CREATION AND MANAGEMENT OF PDMS AND E3D CATALOGUES

SARL ORINOX Ingénierie – 12 route des Fougerays – 44110 CHATEAUBRIANT – 02.40.07.23.40 - contact@orinox.fr
SARL au capital de 150 000 € - RCS NANTES : 507 959 203 – NAF : 7112B – N°TVA Intra communautaire : FR55507959203

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1. PRESENTATION

Partner of the largest engineering and industrial companies, ORINOX specializes in AVEVA software services and CAD (computer-aided design). Our industrial plant design techniques integrate industry databases for faster information delivery including drawings, isometrics, support documents, materials lists, intuitive design models, videos and realistic snapshots.

Orinox's primary design tools are **AVEVA PDMS™** and **AVEVA Everything3D™**, the leading engineering software solutions worldwide in the domains of processing, energy, and naval construction.

Orinox has instituted a Quality Management System (QMS) meeting ISO 9001 criteria. Our Quality Manual is available on our company website: www.orinox.com

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2. PURPOSE

The purpose of the **AVEVA PDMS™** and **AVEVA Everything3D™** catalogues is the capability to insert components into DESIGN without having to create a model for each use. The geometry of all components and their parameters (text information, physical properties, materials, etc.) are created via different modules of **PDMS/E3D** (PARAGON, PROPCON, etc…) and inserted with their specifications. Thus, the pipefitter has access to a limited selection of items, compatible with the characteristics of the line he designs. This operational mode enhances designer efficiency, ensuring that the project is on-time and on-budget, and improves overall quality by reducing the risk of errors.

In terms of the working methodology imposed by **PDMS** and **E3D**, when we speak of catalogue, we mean all elements that allow the use of a component in the 3D models and for the output of the materials lists, 2D drawings, and isometrics. This includes the definition of shapes, text details, materials, physical properties, specifications, tables of nuts and bolts or any tool used in PDMS that is necessary for the proper functioning of a design project.

Orinox has developed expertise in the creation and the implementation of several types of **PDMS** and **E3D** catalogues:

- Piping
- Steel sections, fittings and joints
- Civil engineering
- HVAC
- Cable trays
- Equipment
- Access (ASL and SLH)
- MDS

3. REFERENCES

ORINOX has exercised its PDMS catalogue knowledge for projects with the following clients:

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4. PIPING CATALOGUE

4.1. Methodology

ORINOX, with its extensive **PDMS** catalogue experience, has developed a methodology for creating piping catalogues which optimizes time, reduces data entry errors, and controls the operation of each component in each of the specifications required by different modules of **PDMS** and **E3D** (DESIGN / MODEL, DRAFT / DRAW, ISODRAFT, PARAGON).

This methods consists of several steps:

1) Verification of the input data
2) Creation of the different cataloged elements
3) Creation of the required piping specifications
4) Checking the catalogue in different modules
5) Assistance with catalogue deployment

4.2. Verification of the input data

The first step of every catalogue project is the verification of the input data:

Do we have all the documents (standards, datasheets…) required to start the project?
Do the documents contain all the necessary information (dimensions, weights…)?
Do the documents not contradict one another?
Have all methods been validated with the client?

ORINOX takes particular care in validating and checking all the input data at the beginning of each project. We use document check monitoring tools to insure their validity. At the end of this verification phase, we are capable of presenting a report to the client detailing the document containing necessary information to create any component.

4.3. Geometries creation

ORINOX is able to optimize the creation of 3D shapes in order to reduce work duplication and sources of error, especially when entering the dimensions of the various components.

4.3.1. USE OF THE GENERIC GEOMETRIES

Similar components use standard geometric shapes, regardless of the regulating standards or manufacturing material. Thus, a bend remains a "torus," whether it is made of steel or stainless steel, or whether it follows EN or ASME standards.

It is therefore unnecessary to create this shape many times, as there are different types of the same component. Since only the dimensions change between these types, it is always possible to reference a *generic* shape and enter the dimensions of a desired component. This methodology has been proposed by **AVEVA**, but ORINOX has elaborated the steps. It is also possible to create multiple types of connections by starting with a single shape. Thus, a single shape can create all the components of the same type.

