Belle-Etoile, Feyzin, Roussillon
An integrated industrial basin under customer-centric transformation
Content

1  Safety Instructions
2  Large Industries - A growing integrated basin serving a diversity of customers
3  Industrial Merchant - Transformation of the packaged gas activity
Safety Instructions
Industrial Site of Feyzin

- First Aid
- Meeting point
- Containment point

- No use of mobile phones and other non-ATEX devices without authorization
- No smoking

- Mandatory use of PPE when they are requested
A Growing Integrated Basin Serving a Diversity of Customers

Markus Kohlberger
An Integrated Basin of 3 Production Sites Remotely Operated and Optimized

Belle-Etoile
15000 Nm3/h

Feyzin
400 tpd of liquid

Roussillon
H₂
2500 Nm3/h

Smart Innovated Operations (SIO)
Serving a Large Diversity of Customers
Generating Strong Synergies among Business Lines

**Large Industries**

- H₂ and N₂ for Refining, Chemical and Glass Industries

**Industrial Merchant**

- N₂, O₂ and H₂ for many end-markets

**Global Markets & Technologies**

- H₂ for Energy Transition

- Healthcare
  - O₂ for Hospitals

- Electronics
  - N₂ for semiconductors
65 km of Pipelines Connecting Customers

Providing flexibility and reliability to customers

June 26, 2019 • Site Visit - Feyzin

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Continuous Investments
Fulfilling the Growing Needs of Customers

Roussillon
- **H₂ pipeline**: Roussillon
  - **Year**: 1989

Belle Etoile
- **H₂ pipeline**: Rhone Poulenc sourcing
  - **Year**: 1972

- **SMR Take Over by AL**: 2004
- **SMR Remote Control**: 2014
- **New H₂ Capacity**: 15500 Nm³/h
  - **Year**: 2019

Feyzin
- **ASU°1**: 23 t/d + LIN storage
  - **Year**: 1957
- **ASU°2**: 100 t/d + N₂ pipeline + 1ML LIN st.
  - **Year**: 1967
- **N₂ pipeline extension**: 1995
- **ASU°3**: 360t/d +3ML LIN storage +MED LOX storage
  - **Year**: 1997

- **New ASU capacity**: 400 t/d
  - **Year**: 2016

> 150 m€
Investment
New Tools Modernizing the Operations

**Digital Maintenance**
Improve user experience, efficiency, data quality during maintenance

**eSafety Onboarding**
Maximize the time spent on site for the actual task

**iRound**
Capture weak signals, tracks anomalies during rounds

**eWork Permit**
Optimize the time spent and improve user experience

**eLogbook**
Ensure efficient operational communication

**eLockout-Tagout**
Monitor lockouts and secure operations
Transformation of the Packaged Gas Activity
Sylvie Villepontoux
## Gases Are Present Across All Industries

<table>
<thead>
<tr>
<th>Craftmen &amp; networks</th>
<th>Automotive &amp; Fabrication</th>
<th>Materials &amp; Energy</th>
<th>Food &amp; Pharma</th>
<th>Technology &amp; Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionals and craftsmen</td>
<td>Small to large companies</td>
<td>From the extraction of ores and oil to the transformation of raw materials</td>
<td>Food, beverage and pharmaceutical production</td>
<td>Advanced technology industries (optoelectronics, electronics manufacturing, space)</td>
</tr>
<tr>
<td>Metal fabrication, heating, construction and repair</td>
<td>Transform primary materials (metal)</td>
<td></td>
<td>Processing activities</td>
<td>Research centers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Analytical labs.</td>
</tr>
</tbody>
</table>
For a Variety of Applications
A Great Diversity of Customer, Needs & Usages Addressed Through a Large Range of Products

MOLECULES
- Pure or Mixed

VALVES
- From simple to sophisticated

Cylinders of different SIZES
Key Figures: Packaged Gas Activity - Rhône Alpes Region

- **30,000 customers**
- **70 employees for the supply chain**
- **360 distributors**
- **250,000 cylinders**
- **20 trucks**
- **500 Product references**
- **~2,000 cylinders delivered per day**
- **1.8 million km per year**
Customers: Geographical Reach & High Density

- Feyzin filling center
- Intermediary logistics platforms
- AL or distributor site at ~20’ drive max

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Transformation of the Packaged Gas Activity

To improve **customer experience**

To improve **working conditions**
To increase **employability**

To increase **sustainability**

To generate **efficiencies**
The Cylinder Journey

- Unloading Truck
- Customer Site
- Loading Truck
- Order Preparation
- Storage (full)
- Storage (empty)
- Filling
- Sorting
- Testing
Modernization of Production Processes in Feyzin

Modernization:
- Semi-automatization of filling process
- Automatization of order preparation

