



Belle-Etoile, Feyzin, Roussillon

An integrated industrial basin
under customer-centric
transformation

Feyzin • June 26, 2019 • Analysts and Investors Site Visit



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



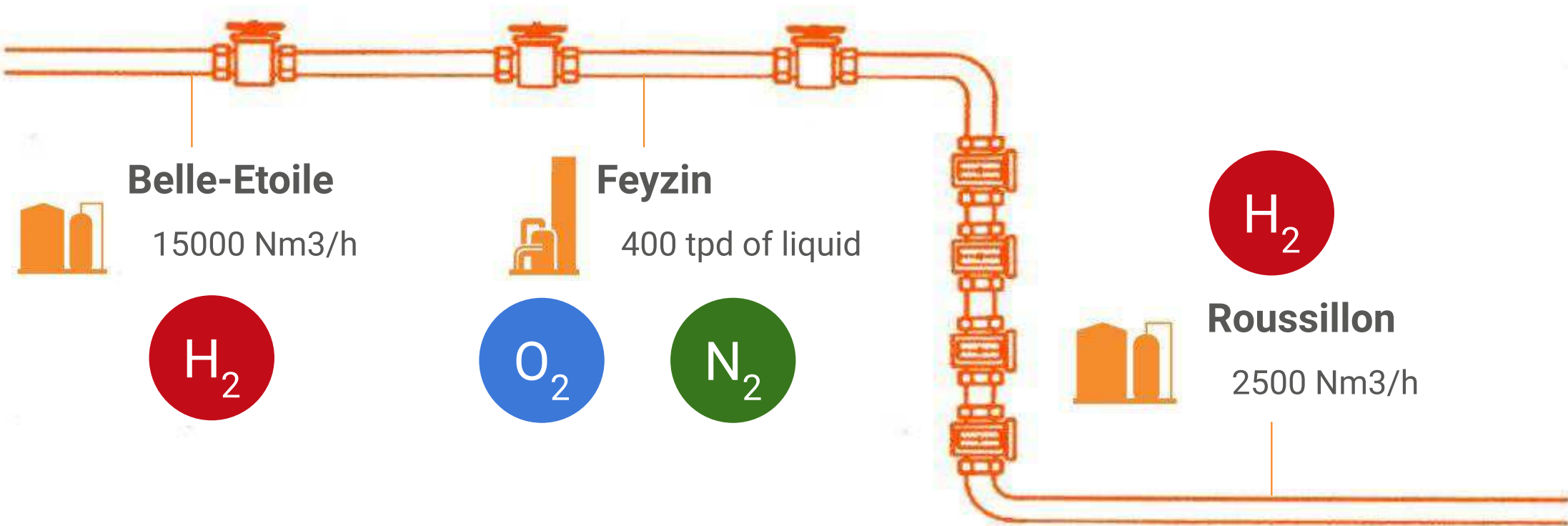
Mandatory use of PPE when they are requested



A Growing Integrated Basin Serving a Diversity of Customers

Markus Kohlberger

An Integrated Basin of 3 Production Sites Remotely Operated and Optimized



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

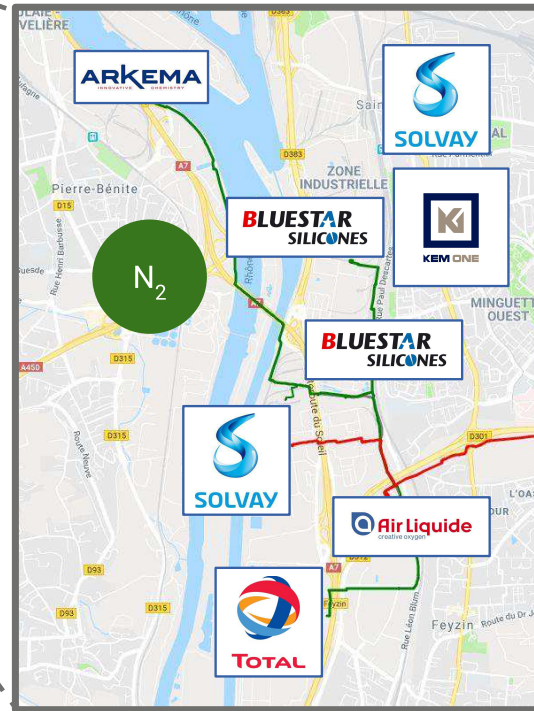
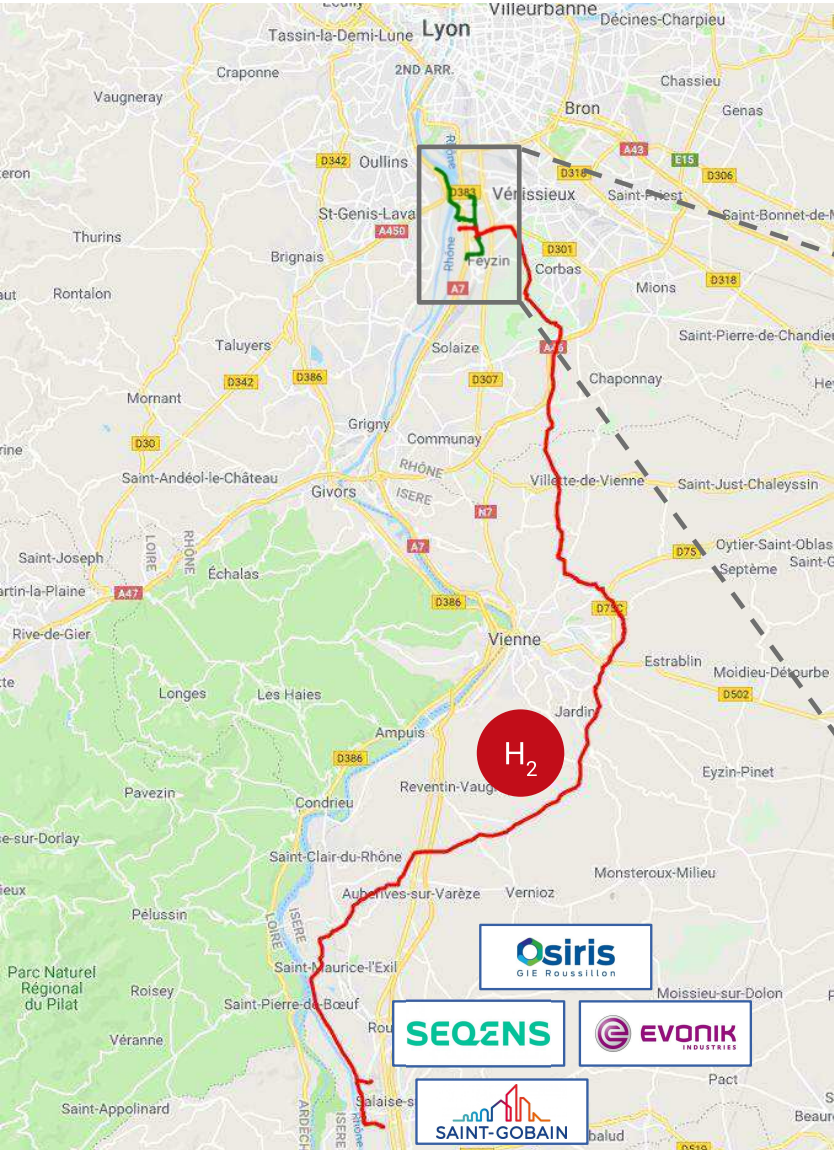
O₂ for Hospitals