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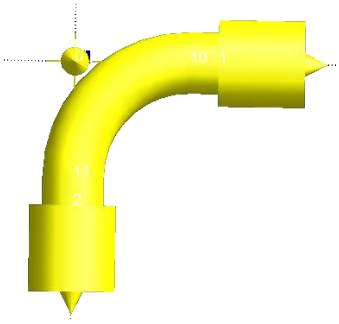
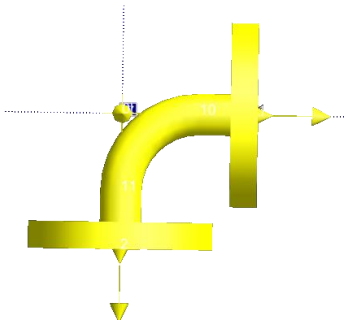
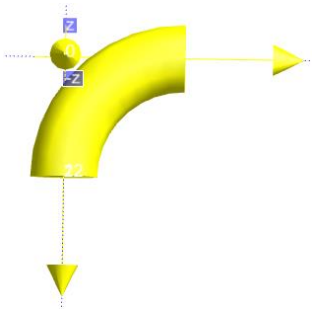
Example of 3 bends created with the same generic shape:



Socket Welding (SW)



Flanged (FL)



Butt Welding (BW)

This method of creating 3D shapes limits the number of shapes to create (Point Set, Geometry Set, Data Set) and saves time not only when creating the initial catalog, but also during future additions throughout project use. When a new element must be created, generic shapes can be directly referenced rather than creating a new shape from scratch.

More complex components (such as valves) may be configured directly from the 3D model in the DESIGN or MODEL modules. These geometries are called *parametric*. They present several advantages:

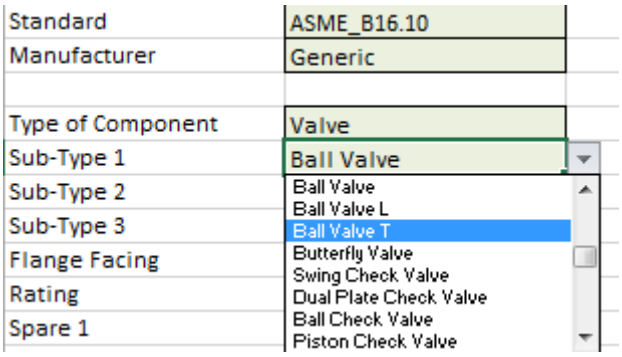
- For pre-project, even if the final type of the component is not yet defined, it is possible to insert a component of the same family with credible dimensions.
- Once the manufacturer datasheet is validated, the designer can modify the dimensions of the component directly in DESIGN or MODEL without having to reselect it or modify the catalogue.

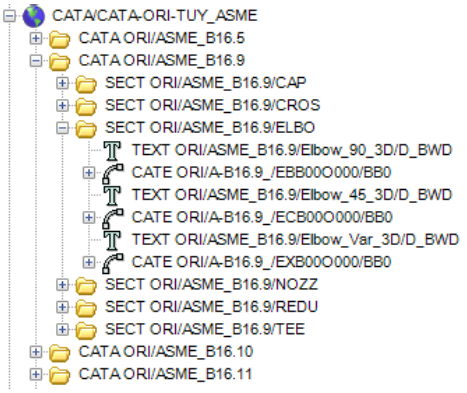
The catalogue is then usable throughout different phases of the project: Pre-Project, FEED, Basic Design, Detailed Design, As-Built…

4.3.2. HIERARCHY CREATION

All components are coded according to a single key that is usually specific to each company. With this coding, the smallest typo can affect future use of the catalogue. This is why ORINOX created automatic component hierarchy to replace manual entry.

With our application, the person tasked with data entry uses a drop-down menu to select a subtype to characterize the component.





By selecting the appropriate option corresponding to each component, command lines are automatically generated in a **PDMS** and **E3D** macro file (**PML**). The person who enters the catalogue only needs to run the **PML** macro for the entire hierarchy to be generated.

The codification must be defined before the catalogue creation can begin. As codification will be different for each company, our application is fully configurable to be adapted to the needs of our clients.

ORINOX has also developed its own codification system for piping components. This system can be made available to our customers in order to minimize preliminary codification and thus the cost of catalogue development.

