processes **through new process control technologies**

Industrial efficiency

Revolution in Electronics

...new needs

Gases & Chemicals for Electronics : Why ?

An ultrapure silicon wafer
+ ~ 250 process steps, utilizing :

- 5 m³ of ultra pure deionized water
- 100-200 m³ of ultra pure gases
 - Carrier Gases
 - Process Gases

Silicon Wafer

Sustainable environment

Efficient Production

- Improve **energy efficiency**
- Improve **productivity**

Clean processes

- **Emission reduction**
- **Effluent control**

Green Energy

- Contribute to the development of **green electricity production**

O2 for Clean Power Production

COAL

Coal based Power Plant

CO₂ (circled in red)

Carbon Dioxide Emissions concentration

O₂ (circled in red)

CO₂ Recirculation Oxygen dilution

Sequestration

HYCHAIN : The largest European Project

Deployment of small H₂ powered vehicles : first step towards clean transportation

Launched on Jan 31, 2006

FP 6 - 2004 TREN. Budget 40 Million €

26 partners
Coordinated by Air Liquide
4 European regions for deployment :

France
Spain
Germany
Italy

44 Fuel cells

Hydrogen Infrastructure

More than 150 vehicles

34, 40, 44, 30, 10

