



COMILLAS
UNIVERSIDAD PONTIFICIA

ICAI

GRADO EN INGENIERÍA EN TECNOLOGIAS
INDUSTRIALES

TRABAJO FIN DE GRADO
IMPLEMENTATION OF AN INTERNET CATALOGUE FOR A
CUSTOMER PORTAL

Autor: Andrés Baltar Arriola
Director: Fahima Bouzehouane

Madrid
Julio de 2019

AUTHORIZATION FOR DIGITALIZATION, STORAGE AND DISSEMINATION IN THE NETWORK OF END-OF-DEGREE PROJECTS, MASTER PROJECTS, DISSERTATIONS OR BACHILLERATO REPORTS

1. Declaration of authorship and accreditation thereof.

The author Mr. /Ms. Andrés Baltar Arriola

HEREBY DECLARES that he/she owns the intellectual property rights regarding the piece of work: Implementation of an internet catalogue for a customer portal that this is an original piece of work, and that he/she holds the status of author, in the sense granted by the Intellectual Property Law.

2. Subject matter and purpose of this assignment.

With the aim of disseminating the aforementioned piece of work as widely as possible using the University's Institutional Repository the author hereby **GRANTS** Comillas Pontifical University, on a royalty-free and non-exclusive basis, for the maximum legal term and with universal scope, the digitization, archiving, reproduction, distribution and public communication rights, including the right to make it electronically available, as described in the Intellectual Property Law. Transformation rights are assigned solely for the purposes described in a) of the following section.

3. Transfer and access terms

Without prejudice to the ownership of the work, which remains with its author, the transfer of rights covered by this license enables:

- a) Transform it in order to adapt it to any technology suitable for sharing it online, as well as including metadata to register the piece of work and include "watermarks" or any other security or protection system.
- b) Reproduce it in any digital medium in order to be included on an electronic database, including the right to reproduce and store the work on servers for the purposes of guaranteeing its security, maintaining it and preserving its format.
- c) Communicate it, by default, by means of an institutional open archive, which has open and cost-free online access.
- d) Any other way of access (restricted, embargoed, closed) shall be explicitly requested and requires that good cause be demonstrated.
- e) Assign these pieces of work a Creative Commons license by default.
- f) Assign these pieces of work a HANDLE (*persistent URL*). by default.

4. Copyright.

The author, as the owner of a piece of work, has the right to:

- a) Have his/her name clearly identified by the University as the author
- b) Communicate and publish the work in the version assigned and in other subsequent versions using any medium.
- c) Request that the work be withdrawn from the repository for just cause.
- d) Receive reliable communication of any claims third parties may make in relation to the work and, in particular, any claims relating to its intellectual property rights.

5. Duties of the author.

The author agrees to:

- a) Guarantee that the commitment undertaken by means of this official document does not infringe any third party rights, regardless of whether they relate to industrial or intellectual property or any other type.

- b) Guarantee that the content of the work does not infringe any third party honor, privacy or image rights.
- c) Take responsibility for all claims and liability, including compensation for any damages, which may be brought against the University by third parties who believe that their rights and interests have been infringed by the assignment.
- d) Take responsibility in the event that the institutions are found guilty of a rights infringement regarding the work subject to assignment.

6. Institutional Repository purposes and functioning.

The work shall be made available to the users so that they may use it in a fair and respectful way with regards to the copyright, according to the allowances given in the relevant legislation, and for study or research purposes, or any other legal use. With this aim in mind, the University undertakes the following duties and reserves the following powers:

- a) The University shall inform the archive users of the permitted uses; however, it shall not guarantee or take any responsibility for any other subsequent ways the work may be used by users, which are non-compliant with the legislation in force. Any subsequent use, beyond private copying, shall require the source to be cited and authorship to be recognized, as well as the guarantee not to use it to gain commercial profit or carry out any derivative works.
- b) The University shall not review the content of the works, which shall at all times fall under the exclusive responsibility of the author and it shall not be obligated to take part in lawsuits on behalf of the author in the event of any infringement of intellectual property rights deriving from storing and archiving the works. The author hereby waives any claim against the University due to any way the users may use the works that is not in keeping with the legislation in force.
- c) The University shall adopt the necessary measures to safeguard the work in the future.
- d) The University reserves the right to withdraw the work, after notifying the author, in sufficiently justified cases, or in the event of third party claims.

Madrid, on 09 of August, 2019.

HEREBY ACCEPTS

Signed.....Balta.....

Reasons for requesting the restricted, closed or embargoed access to the work in the Institution's Repository

I, hereby, declare that I am the only author of the project report with title:

IMPLEMENTATION OF AN INTERNET CATALOGUE FOR A CUSTOMER
PORTAL

which has been submitted to ICAI School of Engineering of Comillas Pontifical University in the academic year 2018/19. This project is original, has not been submitted before for any other purpose and has not been copied from any other source either fully or partially. All information sources used have been rightly acknowledged.

Fdo.: Andrés Baltar Arriola

Date: 09/08/2019



I authorize the submission of this project

PROJECT SUPERVISOR

Fdo.: Fahima Bouzehouane

Date: 09/08/2019





COMILLAS
UNIVERSIDAD PONTIFICIA

ICAI

GRADO EN INGENIERÍA EN TECNOLOGIAS
INDUSTRIALES

TRABAJO FIN DE GRADO
IMPLEMENTATION OF AN INTERNET CATALOGUE FOR A
CUSTOMER PORTAL

Autor: Andrés Baltar Arriola
Director: Fahima Bouzehouane

Madrid
Julio de 2019

IMPLEMENTACIÓN DE UN CATÁLOGO EN INTERNET PARA UN PORTAL DE CLIENTES

Autor: Baltar Arriola, Andrés

Director: Bouzehouane, Fahima

Entidad Colaboradora: Air Liquide Santé Services

RESUMEN DEL PROYECTO

1. Introducción

El presente documento tiene como objetivo mostrar las tareas cotidianas y el proyecto llevado a cabo durante mis prácticas en Air Liquide Santé Internacional, rama sanitaria francesa de Air Liquide.

Air Liquide es un grupo industrial francés de envergadura internacional especialista en gases industriales, es decir, gases para la industria, la sanidad, el medio ambiente y la investigación. La compañía fue fundada en 1902 y tiene cerca de 65000 empleados en la actualidad.

La misión principal de las prácticas es el despliegue de un catálogo de productos en internet que estará en el portal de clientes. Este portal fue lanzado en noviembre de 2018 en Francia y su lanzamiento ha sido progresivo en los diferentes países europeos (Bélgica, España, Portugal, Alemania, Italia) entre los meses de mayo y junio de 2019. Para ello se ha hecho uso de un PIM (Product Information Management), programa de gestión de datos con toda la información relacionada con los productos vendidos en el portal cliente.

Este documento contiene las tareas realizadas en mi día a día, los útiles creados para facilitar el proceso de subida de información en masa al portal, comunicación con las filiales europeas para entender sus necesidades y adaptación de sus portales lo máximo posible a lo deseado, formación de las filiales europeas en el uso del PIM, así como el resultado final del portal.

2. Metodología y resultados

Como se ha mencionado en la introducción, todos los productos vendidos por Air Liquide son almacenados en una base de datos o PIM. Toda la información almacenada en la base de datos es sincronizada semanalmente con el Portal Cliente, que es el producto final que ven los compradores y clientes de Air Liquide.

Cada producto es guardado con una serie de características (atributos) que lo describen, entre ellas podemos encontrar, por ejemplo: su referencia, una descripción de su uso, los componentes químicos del gas que contienen las botellas o el tipo de conexión de salida y entrada entre otras muchas. Hay que tener en cuenta que en el PIM solamente se introduce información que describe intrínsecamente el producto. Nunca se incluíra información sobre el precio, clientes o cantidad de stock; esta información vendrá de otros programas utilizados por Air Liquide.

Los productos son organizados en familias dependiendo de su naturaleza: podemos elegir entre dos familias de gas, diez familias de equipamiento y una de criobiología. Esta separación en familias nos permite asignar distintos tipos de atributos a las familias, simplificando la cantidad de información que manejar para cada producto. Esto en gran parte se debe a que no necesitamos la misma información para describir, por ejemplo, una botella de gas (familia de los gases) o un regulador de flujo (familia de equipamiento).

Toda creación de productos en el PIM para todas las filiales europeas debe ser comenzada desde Air Liquide Santé France. La información básica obligatoria para crear un nuevo producto en el PIM es la referencia y la familia a la que pertenece. A todas las filiales se les envió un documento compartido de *Google Sheets* en el cual se debía introducir al menos estos dos datos básicos. Una vez creada la referencia, los valores de los atributos pueden ser modificados por las filiales.

Hay que tener en cuenta que el PIM es utilizado también por Industrial Marchand (IM), la rama industrial de Air Liquide. Esto ocasiona numerosos problemas debido a la existencia de productos vendidos tanto por Industria como por Sanidad. Esto supone tener extrema precaución a la hora de rellenar el PIM para asegurarse que los cambios realizados no afectan a Industria y por tanto lo mostrado en sus portales.

En las primeras fases de preparación del PIM, se realizaron importaciones en masa de los catálogos de las distintas filiales con la mayor cantidad de información posible sobre todos los productos comercializados, con el fin de acelerar el proceso y evitar el error humano a la hora de introducir los atributos en el programa. Para estas importaciones se partía de los documentos *Google Sheets* rellenos por las filiales. Antes de cargarlos en el PIM es necesaria la creación de un documento Excel el cual contiene todos los valores de los atributos. Con el fin de facilitar la preparación de estos documentos se desarrollaron macros en *Microsoft Excel* y *Google Sheets* para traducir automáticamente los valores completados por las filiales a los códigos aceptados por el programa.

Ejemplo de documento compartido con las filiales:

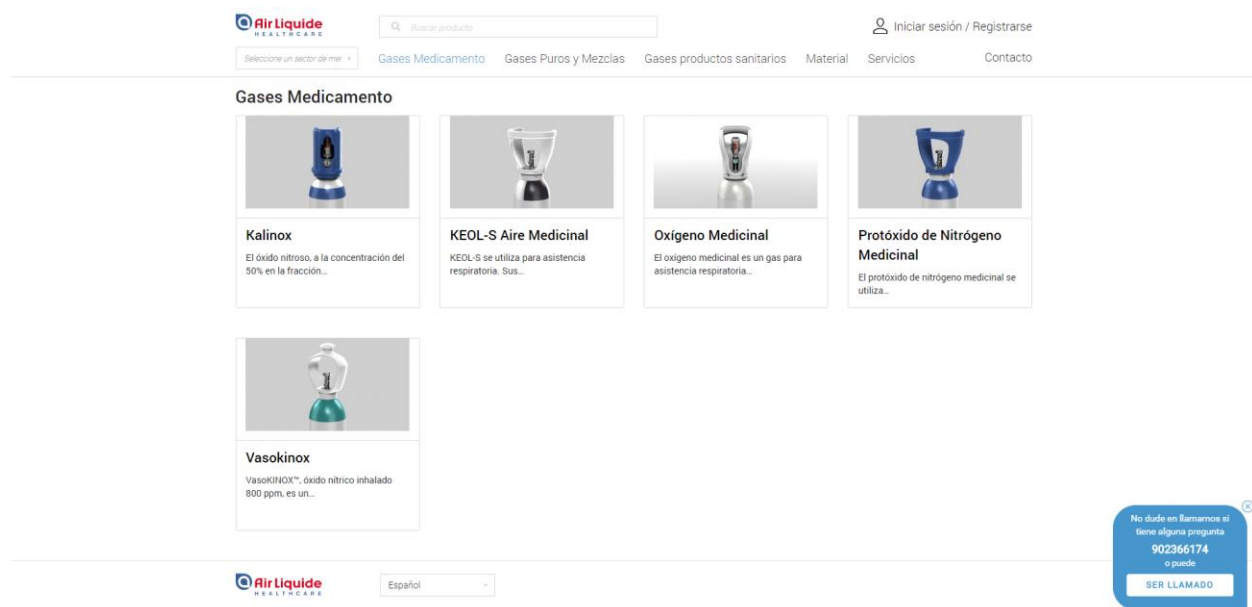
reference	Nombre de la variación	Tipo de salida	Capacidad	Conexión de salida	Presión	Designación corta	Designación larga
M4800V16R2A001	AIRE MED Blq-L V16* 50/200	Estandar	800 L	B	200 bar	KEOL-S Aire Med Blq 16*50	KEOL-S Aire Medicinal Bloque 16 botellas Es
M4800L50R2A001	AIRE MED Bot-L std 50/200	Estandar	50 L	B	200 bar	KEOL-S Aire Med B50	KEOL-S Aire Medicinal Botella Estandar 50 lit
M4800M20R2A001	AIRE MED Bot-M std 20/200	Estandar	20 L	B	200 bar	KEOL-S Aire Med B20	KEOL-S Aire Medicinal Botella Estandar 20 lit
M4800S10R2A001	AIRE MED Bot-S std 10/200	Estandar	10 L	B	200 bar	KEOL-S Aire Med B10	KEOL-S Aire Medicinal Botella Estandar 10 lit
M4800S05R2A001	AIRE MED Bot-S std 5/200	Estandar	5 L	B	200 bar	KEOL-S Aire Med B5	KEOL-S Aire Medicinal Botella Estandar 5 litr
P0291L50S2A001	ALPHAGAZ 1 AIRE Bot-L Smartop 50/200	Smartop	50 L	B	200 bar	Aire Alphagaz 1 B50 Smartop	Aire Pureza Alphagaz 1 Botella 50 litros Sm
P0021L50S2A001	ALPHAGAZ 1 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Argón Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 1 Botella 50 litros Sm
P0251L50S2A001	ALPHAGAZ 1 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Helio Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 1 Botella 50 litros Sm
P0311L50R0A001	ALPHAGAZ 1 N2O Bot-L std 50/99-	Estandar	50 L	U	44 bar	N2O Alphagaz 1 B50	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0311S10R0A001	ALPHAGAZ 1 N2O Bot-S std 10/99-	Estandar	10 L	U	44 bar	N2O Alphagaz 1 B10	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0271L50S2A001	ALPHAGAZ 1 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 50 litros
P0271S10S2A001	ALPHAGAZ 1 NITRÓGENO Bot-S Smartop 10	Smartop	10 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 10 litros
P0022L50S2A001	ALPHAGAZ 2 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 2 Botella 50 litros Sm
P0252L50S2A001	ALPHAGAZ 2 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 2 Botella 50 litros Sm
P0272L50S2A001	ALPHAGAZ 2 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 2 Botella 50 litros
M2010L50R3A001	ARGON CRIO Bot-L std 50/300	Estandar	50 L	C	300 bar	Argón Crio B50 (300 bar)	Argón Crio Botella Estandar 50 litros (300 bar)

El lanzamiento del portal de cada filial se realizó entre los meses de mayo y junio de 2019. Con una separación de entre 2 y 3 semanas entre cada país. Durante las dos semanas anteriores al lanzamiento

del portal en cada país, se programaron reuniones con los equipos de las filiales para la última puesta a punto. Estas reuniones implican desplazamientos a los distintos países para dar cursos de formación sobre la utilización del PIM y asegurar la autonomía de las filiales en cuanto a la modificación de atributos se refiere (hasta ahora dependientes de la sede en Francia), así como un repaso completo del portal para asegurar la aparición de todos los productos deseados y la correcta visualización de fotos y atributos.

Las semanas después de los lanzamientos se realizaron seguimientos continuos de los portales aportando posibles mejoras y completando información necesaria. En el mes posterior al último lanzamiento se han continuado a realizar mejoras en función de la experiencia de las filiales durante la utilización de los portales por los clientes. Estas mejoras han sido a nivel de PIM y de portal.

El resultado final de una de las páginas del Portal Cliente de España es el siguiente:



En cuanto al PIM se ha realizado un análisis de todos los atributos utilizados y los atributos a los cuales no se les ha asignado un valor. En el caso de estos últimos, han sido eliminados de las familias los atributos que no tenían un valor introducido para todos los productos. Esto con el fin de tener una estructura simplificada que contenga solamente la información necesaria para el portal. Esta acción agiliza los procesos de sincronización entre el PIM y el portal. A causa de las demandas de las filiales, también se han añadido a las familias atributos relacionados con la visualización de los productos en el portal, como poder ordenarlos dentro de una página para mostrar los más relevantes en primer lugar.

En cuanto a las mejoras del portal, para cada filial se ha realizado una configuración de filtros de búsqueda personalizada y adaptada a sus clientes, así como la información a mostrar de cada producto.

3. Conclusiones

Los productos finales obtenidos (tanto el PIM como el Portal Cliente) son la mejor versión hasta la fecha. Se ha conseguido completar al máximo posible los atributos de los productos vendidos por las filiales así como simplificar la estructura interna del PIM eliminando los atributos incompletos y no utilizados.

En el portal se ha conseguido una estructura coherente de organización de los productos con su correcta visualización y la mayor parte de las fotos completadas.

Sin embargo, hay que tener en cuenta que ni el portal ni el PIM estarán nunca completos. A contener productos vendidos por Air Liquide siempre habrá cambios que se puedan realizar. La adición de nuevas gamas, así como el cambio con los proveedores puede provocar un gran cambio en el contenido del PIM. Se han organizado nuevos procedimientos para facilitar estos cambios para Air Liquide y para los clientes, en el caso que ocurran en el futuro después del fin de mis prácticas.

IMPLEMENTATION OF AN INTERNET CATALOGUE FOR A CUSTOMER PORTAL

1. Introduction

This document has as an objective to show the daily tasks and project carried out during my internship at Air Liquide Santé International, Healthcare branch of Air Liquide.

Air Liquide is an international French industrial group which specializes in industrial gases, i.e. gases for industry, healthcare, the environment and research. The company was founded in 1902 and currently employs around 65,000 people.

The main mission of the internship is the deployment of a catalog of products on the Internet which will be displayed on a customer portal through a Webservice. This portal was launched in November 2018 in France and its launch has been progressive in different European countries (Belgium, Spain, Portugal, Germany, and Italy) between the months of May and June 2019. For this purpose, a PIM (Product Information Management) has been used, a data management program with all the information related to the products sold in the customer portal.

This document contains the daily tasks carried out, the tools created to facilitate the process of mass uploading information to the portal, communication with European affiliates to understand their needs and adapt their portals as much as possible to their final vision, training of European affiliates in the use of the PIM, as well as the final result of the portal.

2. Methodology and results

As mentioned in the introduction, all products sold by Air Liquide are stored in a database or PIM. All information stored in the database is synchronized weekly with the Customer Portal, which is the final product seen by Air Liquide buyers and customers.

Each product is defined thanks to a series of characteristics (attributes) that describe it, among them we can find, for example: its reference, a description of its use, the chemical components of the gas that contain the bottles or the type of inlet and outlet connection. As well as information on price, customers or stock quantity...

Some of this information is stored in the PIM, there is only information that intrinsically describes the product; others like the price for example are stored on other IT solution (ERP).

The products are organized into families depending on their nature: we can choose between two families for gas, ten families for equipment and one for cryobiology. This separation into families allows us to assign different types of attributes to the families, simplifying the amount of information to handle for each product. This is largely because we do not need the same information to describe, for example, a gas bottle (family of gases) or a flow regulator (family of equipment).

Any new product creation in the PIM for all European affiliates must be started from Air Liquide Santé Services. The basic mandatory information for creating a new product in the PIM is the reference and the family to which it belongs. All affiliates were sent a shared "Google Sheets" document in which at least these two basic data had to be entered. Once the reference is created, the attribute values can be modified by the affiliates.

Note that the PIM is also used by Industrial Marchand (IM), the industrial branch of Air Liquide. This causes numerous problems due to the existence of products sold by both Industry and Healthcare. This implies extreme caution when filling in the PIM to make sure that the changes made do not affect Industry and therefore what is shown on their portals.

In the early stages of preparation of the PIM, mass imports were made of the catalogues of the various affiliates with as much information as possible on all the sold products, in order to speed up the process and avoid human error when introducing the attributes into the program. These imports were based on *Google Sheets* documents completed by the affiliates. Before loading them into the PIM, it is necessary to create an Excel document which contains all the attribute values. In order to facilitate the preparation of these documents, macros in Excel and Google Sheets were developed to automatically translate the values completed by the subsidiaries to the codes accepted by the program;

Example of the shared file with the affiliates:

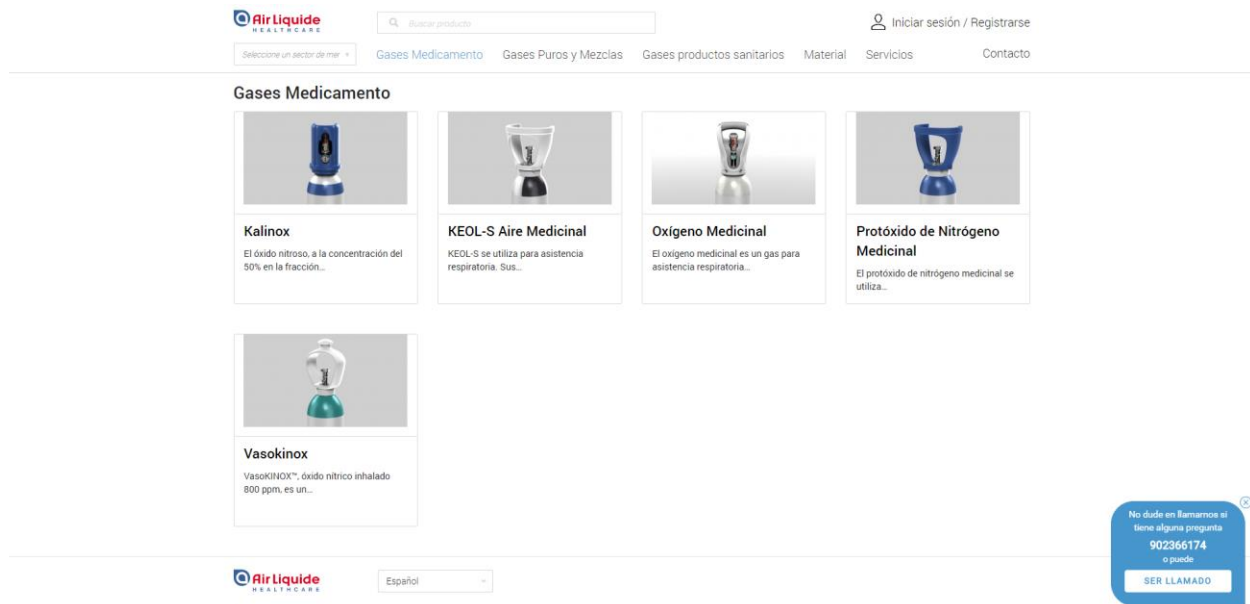
reference	Nombre de la variación	Tipo de salida	Capacidad	Conexión de salida	Presión	Designación corta	Designación larga
M4800V16R2A001	AIRE MED Blq-L V16*50/200	Estandar	800 L	B	200 bar	KEOL-S Aire Med Blq 16*50	KEOL-S Aire Medicinal Bloque 16 botellas Es
M4800L50R2A001	AIRE MED Bot-L std 50/200	Estandar	50 L	B	200 bar	KEOL-S Aire Med B50	KEOL-S Aire Medicinal Botella Estandar 50 lit
M4800M20R2A001	AIRE MED Bot-M std 20/200	Estandar	20 L	B	200 bar	KEOL-S Aire Med B20	KEOL-S Aire Medicinal Botella Estandar 20 lit
M4800S10R2A001	AIRE MED Bot-S std 10/200	Estandar	10 L	B	200 bar	KEOL-S Aire Med B10	KEOL-S Aire Medicinal Botella Estandar 10 lit
M4800S05R2A001	AIRE MED Bot-S std 5/200	Estandar	5 L	B	200 bar	KEOL-S Aire Med B5	KEOL-S Aire Medicinal Botella Estandar 5 litr
P0291L50S2A001	ALPHAGAZ 1 AIRE Bot-L Smartop 50/200	Smartop	50 L	B	200 bar	Aire Alphagaz 1 B50 Smartop	Aire Pureza Alphagaz 1 Botella 50 litros Sm
P0021L50S2A001	ALPHAGAZ 1 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Argón Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 1 Botella 50 litros Sm
P0251L50S2A001	ALPHAGAZ 1 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Helio Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 1 Botella 50 litros Sm
P0311L50R0A001	ALPHAGAZ 1 N2O Bot-L std 50/99-	Estandar	50 L	U	44 bar	N2O Alphagaz 1 B50	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0311S10R0A001	ALPHAGAZ 1 N2O Bot-S std 10/99-	Estandar	10 L	U	44 bar	N2O Alphagaz 1 B10	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0271L50S2A001	ALPHAGAZ 1 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 50 litros
P0271S10S2A001	ALPHAGAZ 1 NITRÓGENO Bot-S Smartop 10	Smartop	10 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 10 litros
P0022L50S2A001	ALPHAGAZ 2 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 2 Botella 50 litros Sm
P0252L50S2A001	ALPHAGAZ 2 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 2 Botella 50 litros Sm
P0272L50S2A001	ALPHAGAZ 2 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 2 Botella 50 litros
M2010L50R3A001	ARGON CRIO Bot-L std 50/300	Estandar	50 L	C	300 bar	Argón Crio B50 (300 bar)	Argón Crio Botella Estandar 50 litros (300 bar)