4.3.3. INPUT OF PARAMETERS (COMPONENT DIMENSIONS)

The input of parameters for each component can be tedious if done directly in the module PARAGON. Even if every version since **PDMS** 12.0 presents a dedicated window, the ergonomics are far from being as user friendly as an Excel spreadsheet. This is another reason why our program is useful for creating catalogues. When thousands of items each require many parameters to be entered, it is necessary to find a program that is both simple and effective. Our spreadsheet allows data to be copied directly from the electronic catalogues of suppliers, thereby limiting the number of required manual entries and, consequently, the number of potential errors.

The values of certain parameters are often calculated from other parameters. With this application, the calculations are completed automatically in the spreadsheets based on formulas that are entered only once. This system prevents the data input operator from returning to the same data multiple times, or making the same calculation for each NS of a component.

Here is one example of a data entry sheet:

PA1	PA2	PA3	PA4	PA5	PA6	PA7	PA8	PA9	PA10	PA11	PA12	PA13	PA14	PA15	PA16	PA17	PA18	PA19	PA20	PA21	PA22	PA23	PA24	PA25	PA26	PA27	PA28	PA29	PA30	PA31	PA32
DN_1	DIA_1	CON_1	TH_1	DIA_CON1	LENGTH_1	DN_2	DIA_2	CON_2	TH_2	DIA_CON2	LENGTH_2	DN_3	DIA_3	CON_3	TH_3	DIA_CON3	LENGTH_3	Spare	Spare	DIA_BODY	LENGTH	DOWN_POINT	UP_POINT	DIA_ACT	DIA_BODY_OBS	LENGTH_OBS	DOWN_POINT_OBS	UP_POINT_OBS	DIA_ACT_OBS	TH_FF_1	TH_FF_2
350	355.6	FGJ	-206	839	832.4	350	355.6	FGJ	-206	839	832.4	0	0	0	0	0	0	341.5	452.5	602.9	80	338.2	919	635	865	0	0	1000	0	17.48	17.48
400	406.4	FGJ	-220	917	931.7	400	406.4	FGJ	-220	917	931.7	0	0	0	0	0	0	383.3	502.5	686.7	80	377.8	960.8	635	965	0	0	1000	0	20.62	20.62
450	457	FGJ	-234	995	1030	450	457	FGJ	-234	995	1030	0	0	0	0	0	0	425.2	552.5	770.5	80	417.4	1003	635	1065	0	0	1000	0	20.62	20.62
500	508	FGJ	-247	1072	1127	500	508	FGJ	-247	1072	1127	0	0	0	0	0	0	467.1	602.5	854.3	80	457	1045	635	1165	0	0	1000	0	24	24
600	610	FGJ	-275	1228	1326	600	610	FGJ	-275	1228	1326	0	0	0	0	0	0	550.9	702.5	1022	80	536.2	1128	635	1365	0	0	1000	0	26.5	26.5
650	660	FGJ	-289	1306	1424	650	660	FGJ	-289	1306	1424	0	0	0	0	0	0	592.8	752.5	1106	80	575.8	1170	635	1465	0	0	1000	0	26.5	26.5
700	711	FGJ	-302	1384	1522	700	711	FGJ	-302	1384	1522	0	0	0	0	0	0	634.7	802.5	1189	80	615.4	1212	635	1565	0	0	1000	0	26.5	26.5
750	762	FGJ	-316	1462	1621	750	762	FGJ	-316	1462	1621	0	0	0	0	0	0	676.6	852.5	1273	80	655	1254	635	1665	0	0	1000	0	29	29
800	813	FGJ	-330	1540	1719	800	813	FGJ	-330	1540	1719	0	0	0	0	0	0	718.5	902.5	1357	80	694.6	1296	635	1765	0	0	1000	0	29	29
850	864	FGJ	-344	1618	1817	850	864	FGJ	-344	1618	1817	0	0	0	0	0	0	760.4	952.5	1441	80	734.2	1338	635	1865	0	0	1000	0	29	29
900	914	FGJ	-358	1696	1916	900	914	FGJ	-358	1696	1916	0	0	0	0	0	0	802.3	1003	1525	80	773.8	1380	635	1965	0	0	1000	0	31.5	31.5
950	965	FGJ	-371	1774	2014	950	965	FGJ	-371	1774	2014	0	0	0	0	0	0	844.2	1053	1608	81	813.4	1422	636	2065	0	0	1000	0	31.5	31.5
1000	1016	FGJ	-385	1851	2112	1000	1016	FGJ	-385	1851	2112	0	0	0	0	0	0	886.1	1103	1692	82	853	1464	637	2165	0	0	1000	0	31.5	31.5
1050	1067	FGJ	-399	1929	2211	1050	1067	FGJ	-399	1929	2211	0	0	0	0	0	0	928	1153	1776	83	892.6	1505	638	2265	0	0	1000	0	34	34
1100	1118	FGJ	-413	2007	2309	1100	1118	FGJ	-413	2007	2309	0	0	0	0	0	0	969.9	1203	1860	84	932.2	1547	639	2365	0	0	1000	0	34	34
1150	1168	FGJ	-427	2085	2406	1150	1168	FGJ	-427	2085	2406	0	0	0	0	0	0	1012	1253	1944	85	971.8	1589	640	2465	0	0	1000	0	34	34