Electronics

N₂ for semiconductors

65 km of Pipelines Connecting Customers



Providing
flexibility
and
reliability
to
customers

Continuous Investments

Fulfilling the Growing Needs of Customers

> 150 m€
Investment

Roussillon

H₂ pipeline
Roussillon

1989

SMR
2500 Nm³/h

2010

New H₂
Capacity
2600 Nm³/h

2019

Belle Etoile

H₂ pipeline
Rhone Poulenc
sourcing

1972

SMR
Take Over
by AL

2004

SMR
Remote
Control

2014

New H₂
capacity
15500 Nm³/h

2019

SIO

2016

Feyzin

ASU°1 23 t/d
+ LIN storage

1957

ASU°2 100 t/d
+ N₂ pipeline
+ 1ML LIN st.

1967

N₂ pipeline
extension

1995

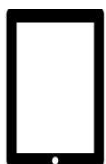
ASU°3 360t/d
+3ML LIN storage
+MED LOX storage

1997

New ASU
capacity
400 t/d

2018

New Tools Modernizing the Operations



Digital Maintenance

Improve user experience, efficiency, data quality during maintenance



iRound

Capture weak signals, tracks anomalies during rounds



eLogbook

Ensure efficient operational communication



eSafety Onboarding

Maximize the time spent on site for the actual task



eWork Permit

Optimize the time spent and improve user experience



eLockout-Tagout

Monitor lockouts and secure operations



Transformation of the Packaged Gas Activity

Sylvie Villepontoux

Gases Are Present Across All Industries

Craftmen & networks



Professionals and craftsmen

Metal fabrication, heating, construction and repair

Automotive & Fabrication



Small to large companies

Transform primary materials (metal)

Materials & Energy



From the extraction of ores and oil to the transformation of raw materials

Food & Pharma



Food, beverage and pharmaceutical production

Processing activities

Technology & Research



Advanced technology industries (optoelectronics, electronics manufacturing, space)

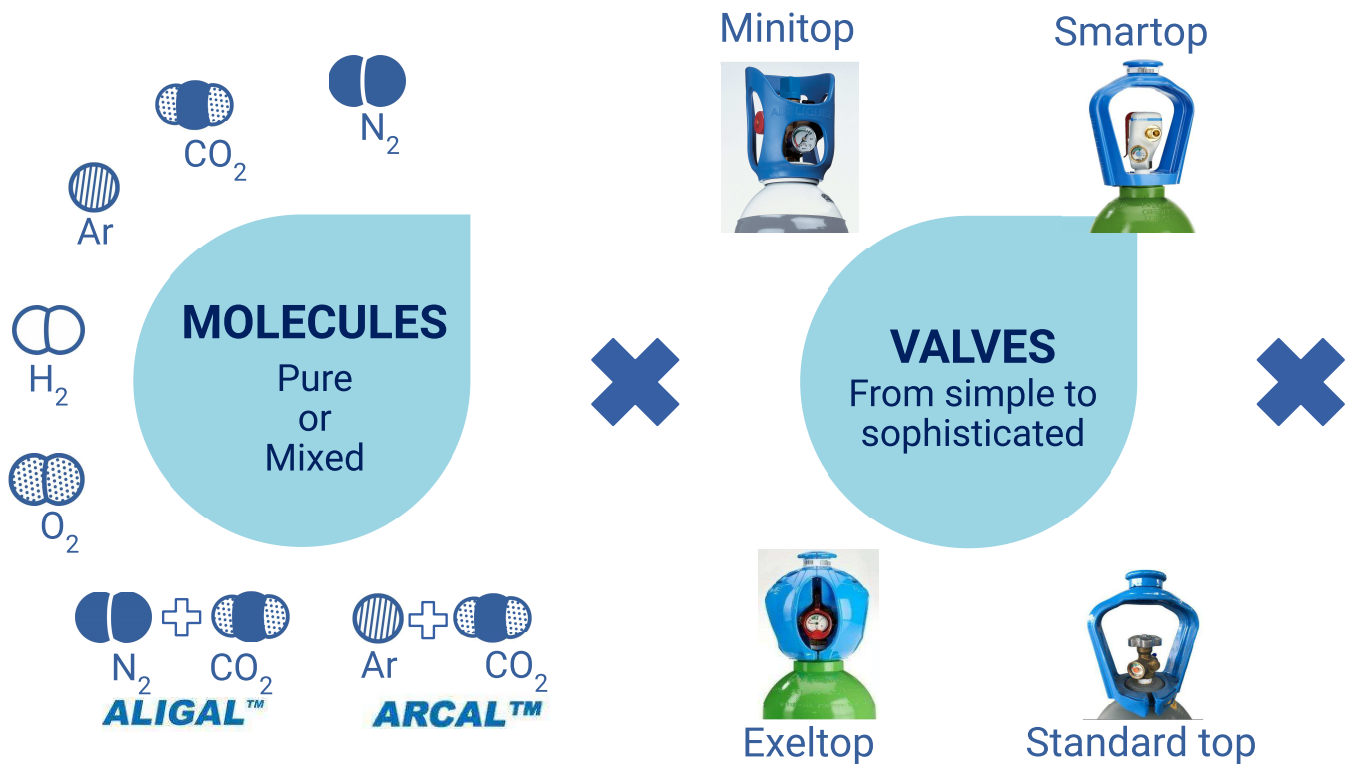
Research centers

Analytical labs.

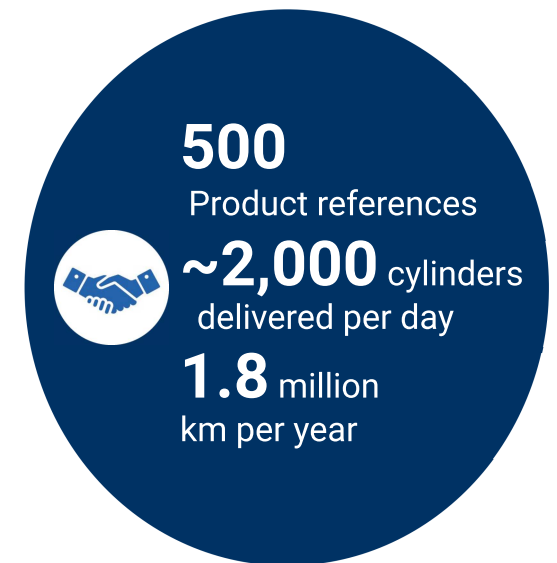
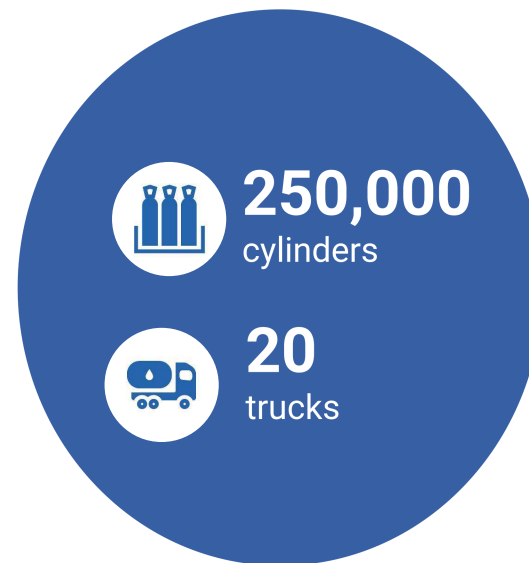
For a Variety of Applications