Each affiliate's portal was launched between May and June 2019. With a separation between 2 or 3 weeks between each country. During the two weeks prior to the launch of the portal in each country, meetings were scheduled with the teams of the affiliates for the final fine-tuning. These meetings involved trips to the different countries to give training courses on the use of the PIM and to ensure the autonomy of the affiliates in terms of modifying attributes (until now dependent on the headquarters in France), as well as a complete review of the portal to ensure the appearance of all desired products and the correct display of photos and attributes.

The weeks following the launch, the portals were continuously monitored, bringing possible improvements and completing the necessary information. In the month following the last launch,

improvements have continued to be made based on the experience of the affiliates during the use of the portals by customers. These improvements have been at PIM and portal level.

The final result for a page in the Spanish Customer Portal is below:



With regards to the PIM, an analysis has been made of all the attributes used and the attributes to which no value has been assigned. In the case of the latter, attributes that did not have an entered value for all products have been removed from the families. This in order to have a simplified structure that contains only the necessary information for the portal. This action speeds up the synchronization process between the PIM and the portal. Due to the demands of the affiliates, attributes related to the visualization of the products in the portal have also been added to the families, such as being able to arrange them within a page to show the most relevant in the first place.

To help the visitors to find products on the website a customized configuration of the search filters and attributes displayed on the product page has been carried out for each affiliate.

3. Conclusions

The final obtained products (both the PIM and the Customer Portal) are the best version to date. The attributes of the products sold by the affiliates have been completed to a maximum as well as to simplify the internal structure of the PIM by eliminating incomplete and unused attributes.

A coherent structure of organization of the products with its correct visualization has been achieved on the Portal, as well as most of the photos have been completed and personalized for each country.

However, it must be kept in mind that neither the portal nor the PIM will ever be complete. To contain products sold by Air Liquide there will always be changes that can be made. The addition of new ranges, as well as the change of suppliers can cause a big change in the content of the PIM. New procedures have been put in place to facilitate these changes for Air Liquide and for customers, should they occur in the future after the end of my internship.

ACKNOWLEDGEMENTS

In the first place I would like to thank Fahima Bouzehouane, my tutor at Air Liquide, for her welcome, support and training during the internship.

To Stéphane Verghote who made this internship possible and has helped me from the first day with management of the PIM.

I thank also all the ALSS team for their welcome during the 5 months of my internship as well as the teams in the different affiliates I have worked with.

Lastly I would like to thank my parents and family for giving me the opportunity to study in this university and do a double degree in engineering with Centrale Nantes. Without them I would not have had the chance to do this internship in Paris at Air Liquide.

Table of contents

Chapter 1: Air Liquide	5
1.1 Air Liquide.....	7
1.2 Air Liquide Healthcare	8
1.3 Bottle filling process	8
Chapter 2: Internship at Air Liquide	11
2.1 Mission of the internship.....	13
2.2 Principal parts	13
2.2.1 The affiliates	13
2.2.2 ALSS.....	14
2.3 Used tools	14
2.3.1 The PIM	14
2.3.2 The Customer Portal	17
Chapter 3: Completing the Catalogue	19
3.1 Collection of information.....	21
3.2 Import of data into the PIM.....	22
3.4 End of life of a product	29
3.5 Optimisation of the PIM	30
3.6 Optimization of the Customer Portal.....	31
3.7 Final appearance of the Customer Portal.....	33
Chapter 4: Training of the affiliates and documents	37
4.1 Support to the affiliates	39
4.2 Training documents and files	39
4.2.1 Training of the affiliates	39
4.2.2 Training documents for the PIM manager.....	41
BIBLIOGRAPHY.....	43

Table of figures

Chapter 3

Figure 3. 1 Shared Mass Import file	21
Figure 3. 2 Gas name attribute for Spanish Local (English)	22
Figure 3. 3 Gas name attribute for Spanish Local (Spanish).....	22
Figure 3. 4 Excel import file	23
Figure 3. 5 Translations of the codes for the German, French and Spanish locals	24
Figure 3. 6 Macro in <i>OPTIONS</i> file for translation of the codes for marketing segments	24
Figure 3. 7 Macro in <i>OPTIONS</i> file for translation of the codes for the molecules.....	25
Figure 3. 8 Example of Excel import file.....	26
Figure 3. 9 Screen capture of the gas models in the French Customer Portal	26
Figure 3. 10 Screen capture of the model Medical oxygen and variations in the French Customer Portal	27
Figure 3. 11 Close up of the model image	27
Figure 3. 12 <i>Photos par filiale</i> file	29
Figure 3. 13 <i>Revue TEMPLATES</i> file.....	31
Figure 3. 14 Taxonomy of the Spanish Customer Portal (<i>Default</i> marketing segment).....	32
Figure 3. 15 Taxonomy of the Spanish Customer Portal (<i>Emergencies</i> marketing segment)....	32
Figure 3. 16 KALINOX variations with their attributes.....	33
Figure 3. 17 Home screen of the Spanish Customer Portal	34
Figure 3. 18 Medical Gases menu (models) in the Spanish Customer Portal	34
Figure 3. 19 Medical oxygen page in the Spanish Customer Portal.....	35

Chapter 4

Figure 4. 1 Content of the training file for affiliates	40
Figure 4. 2 Correspondences between the attributes and the Customer Portal	41

Chapter 1: **Air Liquide**

1.1 Air Liquide

Air Liquide was born in 1902 from the meeting of two graduates: Georges Claude and Paul Delorme with the development of a process for liquefying air to separate its components. In 1906 the group expanded quickly into Europe, Japan, Canada and the USA in order to facilitate the transport of gases.

In 1952 the cryogenic revolution gets underway, the company is able to package liquefied gas in tanks. This allowed bulk transport of gases in a 250 km distance from the production sites. Two years later a facility for the production of liquid oxygen was opened in the north of France.

In 1960 Air Liquide implements its pipeline network strategy. A network of pipelines was built to connect the different production sites. As a result, production capacity grew as well as the global demand from the industry. Oxygen was necessary for the production of steel, and later nitrogen for the chemical industry. This created a series of long term partnerships with customers.

Nowadays, Air Liquide manages almost 10000km of networks around the world, especially in North America, Europe and many Asian countries.

In 1995 Air Liquide expands to include hydrogen and steam to create a new range of gases. Being originally a provider of oxygen for hospitals, Air Liquide became a healthcare specialist. The Home healthcare business was launched, medical gases are classified as medications in many countries. At the same time, Air Liquide embarked in a series of major research programs in therapeutic gases used for anesthesia, intensive care and pain control.

In 20017-2008 evolves into a new organization structure. Four World Business lines where created: Large Industries, Industrial Merchant, Healthcare and Electronics, in order to give a better response to the client's needs.

Large industries: this branch proposes the clients in the sector of metals, chemicals, refining and industry, energy sources and gas solutions which are essential for their industrial production and allows them to improve the efficiency of their processes

Industrial Merchant: The Industrial Merchant business line serves a wide range of markets and customers: craftsmen, large multinational industrial groups, offering comprehensive gas solutions for the implementation and optimization of their industrial processes.

Healthcare: branch of Air Liquide dedicated to health and where the internship has taken place. Further explanation of the activity of Air Liquide Healthcare is given in the next point (1.2).

Electronics: Air Liquide provides innovative solutions to the semi-conductor, flat panel and photovoltaic markets. Its products and services respond to increasingly challenging customer demands for improved mobility, connectivity, computing power and energy consumption. Technological progress is constant and a growth driver for industrial gases.

1.2 Air Liquide Healthcare

The Healthcare branch of Air Liquide provides gas and medical gases, specialty ingredients as well as services which support clients during their recovery process, in the hospital or at their homes, and contributes to save the more vulnerable lives. Air Liquide made a revenue of 3500 M€ in 2018, 38% of this revenue came from gas, equipment and services.

Air Liquide is one of the world leaders in this sector, which has heavy regulatory constraints as well as multiple actors (patients, doctors). The activity of this branch can be divided in four different areas:

- Medical gases: Air Liquide provides gases for 15000 hospitals and clinics.
- Home healthcare: Air Liquide takes care of 1.6 million patients with chronic diseases.
- Hygiene: with its affiliate Schülke, which is a world leader in hospital disinfection.
- Specialty ingredients: with its affiliate Seppic.

Healthcare activity, especially for medical gases, leans mostly on the production capacities from the Large Industry and develops its own delivery logistics. Medical gases have a drug status and need the proper authorizations to commercialize it, this authorization is provided by the sanitary authorities in each country. The products are delivered in liquid or gas form by qualified personnel.

In nearly 20 years, Air Liquide has placed itself as a Healthcare leader in Western Europe (71% of its sales), Canada and Australia. The group has also entered the USA, only for medical gases, in South America (22% of its sales in the Americas), and in certain countries of Asia, Africa and East Europe.

Air Liquide Medical gases branch is divided in 2 entities:

- Air Liquide Santé Services which is the support team for all European affiliates where the internship has taken place, Air Liquide Santé International which contain the marketing and commercial team
- Commercial entities with : Air Liquide Sante France and affiliates in Europe

1.3 Bottle filling process

A visit to the filling plant in Bonneuil (Paris) was possible. This visit gave the opportunity to get to understand the entire process behind the orders made in the portal. This includes the ordering of a product by the client, the process of filling the bottles and delivery to the client.