Benefiting to:
- **Customers**: faster production process, better quality and availability of cylinders
- **Employees**: less manipulations of cylinders, safer processes

50% less filling centers

Generating **Savings**
Next Steps

⇒ **Automatization of**

- **Testing**
  - already implemented in West region of France
- **Sorting and Storage**
  - next steps

⇒ **Enhanced benefits expected**
Optimization of Logistics While Ensuring Proximity to Customers

From 9 to 3 mutualized dispatching centers in France

In the region, 3 intermediary platforms to optimize the last kms

Routing optimization

Reduced transportation costs and CO₂ footprint

Large carrier

Intermediary logistics platforms

Customer

Distributor

Customer

Last kilometers: small carriers
While Reducing Carbon Footprint

**Reduction of km driven on the road**
- Road transportation partially converted to rail in France

**Aligned with Climate Objective to convert 20% of truck fleet to alternative fuels in 2025**
- Pilot in Paris region focusing on small carriers
- Pilot in Iberia on bulk trucks

**New innovative offers: Cryocity, Blueze, Oxy-combustion**
Improvement of Customer Experience

EASY

to buy

to get

to use

Leverage on **Airgas multichannel approach**

Innovative cylinders
Improved Customer Satisfaction

Net Promoter Score = % 😊 - % 😞

Based on, in Feyzin: ~ 50,000 inbounds calls and emails per year and
~ 2,000 feedbacks from surveys

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Smart Innovative Operations (SIO)

Increasing Value to Customers

Cristina Ballester Herrera
Content

1. Safety Instructions
2. Why digitalization of Large Industries Operations?
3. What is Smart Innovative Operations?
4. How to achieve SIO transformation?
5. Where do we stand today?
1. In case of emergency follow the instructions.

2. Pay attention to the emergency exits, do not use the elevator.

3. The meeting point is located outside the building, next to an olive tree.

4. No pictures in SIO room.
Major Trends Trigger the Digitalization of Large Industries Operations

- **DATA Availability**: To make faster operative decisions
- **DIGITALIZATION**: To enhance performance
- **CUSTOMER Expectations**: To improve customer satisfaction
Smart Innovative Operations to Increase Value to Customers

SIO
Step change for LI Operations Performance

Better serve our customers
Better reliability and adaptability

Improve offer to customers
Increase competitiveness to capture growth opportunities

Create value with customers
Improve profitability of both parties

A customer-centric transformation
What is SIO?

- Digital technologies to leverage data
- Organizational transformation
- Enhanced relationship with our customers
SIO.Drive
Remote Control of Production in a Secured Manner

- **Remote control** of
  - 19 Air Separation Units (ASU)
  - 5 Steam Methane Reformers (SMR)
- Investment: **€20m**
- Ensured **safety, cybersafety & reliability**
- Enhanced performance **SAVINGS**
- Global perspective
SIO.Optim
Data Analytics and Mathematical Optimization

- **Variables:**
  - Volume of production for each gas and each unit

- **Constraints:**
  - **Customers:** demand for each gas
  - **Facilities:** min / max production flows for all products for all units, Machine availability, ...
  - **External:** energy cost, weather forecast, ...

- **Optimization:**
  - Improved real time **decision making** process
  - Increased **agility** in a constrained environment

**Savings**
SIO.Predict
Increased Reliability by Early Detection

- Based on **sensors on equipments** and **analytic software**
- Early detection of anomalies
- Anticipation and organization of preventive maintenance, highly valued by customers
- Significant **Savings**
SIO.Perform
Best Economical Performance (BEP) for Each Unit

Find the best economical point for similar production benchmarking with past performance

Instructions to adjust parameters to reach the best possible level of performance

LARGE INDUSTRIES
How to Achieve SIO Transformation?

**INVEST**
- Plant Modernization & IT
- Optimization, diagnostic and improvement centers
- People: Expertise & New Skills

**KEY ENABLERS**
- Multi-skilled site personnel
- High level automation of LI facilities
- Digital access to all required information

* ROCC: Remote Operations Control Center
** LEAD: Leading Enterprise Analysis and Diagnosis

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LARGE INDUSTRIES
SIO, an Organizational Transformation
Creating New Roles and Opportunities

**ROCC PILOTS**
Remote Monitoring & Operations
- High-level operations decisions
- Direct contact with customers, plant teams and central SIO functions

**LEAD CENTER ANALYSTS**
Data Analytics & Case Management
- Drive efficiency and reliability
- Support operational decision making

**Facility Technician**
- Multi-skilled technicians
- Connected with central SIO functions for support
Where Do We Stand Today? 
Already 4 **SIO** Centers Worldwide, 2 Being Deployed
For further information, please contact:

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