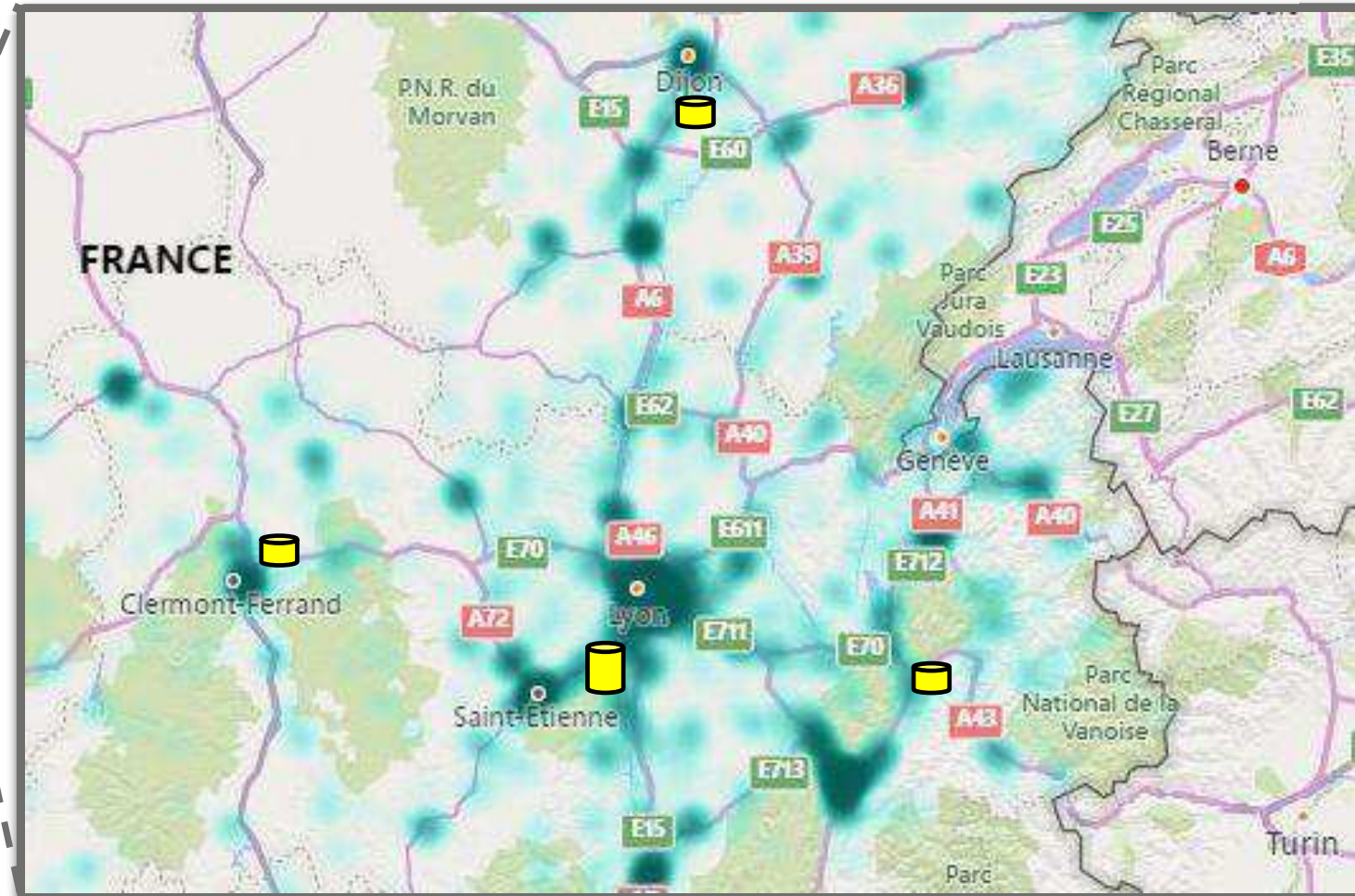
A Great Diversity of Customer, Needs & Usages Addressed Through a Large Range of Products