The principle of Air Liquide is they sell the gas, the cylinders are rented out to the clients. When empty, all bottles must be sent back to Air Liquide to be refilled and sent to other clients. Air Liquide sells bottles of volumes from 5 litres (volume of water that fits in the bottle) up to 50 litres with different types of connections.

The filling process in the plant can be divided into 5 steps:

1. Empty cylinders, when they are returned to the facility they are checked to make sure they are in a good state and ready to be used again.

Bottles are sent for an in-depth revision every 10 years where they are filled up with water at 300bar (100 bar higher of their working pressure) to check for leaks and deformation. After they are completely dried (we need as little moisture as possible as it is considered as an impurity, especially for Healthcare uses), a new bottle connection is placed and the bottle is repainted. Bottles that are not in a good state are sent for refurbishing or thrown away (easily recyclable as they are made out of steel)

2. All bottles used in Healthcare inside hospitals are cleaned on the outside and tags with the drug information inside are placed on the bottle.

3. Bottles are filled up in groups (32 for medical oxygen). There are two types of fill up:

-Dynamic: gas is mixed before going in the bottle and the bottles are filled until they reach a certain pressure (200bar at 15°C). For example Kalinox which is a 50%-50% mixture of Nitrous oxide (N₂O) and oxygen (O₂)

-Static: gas is mixed inside the bottle. Cylinders are filled up by weight using a mass flow meter, the different components are added separately into the bottle. Used for Kinox for example.

All bottles follow a similar filling process:

-Fill up to 3 bar

-Release to the atmosphere

-Create vacuum (~0.8bar) to make sure all connections are properly attached and there are no leaks.

-Fill up to 200bar

4. One bottle in each lot is sent to the laboratory to analyse its contents, to make sure its safe for consumption. A report is automatically done, a copy is stored in a database and another sent to the pharmacist to do a control of all lots exiting the facility.

Quality tests are also carried out on the raw materials (Oxygen and Nitrogen) that arrive to the facility to check for impurities.

5. All cylinder outlets are tested after being filled up. Gas must come out of the bottle to guarantee the correct functioning of the bottle.

A last check to make sure all regulatory stickers are placed on the cylinders before being put in storage. Filled bottles are stored in quarantine until it is given the approval of the pharmacist before being sent to the clients.

Chapter 2: **Internship at Air Liquide**

2.1 Mission of the internship

The main mission of the internship is the deployment of a catalogue of products on a customer portal using a shared database. This portal was launched in November 2018 in France and its launch has been progressive in different European countries (Belgium, Spain, Portugal, Germany, and Italy) between the months of May and June 2019. The portal allows Air Liquide clients to order their products online.

For this purpose, a PIM (Product Information Management) tool has been used, a data management program with all the information related to the products sold in the customer portal. The principal task during the internship is the transfer of data about products into the PIM. This information is shared by the affiliates with Air Liquide Santé Services using Google Sheets files. The PIM is after synchronised to the portal, where all products and relevant information are displayed to the Air Liquide clients.

The mission of the internship implies other tasks such as:

- Contribution to functional analysis and identification of business needs.
- Work on the collection and referencing of photos.
- Adjustment of the information on the PIM data to ensure the correct transition of the portal into production.
- Integration of the PIM with the portal: portal architecture, configuration and correct visualisation.
- Communication, training and support to the various European affiliates during the deployment of the portals, as well as support during the ramp-up phase.
- Establishment of processes, work methodology and tools to ensure the sustainability of the PIM in Europe

2.2 Principal parts

To better understand the entire process it is important to know the different parts of the team. All information related to the products must be sent between all parts.

2.2.1 The affiliates

It must be taken into account that this project is developed by Air Liquide Healthcare for its European affiliates: Spain, Belgium, Germany, Italy and Germany. In this way the affiliates become the main characters in this process.

The fact of having six different affiliates (including Air Liquide Santé France, French affiliate of the group), implies the existence of 6 different portals. This not only implies different languages for each country. Products sold by each country can vary, the client segments are different(hospital, dentists, fireman...), legal constraints can differ between countries and can also affect the display of certain products (especially in the case of drug gases).

The affiliates are the first source of information. The list of products to be displayed on the portal are sent to Air Liquide Santé Services.

2.2.2 ALSS

ALSS (Air Liquide Santé Services) is the entity where the internship has taken place. All collection information regarding products is managed by this entity. Marketing and commercial constraints from the affiliates must be taken into account, as well as technical constraints.

ALSS's role is to deliver solutions (IT or not) to the affiliates to help them meet their objectives. In the case of this project, its role is the introduction of all information collected from the affiliates into the PIM, tool that will be explained later in this document.

2.3 Used tools

Some of the tools used during the internship are Google Sheets for the collection of information from the affiliates as well as the portal and its Back Office in order to configure the correct display of the products. However, as mentioned before, the main tool used during this internship is a PIM (Product Information Management) tool.

2.3.1 The PIM

The PIM can be treated as a database for all information that describes a product sold by Air Liquide. The used software is called Akeneo and is open source. It can be treated as a cloud catalogue whose objective is to centralise and make easier the management of technical information of Air Liquide products. It is important to note that this database is used by all affiliates.

This database will be referred to as the "PIM" for the rest of the document. To better understand the constraints of filling in the PIM it is important to understand its structure and configuration.

The principle for the PIM is to create a catalogue for Air Liquide products and to monitor the product catalogue in central for all affiliates. A product, basic entity in or database, is defined initially when it is created by its reference (identification code) and its family.

The PIM is structured around the notion of families. A family can be composed of a series of products with similar characteristics, this simplifies the amount of information that has to be managed for each type of products. In Healthcare, following this configuration, there are 3 families for gas, 10 for equipment and 2 for cryogenics.

The creation of parenting links between families is allowed in Akeneo (mother family linked to a daughter family). Following this relationship, a daughter family receives the characteristics of the mother

family to which it is linked. In this way this relation is used by Air Liquide: The mother family is called “MODEL family” and the daughter family is called “VARIATION family”.

This model family-variation family notion can be also taken to products. A model contains general information about a product and it will have several sub-products called variations which are linked to it. For example a model called “Oxygen bottles” will have linked to it several variations such as: “Oxygen bottle 20 Litres” and “Oxygen bottle 50 Litres”.

The parenting relationship between models and variations is very important as it affects the customer experience on the portal. The model acts as a “product range” where all related variations will appear. The customer will go through the menus until he arrives to the model containing the variations. The correct assignment of the variations to the models affects the place where the variations are displayed in the portal.

The following table contains an example of the PIM structure combining families and models:

Model family: Gas_bottles	Variation family: Gas_bottle_VARIATION
Oxygen bottle	Oxygen bottle 50 Litres with exit connection NF
	Oxygen bottle 50 Litres with exit connection DIN
	Oxygen bottle 20 Litres
Nitrogen bottle	Nitrogen bottle 50 Litres
	Nitrogen bottle 20 Litres

Model family: Equipment	Variation family: Equipment_VARIATION
Oxygen mask	Oxygen mask size S
	Oxygen mask size M
	Oxygen mask size L

Models aren't products that can be sold, they can be considered as a category that contains all the true sold products (variations).

Each family in the PIM has assigned to it a series of characteristics, since it is not the same describing a gas bottle or a piece of equipment like a hose. These characteristics are called “Attributes” and can be of different types:

- Text: the attribute is a character chain, used mainly for the name of the product and description.
- Number: the attribute is a numeric value.
- Simple select: the attribute can only take one value from a given list of possibilities.
- Multiple select: the attribute can take multiple values from a given list of possibilities.
- Metric: the attribute contains physical value (pressure, length, flow...) followed by the corresponding units.

Considering there are six different portals, one attribute such as the product name needs to be used in different languages. This is allowed in the PIM with the use of locals and channels:

- Locals: this characteristic allows the introduction of values for different countries, in the case of Healthcare there are 7 different locals used (one for each country except for Belgium who displays its products in French and Dutch). This option can become very useful with the translation product names and descriptions for each country.
- Channels: it has to be taken into consideration that the PIM is also used at Air Liquide for Industrial Marchant (IM) to feed their own customer portal. In the case of any shared products between Healthcare and IM, the channel allows for setting different values for an attribute in one same local (for example the French local can have different values for the oxygen for IM and Healthcare). Two different channels are managed in the PIM: Customer portal (for IM) and Medical Customer Portal (for Healthcare).

In this way, when a new attribute is created it can be configured in four different ways:

1. Local specific (localisable) + channel specific (scopable): the attribute can have different values for all seven locals and two channels.
2. Local specific: the attributes can receive different values for each local but will remain the same in both channels.
3. Channel specific: the attribute will receive the same value for all locals but different for each channel.
4. Nor local specific, nor local specific: the attribute will receive the same value for all locals and channels (mostly used for the reference of the product).

This ability to assign different values to attributes according to the locals and the channels can't be used for the structure of the PIM such as the parenting links between models and variations. These relationships between products remain the same for all countries and has been one constraint to take into account during the internship.

2.3.2 The Customer Portal

The Customer Portal is the actual page where the client can see the products and make the orders. All the information contained in the PIM is synchronised with each portal once a week. From the back office of the portal several aspects can be managed like the translations of the text, the taxonomy and the marketing segments amongst others. For the PIM manager the most important ones are the two last ones.

The portal allows to place marketing segments in order to make a customised view of the portal for the client depending on their field of work. This allows the client to search easily the products that are interesting for them as less product are displayed on the portal. Each marketing segment has a code assigned to it in the back office, this code is assigned to the desired products in the PIM as an attribute to make them appear on the portal.

The taxonomy can be also managed from the back office. This is the menus that are displayed on the portal where the products can be placed, for example “Medical Gases”, “Equipment” and “Cryobiology”. Each affiliate can choose the organisation of the menus, in coordination with the PIM manager a code will be assigned to each menu. The models in the PIM will later receive the code of the menu where they have to be displayed in the portal.

For these two tools presented (the PIM and the Customer portal) there are two existing versions of them: pre-production (PPRD) and production (PROD). This makes 2 versions of the PIM and 12 portals (6 affiliates in both versions) in total to manage. The end goal of having these two versions is to check the possible effects of big product modifications in the PIM without affecting the working production, and as well letting the affiliates train with the order process before the go live of their portals. It has to be kept in mind the customer can only see the Production version of the portal.

Chapter 3: **Completing the Catalogue**

3.1 Collection of information

One of the most important tasks in the launch of the Customer Portal is the correct collection of information about the products from the affiliates. The list of products sold by each country as well as their full description is provided by each affiliate.

Stored in the PIM there is only information that describes intrinsically a product and therefore it is not asked in the data collection files. All other details such as product price and customer details come from other software used by Air Liquide or directly uploaded to the back office of the portal.

The collection of all relevant information has been made using standard “Google Sheets” for all affiliates. There are 3 existing files (gas, equipment and cryogenics) per country having two sheets (for models and variations) each one of them. This makes six different tables to be managed for each affiliate. Therefore it is important to have them structured correctly and easily understandable by every sales team, as well as similar as possible to the mass import files used in the PIM to make easier the import of information.

