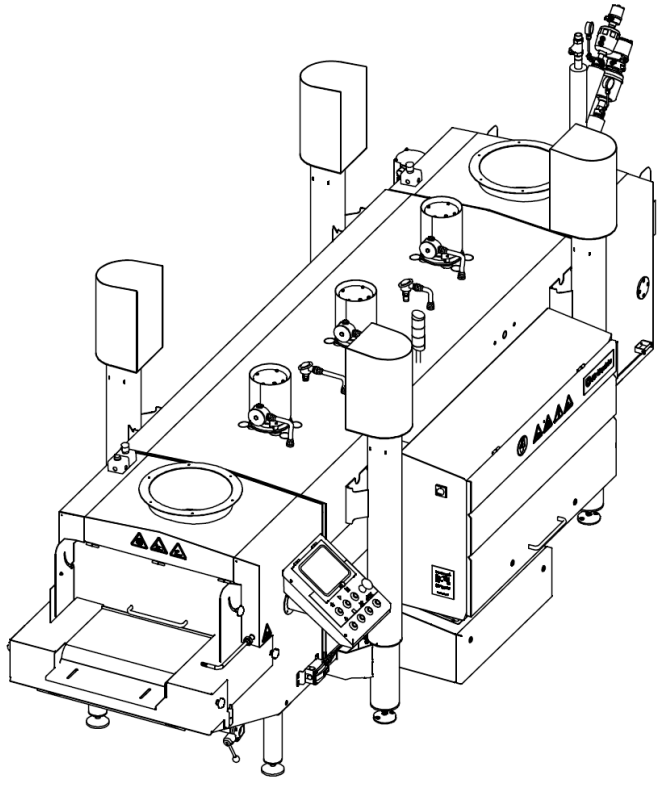
VIRTUAL STUDY VISIT
Food Pilot - Melle (B)
25/09/20

Testimonial : Air Liquide



FOOD **TEST** FACILITIES
Collaboration Between Food Pilot and Food/Pharma teams Air Liquide

Create more value, visibility and business opportunities with invested demo-equipment and specialized Knowledge Centers as partners.

Air Liquide at a glance

Who or what is Air Liquide ?

Air Liquide at a glance

Our scientific territory: essential small molecules

Oxygen, nitrogen and hydrogen are essential small molecules. They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

Separating the **air** components to take advantage of their properties

OXYGEN | **NITROGEN** | **ARGON** AND **RARE GASES**

Producing molecules from **natural resources** of the planet

HYDROGEN | **HELIUM** | **SILANE** | **ACETYLENE** | **CARBON MONOXIDE**

Air Liquide at a glance

~67,000
EMPLOYEES

PRESENT IN
80 COUNTRIES

MORE THAN
3.7 MILLION
CUSTOMERS & PATIENTS

REVENUE
€21.9bn

NET PROFIT (GROUP SHARE)
€2.24bn

INVESTMENT DECISIONS
€3.7bn

Air Liquide

A world leader in industrial gases and related services

A unique model

OUR PROFILE

~ 67,000 committed employees in 80 countries

+ 3.7 million customers and patients

Extensive scientific and technical expertise in industrial gases (oxygen, nitrogen, hydrogen, etc.)

4,300 employees contributing to innovation

5 Innovation Campus

11,000 patents

2 industrial gases production modes

Centralized production

On-site production at customers'

3 industrial gases distribution networks

> 9,600 km of pipelines for large quantities

24 millions cylinders for small quantities

+10,000 trucks for medium quantities

OUR BUSINESS MODEL

- Long-term vision and clear strategy
- +
- A wide range of customers and applications
- +
- Major ability to innovate
- +
- Long-term customer contracts, indexed to energy prices
- +
- Management and optimization of production and distribution chain
- +
- Active involvement in new markets
- +
- Global presence and local activity

OUR ACTIVITIES

LARGE INDUSTRIES 26%(a)

Industrial gases in large quantities in the framework of long-term partnerships

INDUSTRIAL MERCHANT 44%(a)

Industrial gases in small and medium quantities, applications, small equipment and related services serving a wide range of customers

ELECTRONICS 9%(a)

Ultra-pure gases in large quantities and development of new molecules

HEALTHCARE 17%(a)

Medical gases, products and services to support patients and clients in the hospital and at home

GLOBAL MARKETS & TECHNOLOGIES 3%(a)

Molecules, equipment and services to support the markets of energy transition and deep tech(b)

ENGINEERING & CONSTRUCTION 1%(a)

Plants and equipment for industrial gas production

TO SUPPORT ALMOST ALL ECONOMIC SECTORS

- Chemicals
- Refining & energy
- Metals

- Materials & energy
- Automotive & manufacturing
- Food & pharmaceuticals
- Technology & research
- Entrepreneurs & distributors

- Semiconductors
- Flat panels
- Photovoltaic

- Hospitals
- Home healthcare
- Hygiene & specialty ingredients

- Energy transition
- Deep tech(b)

- Customers choosing to insource their industrial gas needs

(a) *Percentage of 2019 Group revenue.*
(b) *Disruptives technologies based on scientific breakthroughs that can fundamentally change design and production methods.*