Key Figures: Packaged Gas Activity - Rhône Alpes Region



Customers: Geographical Reach & High Density

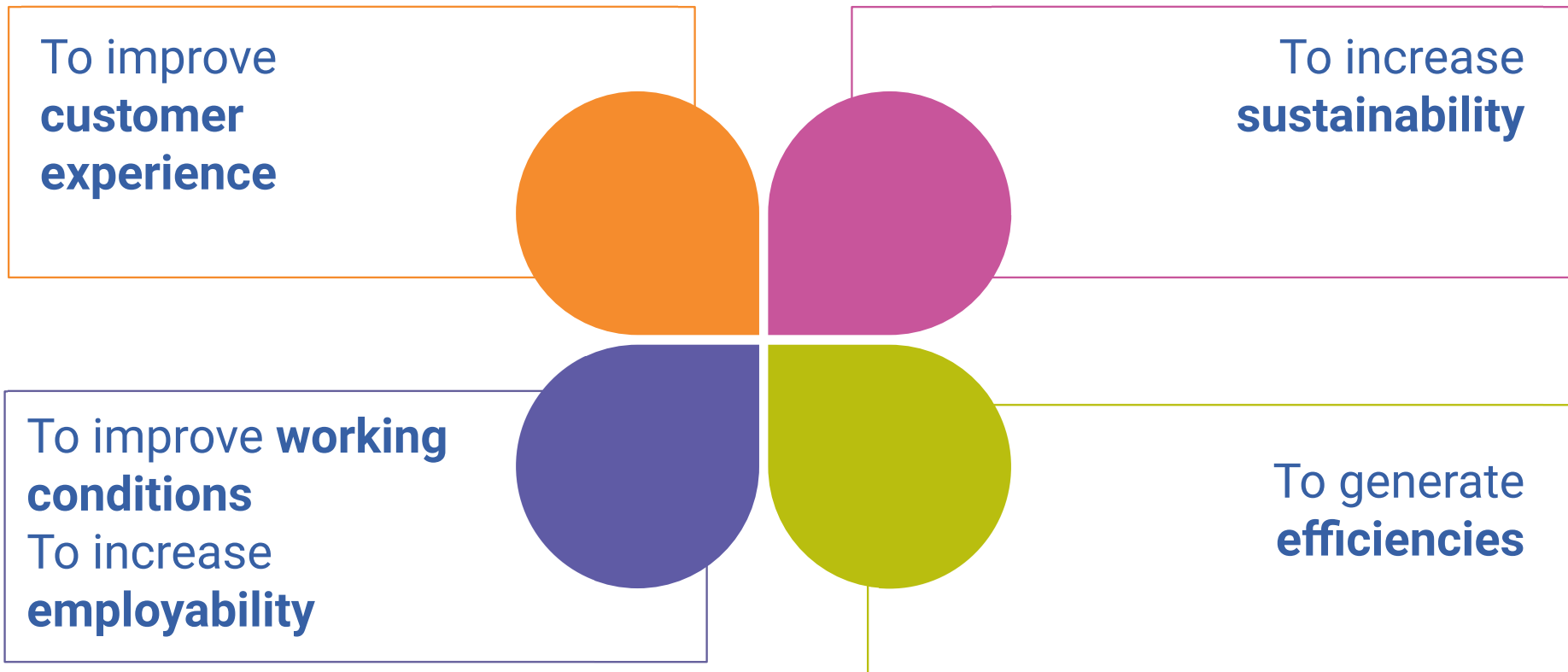


 Feyzin filling center

 Intermediary logistics platforms

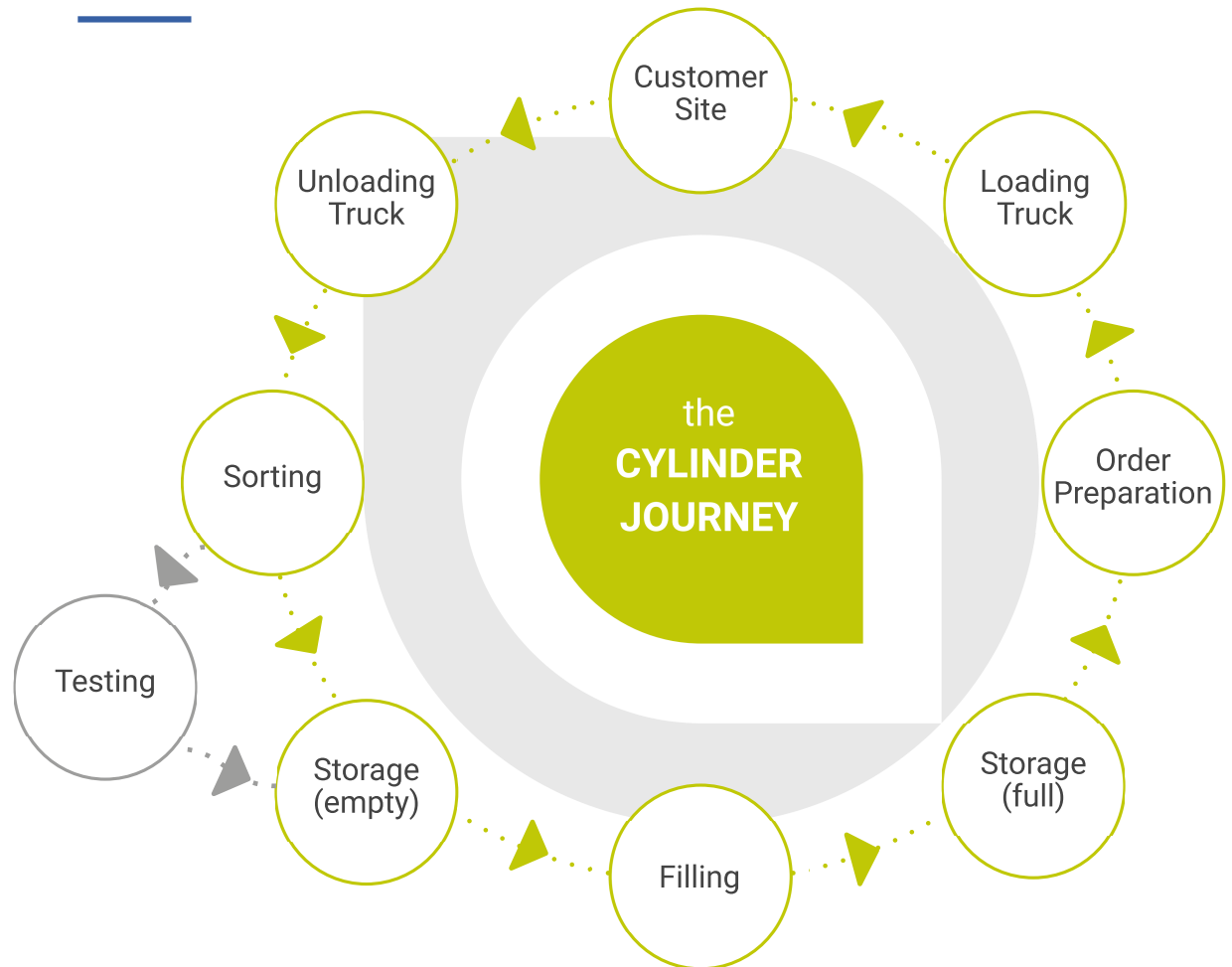
AL or distributor site at
~20' drive max

Transformation of the Packaged Gas Activity





The Cylinder Journey



Modernization of Production Processes in Feyzin

Modernization:

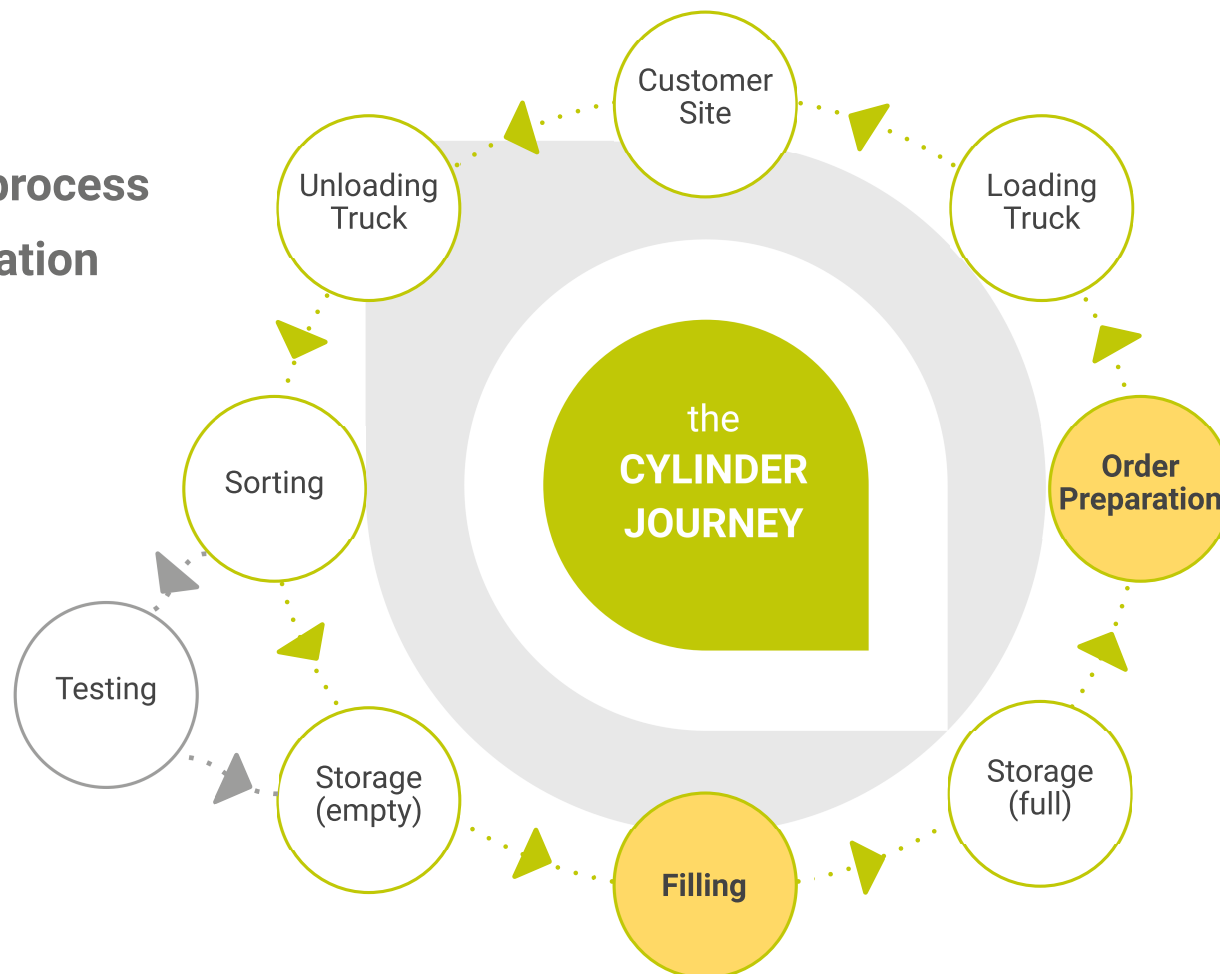
- **Semi-automatization of filling process**
- **Automatization of order preparation**