These files are structured in order to contain as many attributes as possible for each type of products. Mainly they contain:

- Product reference
- Title of the product to be displayed on the portal
- Long description of the product
- Category where it has to be displayed in the portal
- Different attributes depending on the type of product such as flow rate, size, type of connection...
- Marketing segments in which the products are displayed

Example of shared file:

reference	Nombre de la variación	Tipo de salida	Capacidad	Conexión de salida	Presión	Designación corta	Designación larga
M4800V16R2A001	AIRE MED Blq-L V16*50/200	Estandar	800 L	B	200 bar	KEOL-S Aire Med Blq 16*50	KEOL-S Aire Medicinal Bloque 16 botellas Es
M4800L50R2A001	AIRE MED Bot-L std 50/200	Estandar	50 L	B	200 bar	KEOL-S Aire Med B50	KEOL-S Aire Medicinal Botella Estandar 50 li
M4800M20R2A001	AIRE MED Bot-M std 20/200	Estandar	20 L	B	200 bar	KEOL-S Aire Med B20	KEOL-S Aire Medicinal Botella Estandar 20 li
M4800S10R2A001	AIRE MED Bot-S std 10/200	Estandar	10 L	B	200 bar	KEOL-S Aire Med B10	KEOL-S Aire Medicinal Botella Estandar 10 li
M4800S05R2A001	AIRE MED Bot-S std 5/200	Estandar	5 L	B	200 bar	KEOL-S Aire Med B5	KEOL-S Aire Medicinal Botella Estandar 5 litri
P0291L50S2A001	ALPHAGAZ 1 AIRE Bot-L Smartop 50/200	Smartop	50 L	B	200 bar	Aire Alphagaz 1 B50 Smartop	Aire Pureza Alphagaz 1 Botella 50 litros Sm
P0021L50S2A001	ALPHAGAZ 1 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Argón Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 1 Botella 50 litros Sm
P0251L50S2A001	ALPHAGAZ 1 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Helio Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 1 Botella 50 litros Sm
P0311L50R0A001	ALPHAGAZ 1 N2O Bot-L std 50/99-	Estandar	50 L	U	44 bar	N2O Alphagaz 1 B50	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0311S10R0A001	ALPHAGAZ 1 N2O Bot-S std 10/99-	Estandar	10 L	U	44 bar	N2O Alphagaz 1 B10	Protóxido de Nitrógeno Pureza Alphagaz 1 B
P0271L50S2A001	ALPHAGAZ 1 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 50 litros
P0271S10S2A001	ALPHAGAZ 1 NITRÓGENO Bot-S Smartop 10	Smartop	10 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 1 Botella 10 litros
P0022L50S2A001	ALPHAGAZ 2 ARGÓN Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Argón Pureza Alphagaz 2 Botella 50 litros Sm
P0252L50S2A001	ALPHAGAZ 2 HELIO Bot-L Smartop 50/200	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Helio Pureza Alphagaz 2 Botella 50 litros Sm
P0272L50S2A001	ALPHAGAZ 2 NITRÓGENO Bot-L Smartop 50	Smartop	50 L	C	200 bar	Aire Alphagaz 1 B50 Smartop	Nitrógeno Pureza Alphagaz 2 Botella 50 litros
M2010L50R3A001	ARGON CRIO Bot-L std 50/300	Estandar	50 L	C	300 bar	Argón Crio B50 (300 bar)	Argón Crio Botella Estandar 50 litros (300 bar)

Figure 3. 1 Shared Mass Import file

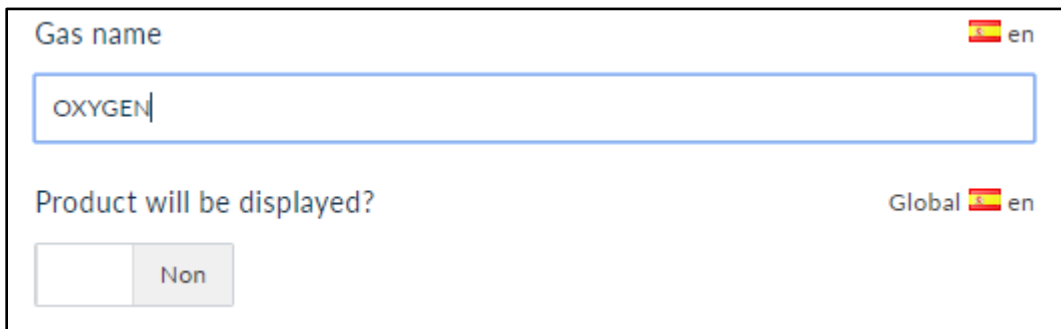
These files are later processed by ALSS and products are imported into the PIM using a mass import if there are many products to upload, or they can be done one by one directly on the PIM.

After the initial mass import of information that was done to start the catalogue on the PIM, these files continue to be used by the affiliates in the case there is a need to create a new product on the PIM as well as a database of all products that are currently on the PIM.

3.2 Import of data into the PIM

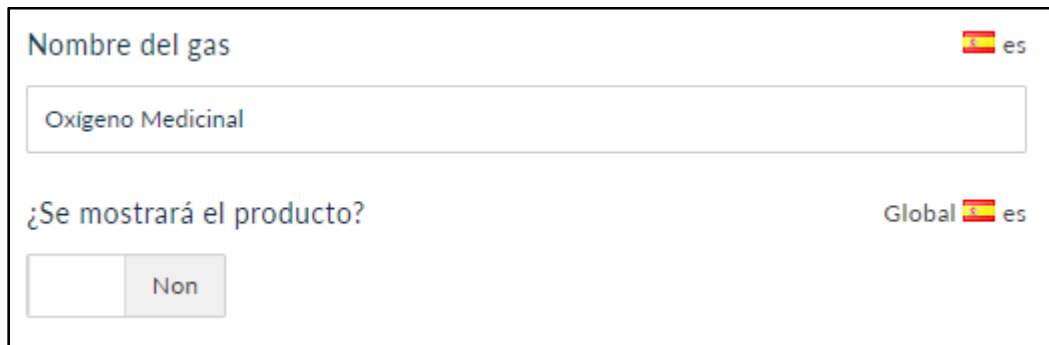
Entering data into the PIM can be done by hand one product at a time, but the PIM also allows to do mass import and export of data using excel files. This can become useful to know all the products that are stored in the database and also for the quick upload of data. The mass upload feature can be also used for changing the configuration of the PIM, this can be for example the title of the attributes or adding new attributes to a family.

Titles of the attributes like “Gas name” or “Nombre del gas” can be changed using an import file.



The screenshot shows a configuration form for the 'Gas name' attribute. At the top, the title 'Gas name' is displayed in blue text, with a small Spanish flag icon and the text 'en' to its right. Below the title is a text input field containing the word 'OXYGEN'. Underneath the input field is a question 'Product will be displayed?' followed by a 'Global' label, a Spanish flag icon, and the text 'es'. At the bottom, there are two radio buttons; the one on the right is selected and labeled 'Non'.

Figure 3. 2 Gas name attribute for Spanish Local (English)



The screenshot shows a configuration form for the 'Nombre del gas' attribute. At the top, the title 'Nombre del gas' is displayed in blue text, with a small Spanish flag icon and the text 'es' to its right. Below the title is a text input field containing the text 'Oxígeno Medicinal'. Underneath the input field is a question '¿Se mostrará el producto?' followed by a 'Global' label, a Spanish flag icon, and the text 'es'. At the bottom, there are two radio buttons; the one on the right is selected and labeled 'Non'.

Figure 3. 3 Gas name attribute for Spanish Local (Spanish)

In the case of using the import files for product data information it is important to respect certain rules in order for the program to correctly read the file. The imports are made through an excel file. The first row contains the codes of the attributes and the first column the reference of the products.

sku	categories	family	Gas_Product	Gaz_Med_Ce	Gas_Product	Gas_Product	Med_Segme	Gas_highligh	Med_Model
I4001	HC,HC_DEAB	compressed	NITRÓGENO	Gaz_Med_Ce	class_1		1 seg_0,seg_4,	El Nitrógeno	El Nitrógeno
I5100	EUP,HC,HC_E	compressed	DIÓXIDO DE	Gaz_Med_Ce	class_1		1 seg_0,seg_5,	El Dióxido de	El Dióxido de
P0762	HC,HC_BEAD	compressed	CO2 N48	Gaz_Med_Ce	class_1		1 seg_0,seg_5,	El CO2 N48 s	El CO2 N48 s
P5633	HC_ESAB_GA	compressed	Mezcla Bio 1	Gaz_Med_Ce	class_1		1 seg_0,seg_4,	Mezcla comp	Mezcla comp
P0252	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_6,	El Helio Alph	El Helio Alph
P0021	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_6,	El Argón Alpi	El Argón Alpi
P0022	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_6,	El Argón Alpi	El Argón Alpi
P0251	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_6,	El Helio Alph	El Helio Alph
P0271	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_4,	El Nitrógeno	El Nitrógeno
P0272	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_4,	El Nitrógeno	El Nitrógeno
P0291	HC,HC_BEAD	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_5,	El Aire Alpha	El Aire Alpha
P0311	HC_ESAB_GA	compressed	ALPHAGAZ™	Gaz_Med_Ce	class_1		1 seg_0,seg_3,	El Protóxido	El Protóxido
M4800	HC,HC_ESAB	compressed	KEOL-S Aire f	Gaz_Med_Ce	class_1		1 seg_0,seg_1,	KEOL-S se uti	KEOL-S se uti
M2001	HC,HC_BEAD	compressed	Argón Medic	Gaz_Med_Ce	class_1		1 seg_0,seg_4,	El Argón Mex	El Argón Mex
M4100	HC,HC_BEAD	compressed	Nitrógeno M	Gaz_Med_Ce	class_2		1 seg_0,seg_4,	El nitrógeno	El nitrógeno
M1850	HC,HC_BEAD	compressed	Kalinox	Gaz_Med_Ce	class_1		1 seg_0,seg_1,	El óxido nitrc	El óxido nitrc
M5110	HC,HC_DEAB	compressed	Dióxido de C	Gaz_Med_Ce	class_2		1 seg_0,seg_4,	El dióxido de	El dióxido de
M1001	HC,HC_BEAD	compressed	Oxígeno Mec	Gaz_Med_Ce	class_1		1 seg_0,seg_1,	El oxígeno m	El oxígeno m

Figure 3. 4 Excel import file

Regarding the codes of the attributes a certain rule has to be respected depending on the attribute, and if it channel specific or local specific. Three different options for the structure can be found:

- Not localisable and not scopable: code_of_the_attribute.
For example: reference (reference of the product for all locals and channels)
- Localisable but not scopable: code_of_the_attribute-LOCAL
For example: inlet_pressure-it_IT (inlet pressure for the Italian local)
- Localisable and scopable: code_of_the_attribute-LOCAL-CHANNEL
For example: marketing_segment-it_IT-HC_customer_portal (marketing pressure for the italian local and the Healthcare Customer Portal channel).

Depending on the type of attributes to put in the mass import file, the shared table has to be slightly modified. In the case of text attributes, the desired text can be written directly in the file. For simple and multiple selects the PIM asks for some required codes.

Simple and multiple selects have a code assigned to them in the PIM, this code can have different translations depending on the country it is used. For example the marketing segments can receive these translations:

Code	de_DE	en_FR	es_ES
seg_0	Undefined / not provided	Undefined / not provided	No definido / no proporcionado
seg_1		Ambulances/ Sanitary transport	Ambulancias/ Transporte Sanitario
seg_2	Care center	Care center	Centro de salud
seg_3	Dentists	Dentists	Dentistas
seg_4	GP & specialists	GP & specialists	GP & especialistas
seg_5	Veterinary	Veterinary	Veterinaria
seg_6	Laboratory	Laboratory	Laboratorio
seg_7	Fertility clinic		Clinica de fertilidad
seg_8	Hospital	Hospital	Hospital
seg_9		Fireman	Bomberos
seg_10	Other	Other	Otros
seg_11			Dermatología
seg_12		Universities	Universidades
seg_13			
seg_14	Centre de thérapie		

Figure 3. 5 Translations of the codes for the German, French and Spanish locals

In this way, if a country asks to have a product displayed for hospitals, in the import file it will have assigned the code “seg_8”. This type of attributes is also used for the molecules of the gas contained in the bottles, bottle connections, bottle pressure...