In green, the data entered directly by the user into the spreadsheet.
In blue, the data obtained automatically from tables or formulas.

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In this example (a valve), the utility of our program is clear. For this type of component, it would be necessary to manually complete 32 data entries in PARAGON, whereas in our program only requires 8 (the dark green columns). In addition, the data was copied and pasted from the PDF catalogue of a supplier. This reduces the number of manual entries to zero and typing errors are kept to a strict minimum.

The use of generic shapes also facilitates parameter input because it imposes a standardization of component parameters. Thus, the NS, tube diameters, types of connections, etc. are the same for many components and are always located on the same identified parameter. It is therefore possible to copy the values entered on one component for reuse on another. The number of manual data entries required is again diminished.

The **PML** macros files previously described will be elaborated with data from each component to create all of the SCOM of the CATE, as well as the SDTE, detail texts, etc. Thus the work performed in **PDMS** or **E3D** serves to initiate the **PML** macro files to create any of the required CATE.

4.3.4. MANAGING ADDITIONAL ELEMENTS

In a **PDMS** or **E3D** piping catalogue, geometric elements are not the only elements that are used. We also find SDTE, SMTE, bolt elements, etc. We can build upon our application to respond to the needs of individual clients. For example, an SDTE can be added in all CATE:

SDTE SKEY	VBFL
SDTE Rtext	Ball Valve, Gearbox, RJ, Reduce bore, #2500, ASME B16.10

Thus, according to the requirements of the catalogue, our application can be adapted to insert all CATE useful elements. These items will be added to the **PML** macro file and then automatically generated when creating the CATE with all components.

4.3.5. CATALOGUE USE AND MANAGEMENT

The application developed by ORINOX also keeps an archive of all the components available in the catalogue, independent of PDMS. The archive allows updates and modifications to be made to the catalogue. As the catalogue of piping components continues to change (the dimensions of components or client needs may evolve), it is necessary to facilitate any upcoming adjustments to the **PDMS** or **E3D** catalogue.

This application can be run according to several different operating modes: complete creation of a component category, addition of components to an existing category or update of the components in a category. This method allows you to manage corrections or modifications to the components directly in our application. In addition, **PML** macro files always run a CATE in its entirety. It is therefore possible to make changes to all components of a CATE in a single operation.

The ORINOX method of creating **PDMS** and **E3D** catalogues not only facilitates the creation of the catalogue, but also serves as a useful tool for managing the catalogue on an ongoing basis.

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4.4. *Creation of piping specifications*

Geometric elements are not accessible in **PDMS DESIGN** or **E3D MODEL** until they are inserted into specifications. ORINOX has developed a simple and rapid method to create and edit piping specifications when managing PDMS catalogues. The application uses the SPECON module. This module creates piping specifications from text files with the elements of the specification in a table format.

```
HEADING
TYPE    NAME                                  PBOR1   PBOR2      SHOP    STYP            CATREF
DEFAULT
-       -                                     -       -          =       =
VALV    /ORI_K03_/Q-0/VALVAB00K0/BB0/ACAC00   0.5in   0.5in      TRUE    TEXT 'VALV_01'  /ORI/Q-0/VALVAB00K0/BB0/ACAC00
VALV    /ORI_K03_/Q-0/VALVAB00K0/BB0/ADAD00   0.75in  0.75in     TRUE    TEXT 'VALV_01'  /ORI/Q-0/VALVAB00K0/BB0/ADAD00
VALV    /ORI_K03_/Q-0/VALVAB00K0/BB0/AEAE00   1in     1in        TRUE    TEXT 'VALV_01'  /ORI/Q-0/VALVAB00K0/BB0/AEAE00
VALV    /ORI_K03_/Q-0/VALVAB00K0/BB0/AGAG00   1.5in   1.5in      TRUE    TEXT 'VALV_01'  /ORI/Q-0/VALVAB00K0/BB0/AGAG00
```