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

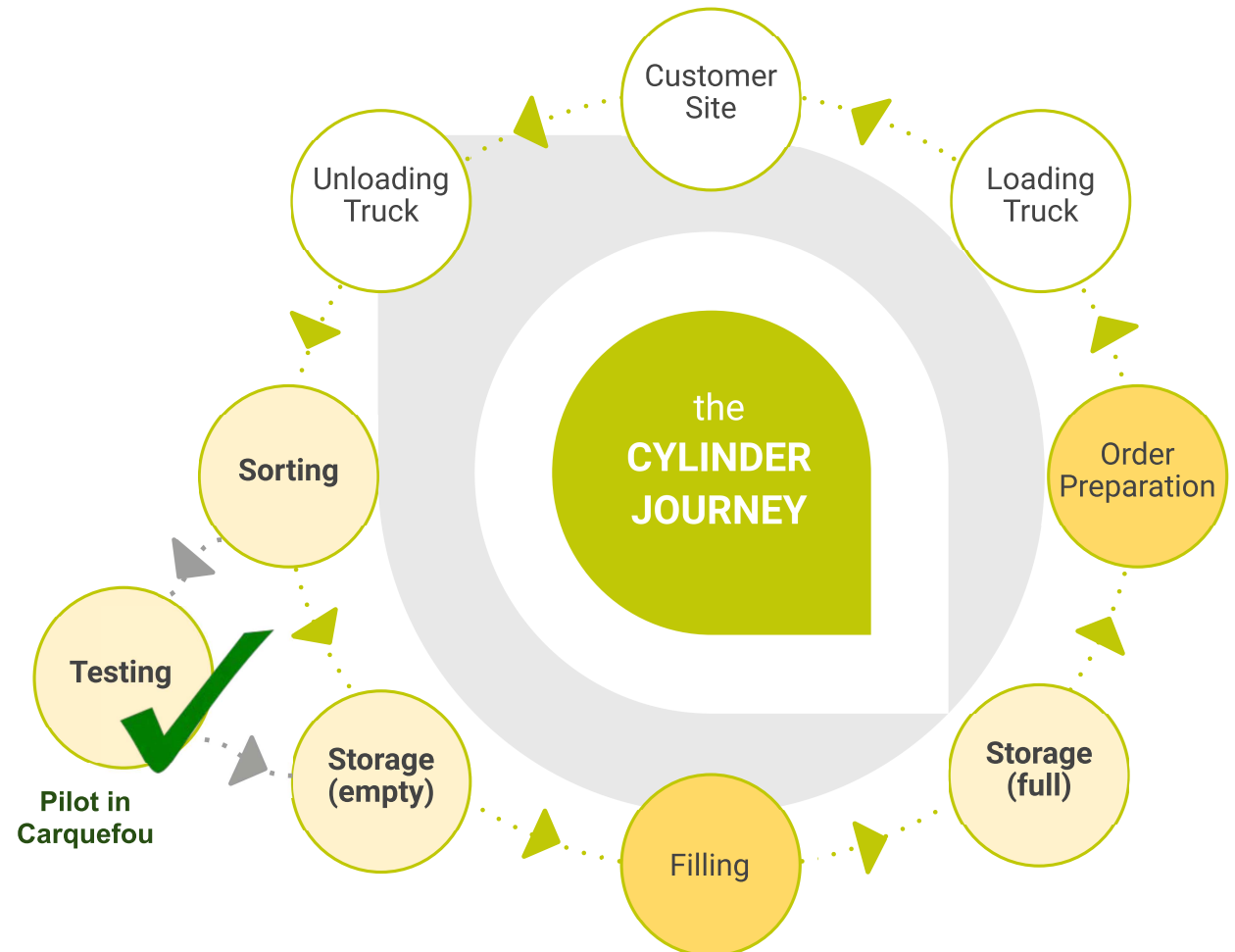
- **Testing**

- already implemented in West region of France

- **Sorting and Storage**

- next steps

⇒ Enhanced benefits expected



Optimization of Logistics While Ensuring Proximity to Customers

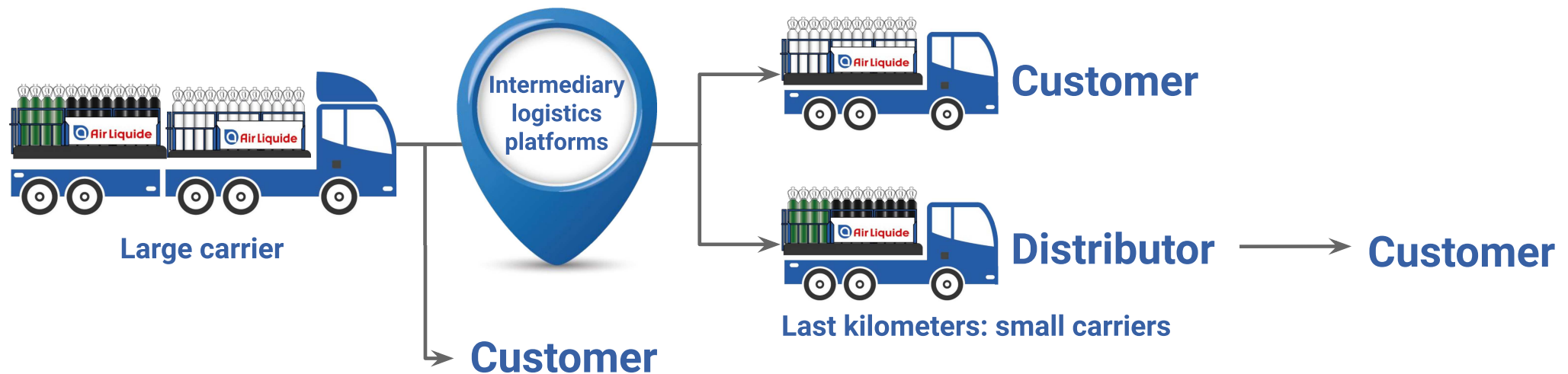
From 9 to 3 **mutualized dispatching centers** in France