To simplify the filling of the shared files by the affiliates, they were asked to directly write the translations in the shared files. A work of translation from these files to the codes asked by the PIM has to be made. For this, auxiliary files with macros on “Google Sheets” were created to make this job faster. This file is called *OPTIONS* and has different macros depending on the attribute to transform. Here are some examples of the transformations that can be done:

- Marketing segments: The desired marketing segments are selected in the different columns and the corresponding codes are displayed on the right separated by commas.


seg_9	seg_8	seg_12	seg_10	seg_11		seg_7	Résultat
Fireman	Hospital	Universities	Other	Dermatologists		Criobank & Fertility Clinic	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_3,seg_5,seg_8,seg_9,seg_10,seg_11,seg_12,seg_14
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_5,seg_10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_5,seg_4,seg_10
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	seg_0,seg_6,seg_8,seg_12,seg_14

Figure 3. 6 Macro in *OPTIONS* file for translation of the codes for marketing segments

- Gas Molecules: the full name of the gas molecules is placed in the column on the left and the resulting codes are displayed on the right column.

	O2/N2O	CO2	N2O	O2	N2	NO	Ar	
entrée	molecule_20	molecule_3	molecule_4	molecule_1	molecule_2	molecule_5	molecule_6	
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
CO2	CO2	molecule_3	molecule_3	molecule_3	molecule_3	molecule_3	molecule_3	molecule_3
He	He	He	He	He	He	He	He	molecule_8
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
N2	N2	N2	N2	N2	molecule_2	molecule_2	molecule_2	molecule_2
Ar	Ar	Ar	Ar	Ar	Ar	Ar	molecule_6	molecule_6
N2O	N2O	N2O	molecule_4	molecule_4	molecule_4	molecule_4	molecule_4	molecule_4
N2O	N2O	N2O	molecule_4	molecule_4	molecule_4	molecule_4	molecule_4	molecule_4

Figure 3. 7 Macro in *OPTIONS* file for translation of the codes for the molecules

This file has to be updated constantly in order to keep up with the configuration changes in the PIM like the addition of new marketing segments or new gas molecules.

The translated codes can be transferred into the excel import file. Here is an example of a complete import file in which we can see in each column from left to right: the reference, the category in the PIM, the family, the category in the Portal (simple select), the marketing segments (multiple select), a long description of the model (text) and whether the product is displayed or not in the portal.

sku	categories	family	Equip_Med_Categ	Med_Segmentation	Equip_Highlights-it	Equip_Displa
TR_11	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	<p>Serbatoio in all	1
TR_21	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	Serbatoio in allum	1
TR_26	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	Serbatoio in allum	1
TR_35	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	Serbatoio in allum	1
TR_60	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	Serbatoio in allum	1
TR_100	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_10,seg_1	<p>Serbatoio in all	1
ARPEGE_140	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_7,seg_8	I contenitori della	1
ARPEGE_40	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_7,seg_8	I contenitori della	1
ARPEGE_70	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_7,seg_8	I contenitori della	1
ARPEGE_70	Dewars,HC,H	cryogenics	Equip_Med_Categ	seg_0,seg_7,seg_8	I contenitori della	1

Figure 3. 8 Example of Excel import file

3.3 Product images

To promote Air Liquide products and at the end engage the customers or visitors to buy them, a high quality of the design of the portal has to be delivered. The images of the bottles and equipment sold are very important. The portal must be aesthetically pleasing for the clients. Models and variations can receive an image. The model photo is used in the menus containing all the models and inside the product:

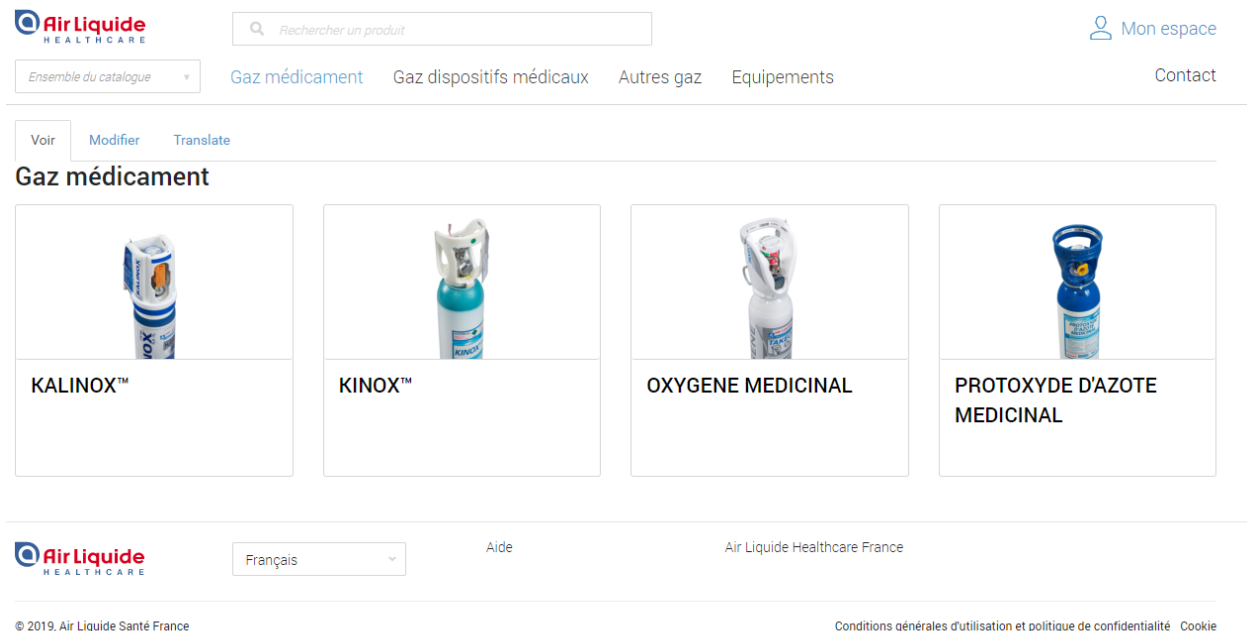


Figure 3. 9 Screen capture of the gas models in the French Customer Portal

The screenshot shows the Air Liquide Healthcare website interface. At the top, there is a search bar with the text "Rechercher un produit" and a "Mon espace" link. Below the search bar, there are navigation links for "Gaz médicament", "Gaz dispositifs médicaux", "Autres gaz", "Equipements", and "Contact". A "FILTRES" sidebar on the left allows filtering by "CONTENU" (0,42 m3, 1 m3, 1,06 m3, 2,3 m3, 3,2 m3), "GAMME" (Cadre V9, Classic, EM450, Présence™, Takeo™), "PRESSION" (200 bar), "MOLECULE" (O2), and "RACCORD DE SORTIE" (F, PI, RDI). The main content area displays the "OXYGENE MEDICINAL" product with a small image and a description: "OXYGENE MEDICINAL AIR LIQUIDE SANTE FRANCE 200 bar, gaz pour inhalation, en bouteille." Below this, there is a "Composition" section stating "Oxygène..... qs (sous une pression de 200 bar)". A "Catalogue de vente en ligne" table lists two variations: "OXYGENE MEDICINAL TAKEO™ B11" (M1001S11K2A001) and "OXYGENE MEDICINAL TAKEO™ B2" (M1001S02K2A001). Each variation includes a small image, the molecule type (O2), the range (Takeo™), the content (2,3 m3 for B11, 0,42 m3 for B2), and the outlet type (RDI). A "Fiche données sécurité" sidebar on the right contains links for "RCP" and "Notice".

Figure 3. 10 Screen capture of the model Medical oxygen and variations in the French Customer Portal

In the previous figure we can see how the same image is used for the “Medical Oxygen” in the menu and in the product. In the bottom of the figure we can see one variation “OXYGENE MEDICINAL TAKEO B11” with its own image inside. Clicking on the images will create a bigger photo display:

This image shows a close-up of the product image from the previous screenshot. It is a modal window displaying a larger view of the "OXYGENE MEDICINAL TAKEO B11" product. The product is a white cylindrical oxygen cylinder with a blue and white label that reads "AIR LIQUIDE" and "OXYGENE MEDICINAL". The cylinder has a white top section with a blue and white label that reads "TAKEO". The background of the modal window is dark, and the product image is centered. A close button (an 'X' icon) is visible in the bottom right corner of the modal window.

Figure 3. 11 Close up of the model image

As with products, images are managed from the PIM. They are managed from the assets part of the PIM where photos or documents can be uploaded. A photo is not an attribute, it is a separate product. The PIM later does the link between the asset where the photo is and the actual product. In this way an asset can be linked to multiple products.

In the first configuration of the portal all countries received the same photo for their products, which were the ones used for the French Customer Portal. Furthermore, the assets were created with random names instead of their reference, making it impossible to search the images on the PIM. After several requests from the affiliates to be able to upload their own photos for their portal, especially for gas bottles whose connections can change from one country to another. A configuration change was made on the PIM to be able to respond to their needs.

The PIM allows the configuration of assets as localisable and scopable. For all Healthcare products, the existing assets were downloaded from the PIM to save the photos, erased and new localisable assets were created using the references of the products as their code. This means using one asset for one product and losing the ability to link a photo to multiple products, but being able to set a different image for each country's portal and easily identify the assets by their code. By a simple mass import we can rapidly make the link between the asset and the corresponding product.

Mass uploads of images are allowed on the PIM. Naming the photo with their reference and their local will automatically store the image in the correct asset. For example: the photo **oxygenbottle-fr_FR.png** is stored in the **oxygenbottle** asset in the **French** local. After the configuration change, all the images that were previously on the portal were renamed using the new code and uploaded onto the PIM for all affiliates. This supposes having 7 copies (one for each local) of the same photo, with 7 different names. The renaming of the hundreds of photos was done using a macro in excel, file which is saved and used for every new photo upload.

For images shared with IM, in the case where there was an existing photo on the PIM no changes could be made and Healthcare would receive the same picture as IM. In the case of an IM product not having a photo, it can be uploaded but it would be the same for all affiliates.

Only ALSS can upload images to prevent affecting other sectors of Air Liquide. A process was set in place with the affiliates to share the photos with ALSS. A shared folder was created on Google Drive separating the photos to upload and the photos which were already uploaded, so we could also have a database of images. Affiliates must send an email to ALSS with a request to upload the images containing the references of the products and whether there is already a picture on the PIM for that product or not. This last piece of information is important for the PIM manager in order to know if the asset has to be created before uploading the image.

The portal has a default image for products that don't have a picture. A decision was made to upload the Air Liquide logo to the PIM for every product without an image, following the same structure as for normal images and not sharing one same asset between products. This allowed the creation of one asset for every existing product and faster upload of the images in the case of having one in the future. Later in the process, the portal manager was able to change the default picture in the back office of the portal, where

the Air Liquide Healthcare logo was place, so there was no longer need to upload the logo to the PIM. This measure is now in test in the pre-production version of the French portal, and will be introduced into the rest of the portals.

The end goal is to have the portal as complete as possible, making it visible appealing for the client. To facilitate the process with the photos, a file called *Photos par filiale* (Photos by affiliate) was created with the entire list of products sold by all affiliates, models and variations for gas, equipment and cryobiology. This file contains the products sold by each affiliate, whether they have a photo on the portal and if it is the shared image by ALSF or they have uploaded their own. The file allows for a quick track of all missing photos and in the case one affiliate finds a new photo for their portal, to see if it is needed for any other affiliate (only true for equipment and cryobiology, since gas bottle connections can change between countries, even for the same gases).