4.4.1. *APPLICATION PRINCIPLE*

The method for creating specifications consists of creating the TXT file that will be read by SPECON, which again limits the number of data entries to be entered manually. The straightforward system reduces human error and saves time.

4.4.2. *PRESENTATION OF THE APPLICATION*

The image below shows a partial data entry sheet. It consists of entries of the names of each SCOM to include in the specification and of choosing the material in a drop down list.

Insertion de	VALV	96		Matériau	/ORI/A694_F60			
Dans la SPEC	/ORI/L01_			Incrément	1			
speconmode								
$S-								
OLD SPEC	/ORI/L01_							
HEADING								
TYPE	NAME	PBOR1	PBOR2	SHOP	STYP	CATREF	DETAIL	MATXT
DEFAULT								
-	-	-	-	=	=			
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/ACAC00	0.5in	0.5in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/ACAC00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/ADAD00	0.75in	0.75in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/ADAD00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AEAE00	1in	1in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AEAE00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AGAG00	1.5in	1.5in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AGAG00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AHAH00	2in	2in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AHAH00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AJAJ00	3in	3in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AJAJ00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AKAK00	4in	4in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AKAK00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60
VALV	/ORI_L01_/M-0000/GASKGI0GL0000/GG0/AMAM00	6in	6in	TRUE	TEXT 'VALV_01'	/ORI/M-0000/GASKGI0GL0000/GG0/AMAM00	/ORI/M-0000/GASKGI0GL0000/GG0/SD	/ORI/A694_F60

Based on this information, the different elements will be automatically linked based on their codification:

- Detail texts
- Physical properties
- Thickness tables
- …

A same group of SCOM can therefore be inserted into several specifications by naming the SPEC, and the associated material is modified in the application.

The application presented above allows us to save time, limit input errors, and create any piping specification. However, for projects requiring the creation of many specifications, ORINOX has developed specific tools adapted to the client's needs and specifications.

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4.5. *Catalogue verification*

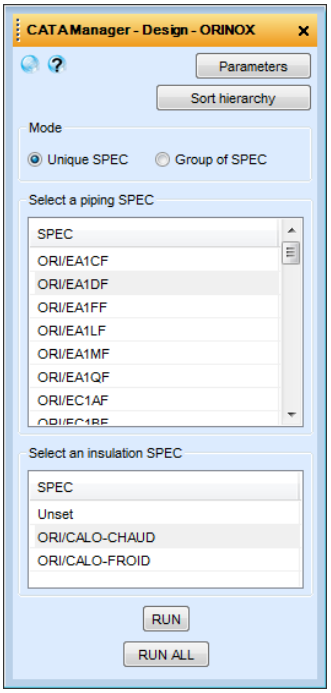
In addition to reducing catalogue entry errors, ORINOX has developed a very thorough audit application for specifications and the elements they contain. For each of the specifications that are created, we issue the following verification features:

- A PIPE that includes all of the components of the specification for each NS
- An isometric of each PIPE
- One or more DRAFT of each PIPE, allowing visualization of the different levels of representation, the insulation, the center line, etc.