Air Liquide at a glance

The FOOD DIVISION

Agriculture and fish farming

Food

Beverages

Cold transportation and food retail

FARMING

PROCESSING

LOGISTICS

RETAIL AND CONSUMPTION

Air Liquide at a glance

Gas Solutions for Every Food Processing Sector

#	Main Gas Applications	Meat	Poultry	Fish & Seafood	Fruits & Veg.	Bakery	Dairy	Oils & fats	Prepared Meals
1	**Stunning**	X	X						
2	**Combo Bin/box Chilling**	X	X	X					
3	**Chilling**	X	X	X	X	X	X		X
4	**Freezing or Crust Freezing**	X	X	X	X	X	X		X
5	**Crust Freezing before Slicing/Dicing**	X	X	X					
6	**Crust Freezing before Glazing**			X					
7	**Crust Freezing for Hardening**					X	X		
8	**Coating of IQF products**								X
9	**IQF of Liquid Pellets**						X		
10	**Temperature Control**	X	X	X		X	X		
11	**Pressurization of Aerosol Cans**						X		
12	**pH Adjustment**						X		
13	**Hydrogenation**							X	
14	**Tank Inerting and Deoxygenation**						X	X	
15	**Modified Atmosphere Packaging (MAP) & Atm. Control in Greenhouses & Aquaculture**	X	X	X X	X X	X	X	X	X

The Food Pilot <-> Air Liquide

Air Liquide has several Testing centers at his own in **Europe** :

- Krefeld (D)
- Paris (F)
- -..

And several partnerships with knowledge Centers in

- Foodhill - Sweden (https://foodhills.se/)
- DIL (Deutsches Institut für Lebensmitteltechnik" - Germany) https://www.dil-ev.de/
- ...
- FOOD PILOT
  - Modified Atmosphere Packaging (Several gasses are present & Packaging Equipment)
  - Cryogenic applications (Freezing - Chilling) with Tunnel and Chamber ,Liquid Nitrogen in Vessel

The Food Pilot <-> Air Liquide

Air Liquide and FOOD PILOT signed a collaboration agreement (5y) for mutual trials : https://www.youtube.com/watch?v=LWwvc8ad4Zc

The Food Pilot <-> Air Liquide

Testimonial of Customer

user - VLEVY in the video explained in a few words the essentiel benefits of this possibility :

- Running a trial in a production environment = difficult
  - Short & small but with long change-over times => out of production Environment
- It helps during product development phase
- Quick reaction on demands of Customer

The Food Pilot gives us the possibility to simulate our Production Process in a Food Safety Environment with several Food Experts .

The Food Pilot <-> Air Liquide

The solution offered by the Food Pilot are very Flexible

2 OPTION to do trials	
OPTION 1: trials at **customer site**	OPTION 2: trials at the '**Food Pilot' Belgium**
+ Best production simulation (preparation and after treatment) + Longer trial period possible	+ Easy way to test and prove with customer product samples as all equipment is in place (pretraitement, freezing equipment - both equipments, LIN, safety equipment …)
- Transport & installation of the equipment to customer - Available space and time at customer - Provide LIN or LIC at customer site + safety - Higher cost at the end	- Lower product volume and customer has to come to 'Food Pilot' (can also by video and send back of product)

Trials at the FOOD-PILOT in Belgium

SOLUTION to do small trials with customer product(s):

Food Pilot (independent Flemish government organisation to stimulate food business) in Gent (Belgium) has a complete pilot center with all kind of equipment for trials (ideal for preparation of customer products to simulate production…. Check details of all available equipment on following link)

Air Liquide invested 35 k€ to install a fix storage (LIN 3000 liter), the needed vacuum piping, flexibels and extraction to execute trials on a professional level.

OPTION 2 : Trials at the FOOD-PILOT in Belgium

Equipment:

- AL- Demo tunnel - type FP1 - model: LIN 30x6
- freezing cabinet - type Dohmeyer (LIN/LIC)
- All other food preparation equipment (oven, packaging with MAP, etc..)

Support:

- AL: Always initial demand and assistance by Altec (to check availability and feasibility (scope of customer)
- FOODPILOT: Local assistance, LIN available (LIC on demand), cleaning inclusive, option: other equipment, analyses and reporting (,- €* as option).

Prices: cost invoiced by AL Belge to the country.

- Food pilot rent per day (people and space),-€/d*
- AL payback investment and rent tunnel ….
- LIN consumption (+/- 1500 liter/trial) €/l*
- Cleaning of equipment ,- €*

Day 1 = - €
Extra day = ,- € day
excl. Altec support

- *Other equipment from Food Pilot (on demand)* *link* : *average €/machine** :

* costs what we have to pay to the Foodpilot

EQUIPMENT DETAILS

Specifications Freezing CABINET

CRYO CABINET Range	STANDARD
Overall WxDxH (mm)	1990 x 1550 x 2215
Internal WxDxH (mm)	1130 x 1280 x 2046
Door Opening WxH (mm)	900 x 1977
Trolley Size WxDxH (mm)	Euro-Norm : 600x800x1800
Weight (kg)	1100
Power Supply	400V, 50/ 60Hz, 3 phase

Specifications Demo Freezing TUNNEL - FP1

CRYO TUNNEL 30x6	DEMO FP1 Cluster NEC
Overall WxDxH (mm)	4878 x 2005 x 2300
Belt WxD (mm) Internal freezing chamber length (mm)	4500 x 600 3000
Product Clearance (mm)	200
Belt specifications	standard
Weight (kg)	2500
Power Supply	Electricity: 400V, 50/ 60Hz, 3 phase, 8 kW Compressed air : 6-8 bar

THANKS FOR YOUR ATTENTION

Piet de Caluwé
Sr. Consultant Food & Pharma
piet.decaluwe@airliquide.com
Air Liquide Belgium

Air Liquide
creative oxygen