REF	FR	ES	IT	PT	BE	DE
AHL_200-16-25						1
AHL_200-8-15						1
aidal			1			
aidal_accessories			1			
aivia_wall_box	1					
alize	1	1		1	1	
als_gas_control	1				1	
antibacterial_filter			1			
bag	1	1			1	
ballon_unidirectionnel_kit	1				1	
bottle_racks_and_holders		1	1			1
cannula			1			
CH200			1			
connection			1			
defibrillator_consumable	1					

Figure 3. 12 *Photos par filiale* file

The references are in the first column and the first row contains the affiliates. Marked with a “1” are the products used by each affiliate and have the photo shared by ALSF, in green if the affiliates put their own photo and in yellow if the product doesn't have a photo on the portal.

3.4 End of life of a product

When Air Liquide wants to sell a new product or stops selling it, due to a change of supplier or development of a new range of products, the sales team at ALSS creates a demand of creation of a new reference which is approved by Air Liquide and then sent to the affiliates. The moment this new reference is created, customers can start to make orders on it.

At the moment, all creation or suppression of references on the PIM is communicated to the PIM manager by the affiliates when they have the need to display it on their portal. This process can take time, and therefore there is a gap between the creation of the reference by Air Liquide and the creation of the product on them PIM.

A process has been set in place where the PIM manager will directly receive the information concerning the new reference creation by Air Liquide at the same time as the affiliates. In this way, the product will already be created on the PIM by the time the affiliates need it, allowing them to complete all attributes by themselves without the need of contacting ALSS.

In the case of a product being substituted by another one, if a supplier develops a new range for example, the old reference will be displayed on the portal as a “substitution reference” to help the customer to understand the change at the time of creating an order.

3.5 Optimisation of the PIM

Following the go live of all the portals a complete analysis of the configuration of the PIM has been made. We have to bear in mind that the configuration was made before the upload of products. Many of the attributes used on the families are not used by any products, or there are families with missing attributes requested by affiliates.

When filling in the PIM, the affiliates requested the addition of attributes for some families. This was due to some products needing more information than allowed by the configuration in the PIM. Meetings with the affiliates were organised to set the needs of these additions and find other possible solutions like writing all extra information in the descriptions. The end goal was to minimise the amount of attributes in each family for easier management. Adding all attributes to all families would make useless the notion of family because all products would have the same characteristics.

In order to simplify the families a compiling document (*Revue TEMPLATES*) with the list of attributes by family was made together with the export of all products found in the PIM. This *Revue TEMPLATES* document contains all attributes used in Healthcare, whether or not they are localisable or scopable, the type of attribute and the families to which they are attached. This file allows the PIM manager to have a control of the existing attributes in the PIM and their use.

Attribut	scopable	localisable	Type	med_flowmete r	med_regulator	regulator	med_resuscita tor	med_others	med_vacuum_ regulator	med_suction_ device
Equip_Display_Authorization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Yes/No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_Highlights	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_Med_Category_ID	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Simple Select	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_Product_Photo	<input type="checkbox"/>	<input type="checkbox"/>	Media	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_SoldBy	<input type="checkbox"/>	<input type="checkbox"/>	Simple Select	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Med_Model_Description	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Med_Segmentation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Multiple Select	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Med_Title_Model	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
med_model_sorting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
sku	<input type="checkbox"/>	<input type="checkbox"/>	Number	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_Maximal_Flow_Value	<input type="checkbox"/>	<input type="checkbox"/>	Measuring Unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Med_Equip_Maximal_Flow_Value	<input type="checkbox"/>	<input type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Equip_Model_description	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas_Product_Display_Authorization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Yes/No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas_Product_Med_Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Simple Select	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas_Product_Med_RCP_Link	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas_Product_Name	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3. 13 *Revue TEMPLATES* file

In the figure above there is represented the attributes in the first column and the families in the first row. With a check there are marked to which families each attribute is attached. Marked in yellow the attributes which are attached to a family but don't have any values. In this case, the need to have the attributes linked to the family is assessed and erased if not used. In the figure we can see the attribute *med_model_sorting* which doesn't have any value for any family, the reason is it is a newly added attribute and affiliates have not had the chance to fill in the values yet, this attribute will not be erased from the PIM. This file was made both for models and variations.

Following the requests of the affiliates to be able to change the order of appearance of the models and the variation in the customer portal, it was decided that it would be managed through the PIM. Two new attributes were created, one for models and one for variations, where the products could be given a number depending on the order of the desired appearance on the portal. The first introduction of these values was first done by ALSS through a mass import, and later managed individually by each affiliate on the PIM.

3.6 Optimization of the Customer Portal

After the launch of the Customer Portals in all countries, the optimisation of the portal also continues in order to improve the customer experience. These configuration changes affect the display of products and all information related.

As explained before in the tools used, the Customer Portal allows de division into marketing segments. This feature manages which products are displayed on the portal, and if configured incorrectly the portal would have category menus which don't have any products inside for some marketing segments. This can affect the customer experience because it gives the client the impression of an unfinished portal. In order to solve this, the marketing segments for each category menu in the portal where listed and the menus were configured to be displayed only in the segments which have models inside.

For example, in the following screen capture of the Spanish portal we can see the accessible menus (Medical Gases, Pure Gases, Sanitary Product Gases, Material and Services) in the default segment, which displays all products:



Figure 3. 14 Taxonomy of the Spanish Customer Portal (*Default* marketing segment)

And the reduced list of menus when in the “Emergencies” marketing segment where we can only see Medical Gases, Material and Services:

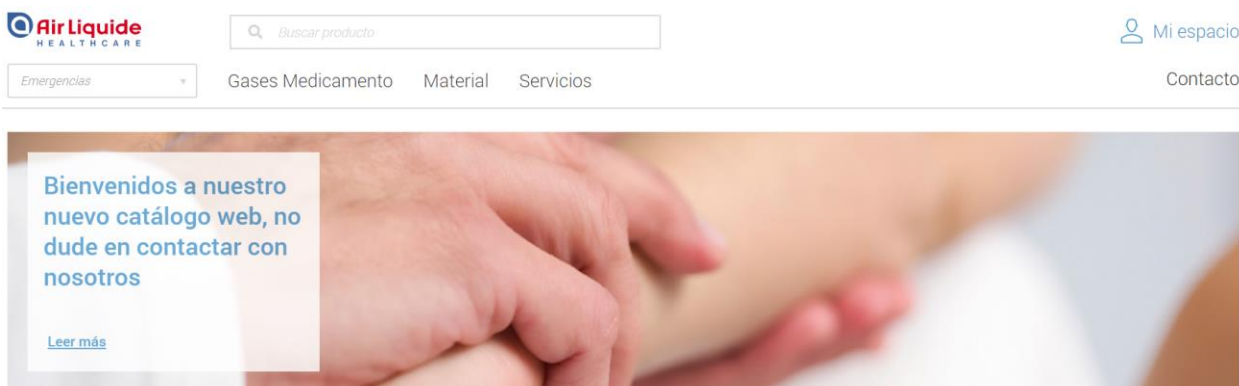


Figure 3. 15 Taxonomy of the Spanish Customer Portal (*Emergencias* marketing segment)

In the Customer Portal, the variations for the attributes is displayed in columns. As with the marketing segments, in the case of attributes without values there are empty columns displayed on the portal which don't give a good image. For example the molecules column in the gases for the Spanish Portal.

Catalogo de venta online

	MOLÉCULA	TIPO DE SALIDA	CAPACIDAD	CONEXIÓN DE SALIDA
> KALINOX Cy-S Compacta 11/170 <i>M1850S11C7A001</i>		Compacta	11 L	AFNOR O2/N2O
> KALINOX Bot-S compacta 5/170+ <i>M1850S05C7A001</i>		Compacta	5 L	AFNOR O2/N2O

Figure 3. 16 KALINOX variations with their attributes

A file was shared with the affiliates in which they could choose the attributes to display in the columns as well as in the search filters. With these values, a custom configuration was made for each portal. The portal was also configured so that it will automatically not display a column if it is empty, even if set in the configuration asked by the affiliates.

3.7 Final appearance of the Customer Portal

The actual catalogue is the best version up to date. Products sold by the affiliates are all completed on the PIM with the relevant attributes and images displayed on each portal. ALSS has tried to cover as much as possible the needs of each affiliate for their customer portals to offer the best customer experience they can to the client.

However, we must bear in mind that the product catalogue will never be completed. The suppression, introduction and substitution of products by the suppliers or Air Liquide will cause constant changes to the portals. For this reason processes have been put in place to make sure these changes are made seamlessly for the client and the correct functioning of the Customer Portal in the future.

The following images show the appearance of the Spanish Customer Portal in August 2019 (other countries portals will have similar appearances with similar configurations):