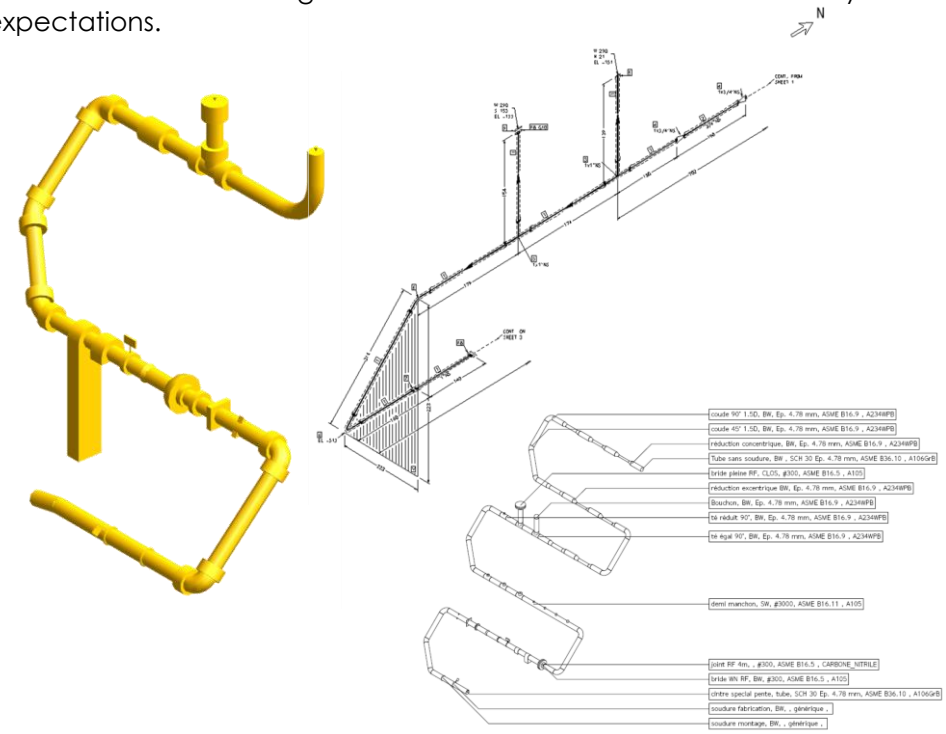
By reviewing these features allows us to verify the following:

- Connections between the components
- Geometries
- Insulation
- Level of representation and obstruction
- Isometric symbol
- Detail texts and material texts
- …

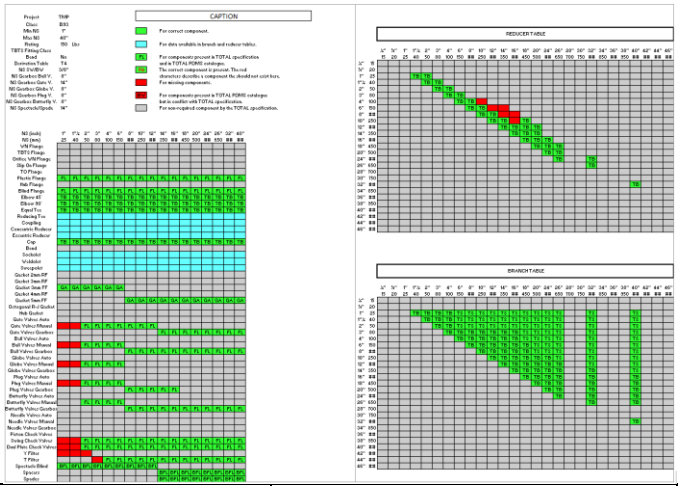
This verification protocol assures that all catalogues created for our customers are fully functional and meet their expectations.



PML window developed by ORINOX



In addition to component verification tools, ORINOX has also developed a tool to verify the specifications created. The tables generated by this application indicate (in green) the components correctly inserted in the specification and (in red) the missing components.
It is a quick way to check if the **PDMS** or **E3D** SPEC are compliant with the project specifications.