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

Routing optimization

Reduced
transportation **costs**
and **CO₂ footprint**

SAVINGS





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, Blueeze, Oxy-combustion



Improvement of Customer Experience

 SIMPLE

E
A
S
Y

to buy

to get

to use



Leverage on **Airgas multichannel approach**

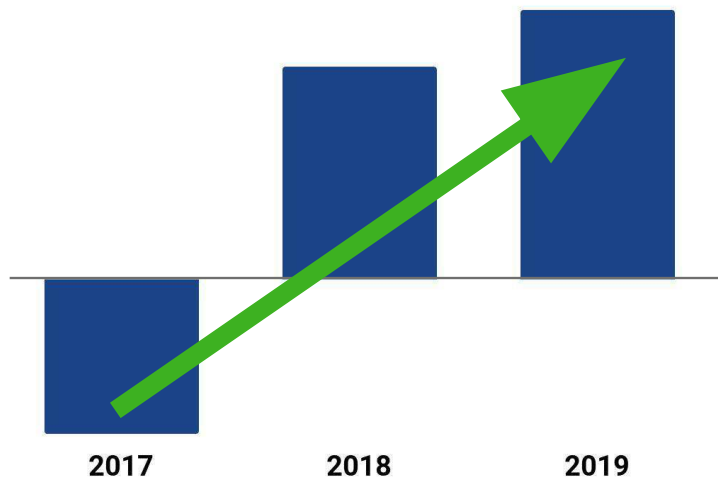


Innovative cylinders



Improved Customer Satisfaction

Net Promoter Score = % 😊 - % 😞



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



Smart Innovative Operations (SIO)

Increasing Value to Customers

Cristina Ballester Herrera

Saint Priest • June 26, 2019 • Analysts and Investors Site Visit



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?

Safety Instructions



TECHNOLAND // BÂTIMENT G
2 ALLÉE DU PIÉMONT
69800 SAINT PRIEST

BON À TIRER
VÉRIFIER L'INTEGRALITE DU DOCUMENT

NUMERO ET ADRESSE, POSITION ET NOMBRE DE PLANS,
ORGANISME DE SECOURS CONCERNES,
REGLEMENTS ET STATUTS
PAR FEU MANUSCRIT

NOMMAI B A T
 BON POUR ACCORD

Visa du Client
(à retourner à l'adresse de l'Air Liquide - 69800 SAINT PRIEST)

Date: _____

NIVEAU 1



LEGENDE

	Cheminement d'Evacuation
	Evacuation Vers Sortie Finale
	Extincteur Portatif
	Déclencheur Manuel d'Alarme Incendie
	Coupure Electrique
	Ascenseur



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



To make faster
operative decisions



To enhance
performance



To improve
customer satisfaction

Smart Innovative Operations to Increase Value to Customers



A customer-centric transformation



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

What is SIO?

Digital technologies
to leverage data

Organizational
transformation

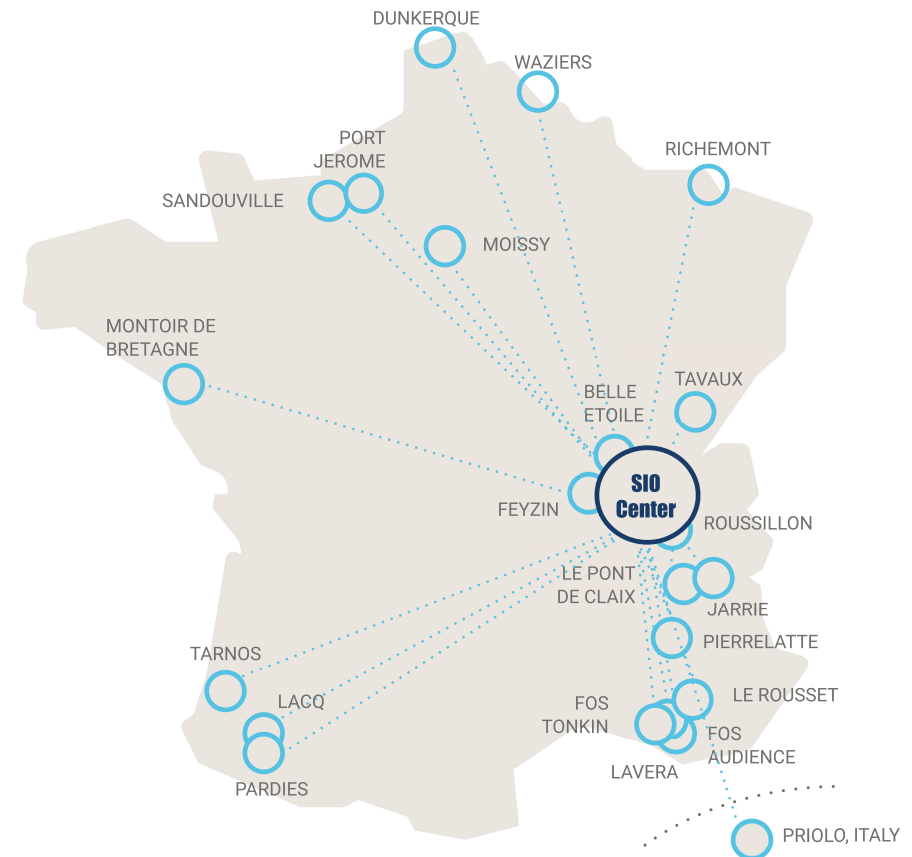
Enhanced relationship
with our customers