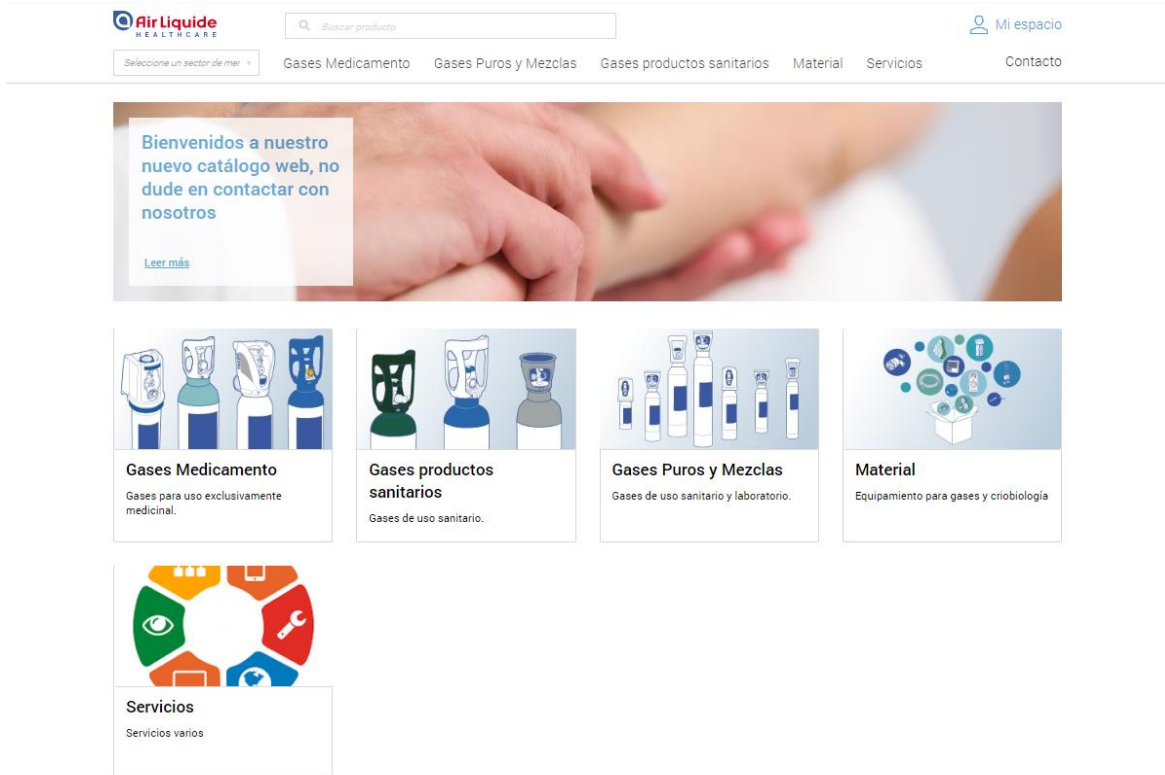


Figure 3. 17 Home screen of the Spanish Customer Portal

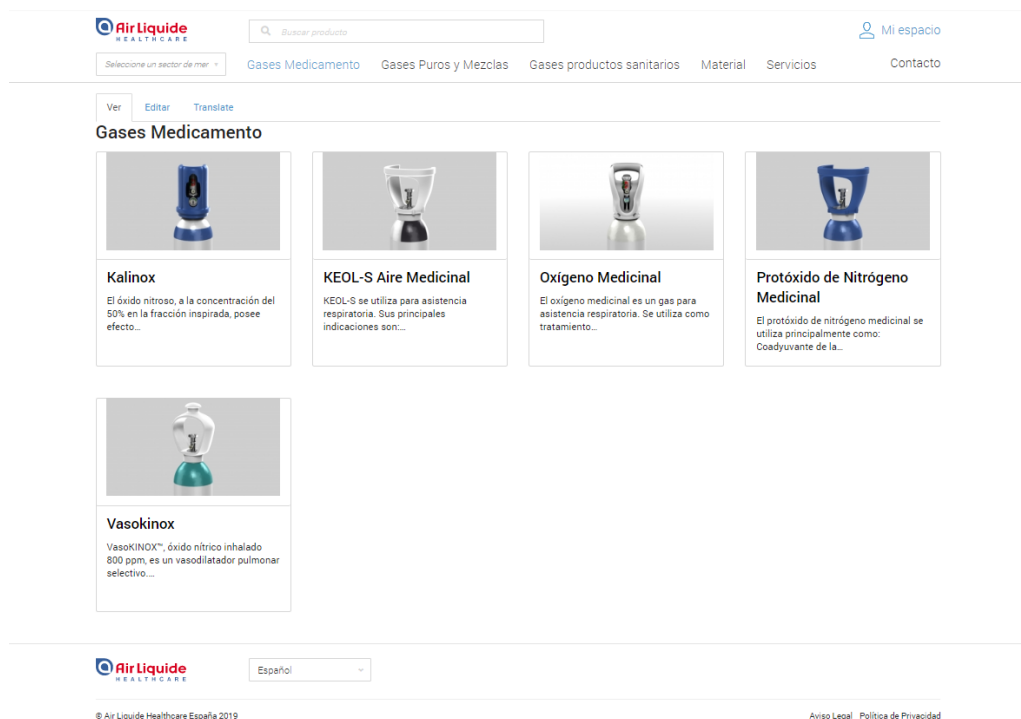


Figure 3. 18 Medical Gases menu (models) in the Spanish Customer Portal

Air Liquide HEALTHCARE

Buscar producto

Mi espacio

Selección un sector de mer

Gases Medicamento Gases Puros y Mezclas Gases productos sanitarios Material Servicios Contacto

FILTRO

CAPACIDAD
 2 L
 5 L
 10 L
 13 L
 20 L
[Ver más](#)

TIPO DE SALIDA
 Compacta
 Estandar
 Takeo™

PRESIÓN
 200 bar

CONEXIÓN DE SALIDA
 AFNOR O2
 F

OXÍGENO MEDICINAL
 El oxígeno medicinal es un gas para asistencia respiratoria. Se utiliza como tratamiento médico en situaciones crónicas y agudas. Sus principales indicaciones son:

- Hipoxia
- En anestesia y reanimación
- Coadyuvante en nebulización de medicamentos
- Uso en cefaleas en racimo

Anexos
[RCP](#)
[Aviso](#)

Catalogo de venta online




	MOLECULA	TIPO DE SALIDA	CAPACIDAD	CONEXIÓN DE SALIDA
<input checked="" type="checkbox"/> OXIGENO MED Bot-S Takeo 5/200 M1001S03K2A001  Oxígeno Medicinal Botella Takeo 5 litros		Takeo™	5 L	AFNOR O2
<input checked="" type="checkbox"/> OXIGENO MED Bot-S std 5/200 M1001S03R2A001  Oxígeno Medicinal Botella Estandar 5 litros		Estandar	5 L	F
<input checked="" type="checkbox"/> OXIGENO MED Bot-S std 2/200 M1001S02R2A001  Oxígeno Medicinal Botella Estandar 2 litros		Estandar	2 L	F

Figure 3. 19 Medical oxygen page in the Spanish Customer Portal

Chapter 4: **Training of the affiliates and documents**

4.1 Support to the affiliates

The management of each portal is done by the different affiliates. They receive the support of ALSS in the duration of the entire process, this is preparation of the portal, launch and maintenance and optimisation. To ensure the development of the project a weekly meeting is organised by ALSS with all the affiliates where all aspects of the portal are discussed. This includes informing the affiliates about changes of the PIM, but also topics related to ordering process, management of users, or actions to follow in the future for the progress of the project.

As the management of the PIM after the launch of the portal is done by the affiliates, it was important to ensure that all teams knew how to use the PIM. An incorrect use of the PIM could affect the values for other countries and channels, changing the appearance of the portal of the rest of the countries. Trips to the different affiliates (Spain, Portugal and Italy) were made to give training sessions on the PIM as well as last minute support to the teams before the go live.

4.2 Training documents and files

Different documents were created to support the training offered to the affiliates and also for the training of the next PIM manager at the end of the internship.

4.2.1 Training of the affiliates

The main training document called *PIM Training / Portal* is a presentation used during the training sessions where there is explained the entire structure of the PIM, the search of products and modification of attributes. This document is thought for the use of the PIM by the affiliates, who have limited access to the functions on the PIM. The affiliates can only modify their own local, can't change products photos or do mass imports and exports of information, they can only modify each product manually one by one. The following figure shows the content of this file:

Index

- [Understand the PIM](#)
 - Families
 - Models and variations
 - Attributes
- [Using the PIM](#)
 - [Search a product](#)
 - [Attributes](#) : notion of localisable and scopable
 - [Marketing Segments](#)
 - [HTML guide](#) : give format for model descriptions
 - [Product display on the portal](#)
 - [Bulk actions](#) : modifying multiple products at once
 - [Changing images](#)
 - [PIM - Portal synchronisation](#)
- [Links between PIM and Portal](#)
 - [Categories](#)
 - [Manage products on the Back Office](#)
- [Attributes in the Portal](#)
- [What to do to modify a product](#)
- [What to do to create new products](#)
- [What to do to delete a product](#)
- [What to do to replace an existing product with another product \(management of substitution\)](#)
- [What to do to not display for any reason](#)

This document is **INTERNAL**

3	20/18	Déploiement PIM	World leader in gases, technologies and services for Industry and Health
---	-------	-----------------	--

Figure 4. 1 Content of the training file for affiliates

The presentation also contains the links between the portal and the PIM, this is how the values of the attributes of the PIM are displayed on the Portal. It gives the affiliates a quick guide of which attributes they have to modify in the PIM if they want to change a certain part of the portal.

med_title_model

Hôpital

Gaz médicament Gaz dispositifs médicaux Autres gaz Equipements

FILTRES

- PRESSION DE SERVICE
 - 4,5 bar
- MOLÉCULE
 - Air
 - O2
- DÉBIT MAXIMUM
 - 15 L/min
 - 5 L/min
 - 30 L/min

FLOMED

• Equipements • Administration des gaz • Basse pression • FLOMED

Débitmètre à bille

Suppression maximale : 5 bar
Précision : ± 10% de la valeur lue ou ± 0,5 l /min
Dimensions : 136 x 33 x 82 mm
Masse : 230 g
Température de stockage : -40°C à +60°C / 40%
-70% d'humidité relative.
Température d'utilisation : +5°C à +35°C
La mesure du débit se fait à mi-bille.
Durée de vie : 10 ans
Flomed est livré systématiquement avec son olive (12x125) de sortie

Equip_Highlights

Variations filtered according to **Med_Segmentation_var**

displayed if **Equip_Display_Authorization_Var = yes**

RACCORDE D'ENTRÉE	PRESSIION DE SERVICE	MOLECULE	DEBIT MAXIMUM	RACCORDE DE SORTIE	
FLOMED 719850	4,5 bar	Air	15 L/min	Ragrip	Merci de vous identifier pour avoir plus d'informations
FLOMED 719801	4,5 bar	Air	5 L/min	Ragrip	Merci de vous identifier pour avoir plus d'informations
FLOMED 719807	4,5 bar	O2	30 L/min	Ragrip	Merci de vous identifier pour avoir plus d'informations
FLOMED	4,5 bar	Air	15 L/min	Ragrip	Merci de vous identifier pour

Equip_Short_Designation_variant

Figure 4. 2 Correspondences between the attributes and the Customer Portal

An example in the figure above of where appears each attribute in the portal:

- **Med_title_model**: name of the model
- **Med_segmentation_var**: chosen marketing segment
- **Equip_Highlights**: description of the model
- **Equip_Short_Designation_variant**: name of the variation

Other documents with processes to follow have been sent to the affiliates during the internship. For example the process to send the photos to the PIM manager (*Guide Photo PIM*) where the correct photo renaming and file completion process is explained.

4.2.2 Training documents for the PIM manager

After the end of the internship there will be a need of someone taking the role of PIM manager for ALSS. On top of the document for the affiliates, several documents with more specific tasks have been prepared in order to facilitate the training.

The main one is *PIM Mass Import / Export* where the process to do a mass import and export is explained. This includes the use of import and export profiles, the modification of the excel files and other uses that can be given to the mass imports.

The modification of the excel files can be done using the *OPTIONS* file explained in the point 3.2 of this document. A part from the macros to do the necessary modification, this file also contains a list of

the codes for all simple and multiple select attributes. Although these lists exist in the PIM it is more convenient to find all the translations in one sheets than having to search by attribute on the program. This list is shared with the affiliates too so they can easily modify the attributes in the PIM one product at the time.

Other operations that can be done through mass import and are explained in this training file are:

- Upload of assets and making them localisable: The structure of the import excel files is explained. An excel file with a macro to rename a list of images from a folder to give them the correct codes for the locals will be also joined in this folder
- Adding attributes to families.

As a resume the following documents will be joined for training:

1. For the affiliates:
 - *PIM Training / Portal* presentation
 - *Guide Photo PIM* presentation
 - *Photos par filiale* file
 - *OPTIONS* file

2. For the PIM manager
 - *PIM Training / Portal* presentation
 - *Guide Photo PIM* presentation
 - *Photos par filiale* file
 - *OPTIONS* file
 - *Revue TEMPLATES* file
 - Photo renaming macro Excel file
 - Example mass import excel files of multiple tasks (basic mass import of product information, creation of a new asset, adding new attributes to a family...)

BIBLIOGRAPHY

- Air Liquide history: <https://www.airliquide.com/group/our-history> Consulted: 31/07/2019
- Air Liquide Large Industries: <https://www.airliquide.com/group/large-industries> Consulted: 31/07/2019
- Air Liquide Industrial Merchant: <https://www.airliquide.com/group/industrial-merchant> Consulted: 31/07/2019
- Air Liquide Healthcare: <https://www.airliquide.com/fr/groupe/sante> Consulted: 31/07/2019
- Air Liquide Electronics: <https://www.airliquide.com/group/electronics> Consulted: 31/07/2019
- Captures of the Customer Portals:
 - France: <https://portail.airliquidehealthcare.fr/>
 - Italy: <https://portale.airliquidehealthcare.it/>
 - Belgium: <https://portal.airliquide-benelux.com/>
 - Spain: <https://portal.airliquidehealthcare.es/>
 - Portugal: <https://portalcliente.airliquidehealthcare.pt>
 - Germany: <https://kundenportal.airliquide-healthcare.de/node>