SIO.Drive

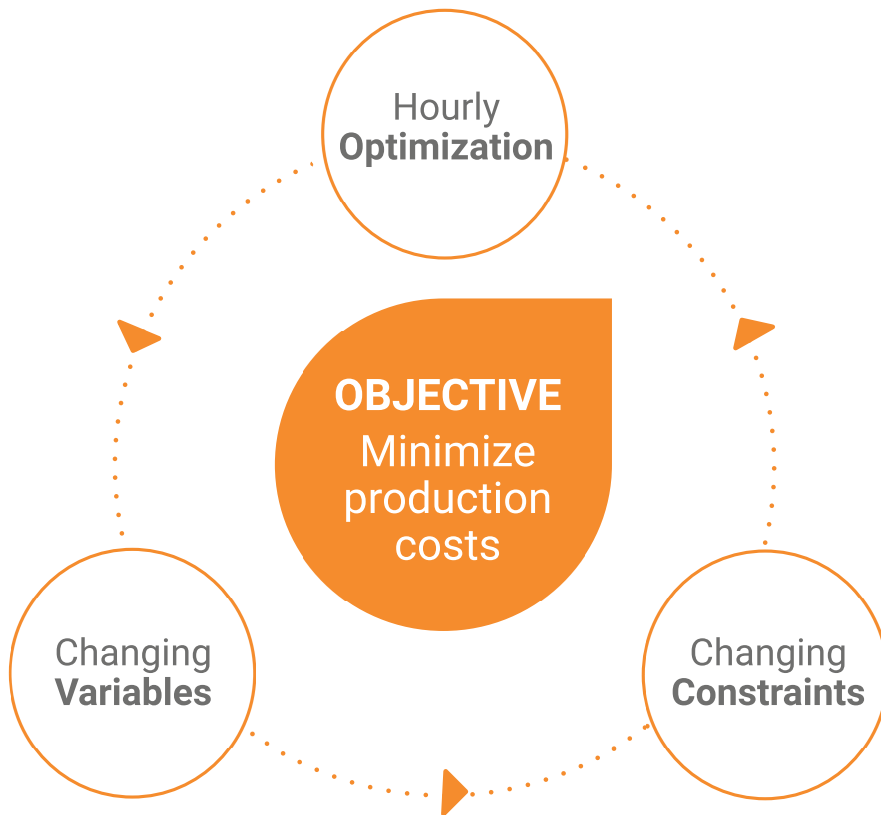
Remote Control of Production in a Secured Manner

- **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

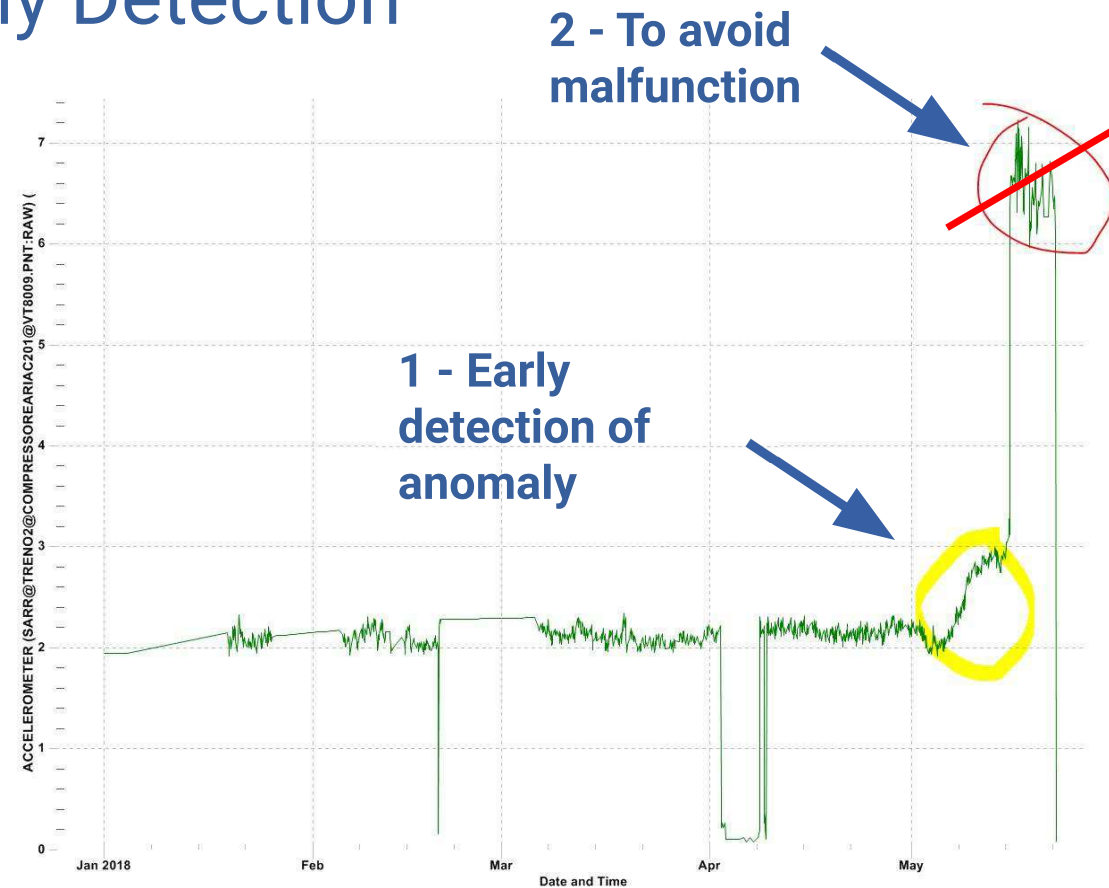


- **Variables:**
 - Volume of production for each gas and each unit
- **Constraints:**
 - **Customers:** demand for each gas
 - **Facilities:** min / max production flows for all products for all units, Machine availability, ...
 - **External:** energy cost, weather forecast, ...
- **Optimization:**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



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

SAVINGS

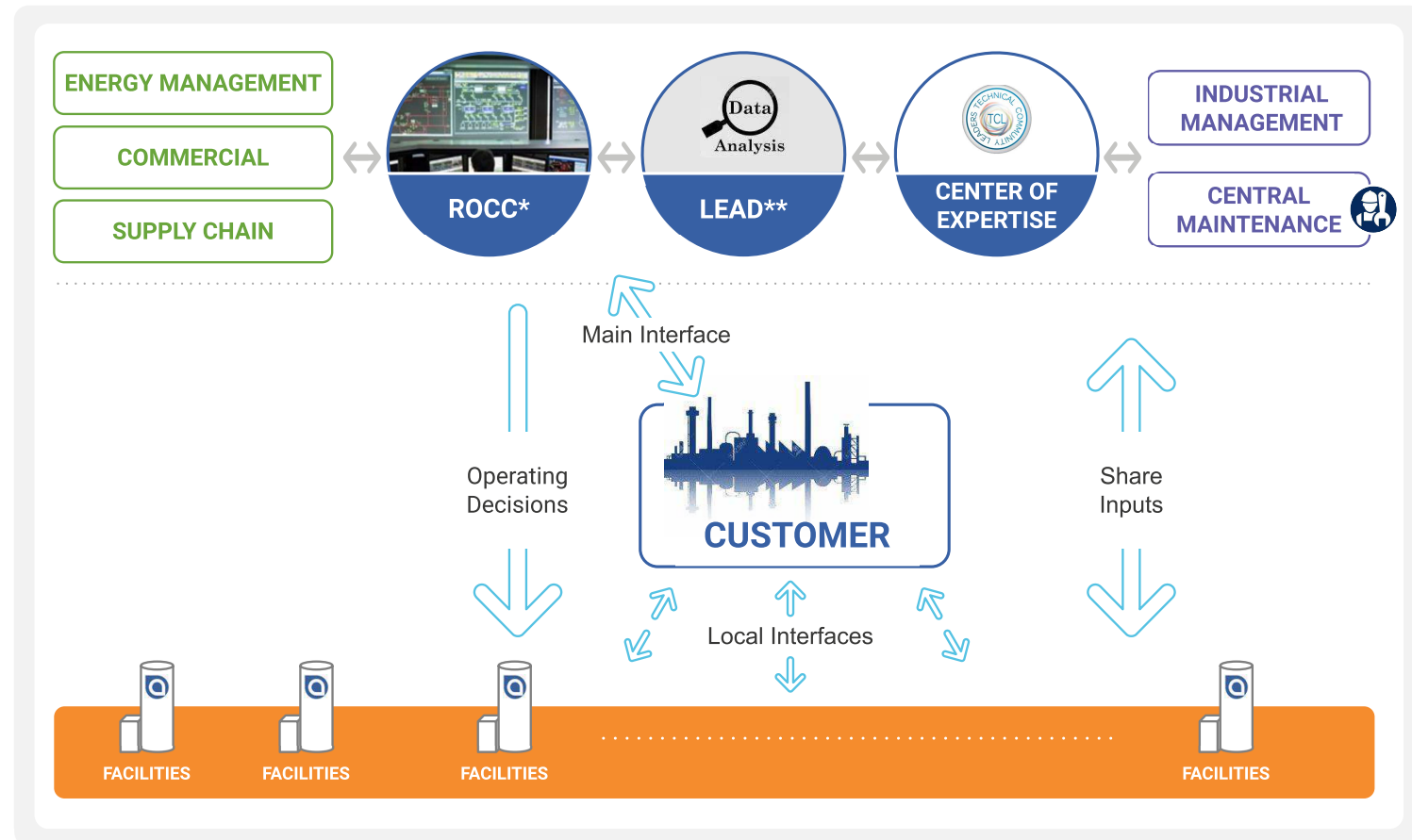
How to Achieve **SIO** Transformation?

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

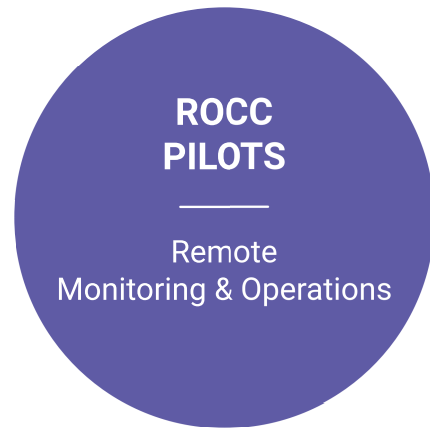


* ROCC: Remote Operations Control Center

** LEAD: Leading Enterprise Analysis and Diagnosis

SIO, an Organizational Transformation

Creating New Roles and Opportunities



- High-level operations decisions
- Direct **contact with customers**, plant teams and central SIO functions



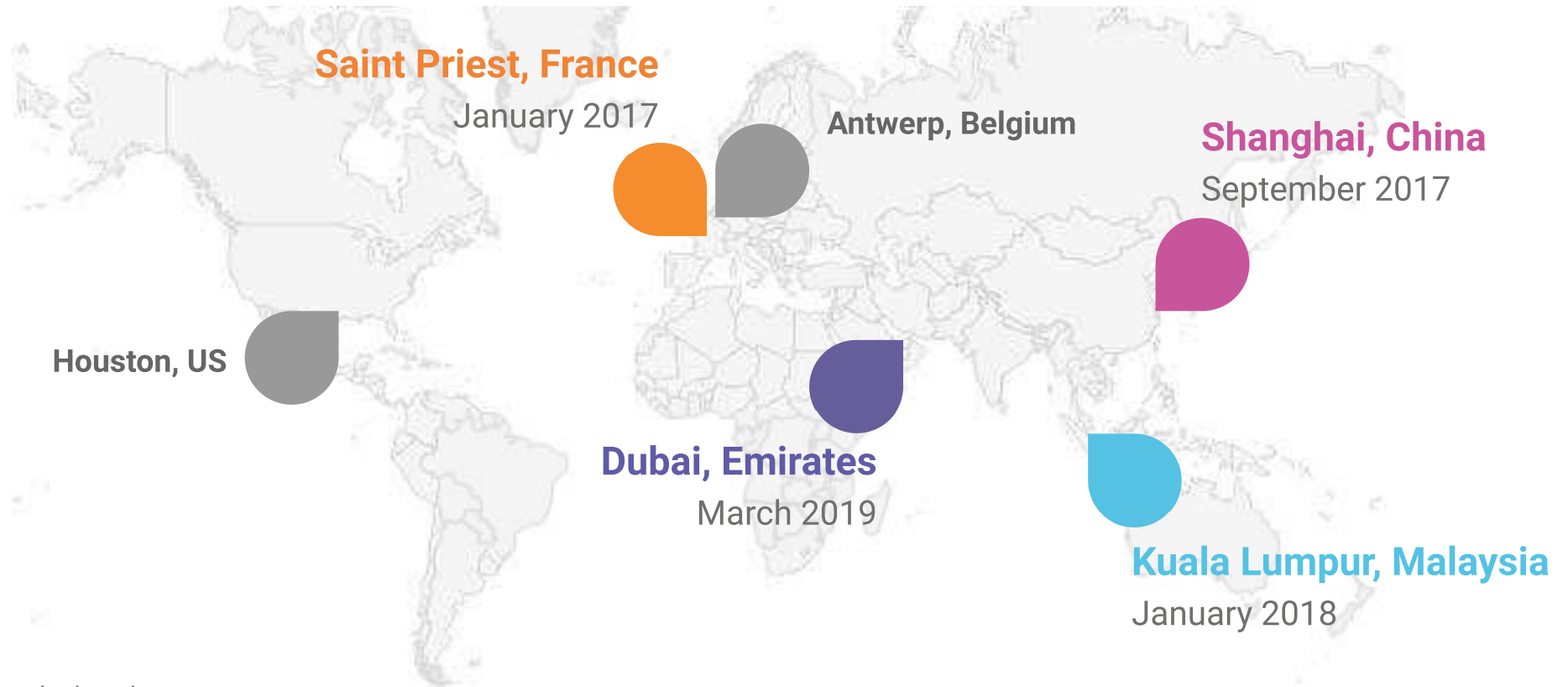
- Drive **efficiency** and **reliability**
- Support operational **decision making**



- **Multi-skilled** technicians
- Connected with central SIO functions for **support**

Where Do We Stand Today?

Already 4 **SIO** Centers Worldwide, 2 Being Deployed



Being deployed

For further information, please contact:

Investor Relations

Aude Rodriguez 📞 + 33 (0)1 40 62 57 08

Ludmilla Binet 📞 + 33 (0)1 40 62 57 37

Muriel Légeron 📞 + 33 (0)1 40 62 50 18

Joseph Marczely 📞 + 1 610 263 8277

www.airliquide.com

L'Air Liquide S.A.

*Corporation for the study and application of processes developed by
Georges Claude with registered capital of 2,361,913,658.50 euros*

Corporate Headquarters:

75, Quai d'Orsay

75321 Paris Cedex 07

Tel : +33 (0)1 40 62 55 55

RCS Paris 552 096 281