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4.6. *Catalogue deployment*

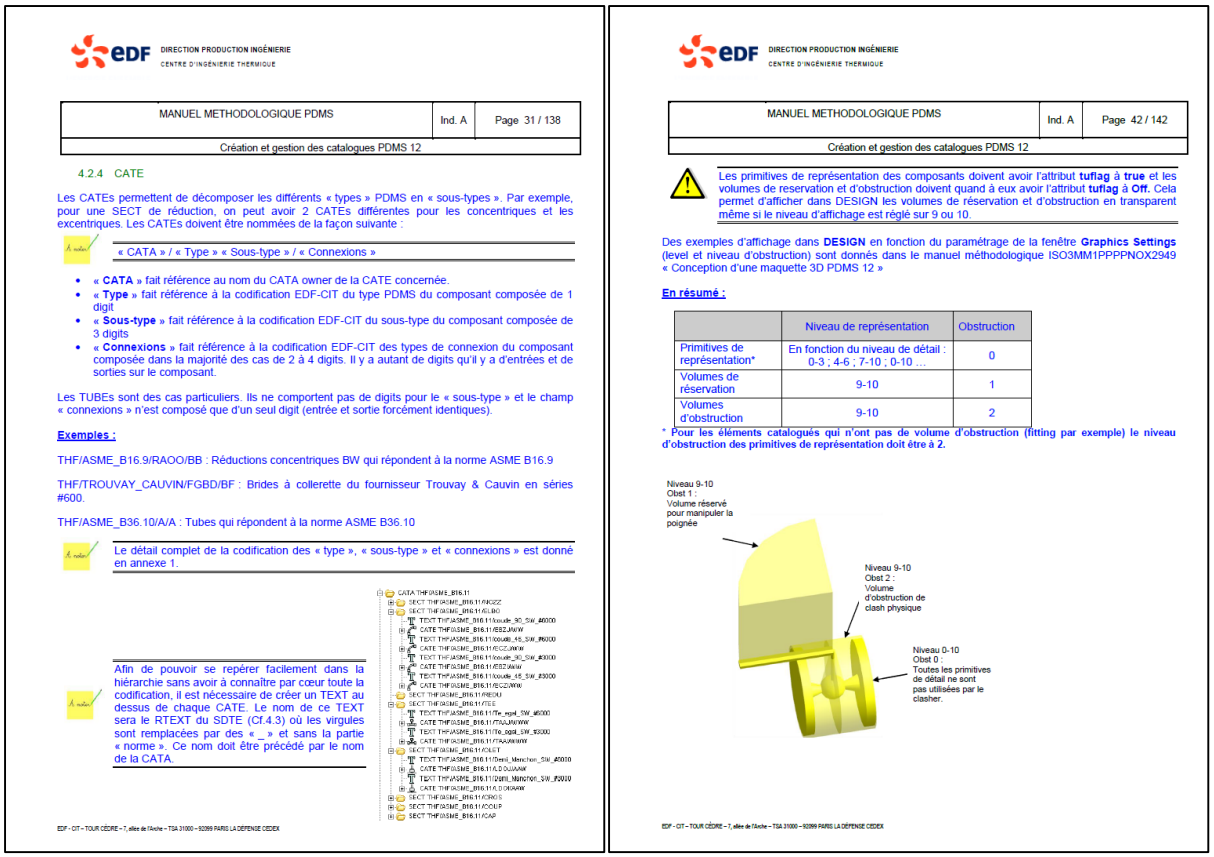
For each **PDMS** or **E3D** catalogue created, ORINOX proposes different support solutions for database deployment and methodology. These services can take several forms:

1. Project installation and configuration

In order to ensure proper project standards, ORINOX proposes assistance with new catalogue and methodology setup. Our teams of administrators are available to install newly created databases and configure projects on-site.

2. Methodological guides redaction

Each engineering team and project have their own needs for catalogues (available components, specifications, UDA). This is why our catalogue services also include the redaction of methodological guides. These manuals contain all the methods to be applied to projects: codification, hierarchy organization, preferred creation methods, verification methods…



DIRECTION PRODUCTION INGÉNIERIE
CENTRE D'INGÉNIERIE THERMIQUE

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Création et gestion des catalogues PDMS 12

4.2.4 CATE

Les CATEs permettent de décomposer les différents « types » PDMS en « sous-types ». Par exemple, pour une SECT de réduction, on peut avoir 2 CATEs différentes pour les concentriques et les excentriques. Les CATEs doivent être nommées de la façon suivante :

« CATA » / « Type » « Sous-type » / « Connexions »

- « **CATA** » fait référence au nom du CATA owner de la CATE concernée.
- « **Type** » fait référence à la codification EDF-CIT du type PDMS du composant composée de 1 digit
- « **Sous-type** » fait référence à la codification EDF-CIT du sous-type du composant composée de 3 digits
- « **Connexions** » fait référence à la codification EDF-CIT des types de connexion du composant composée dans la majorité des cas de 2 à 4 digits. Il y a autant de digits qu'il y a d'entrées et de sorties sur le composant.

Les TUBEs sont des cas particuliers. Ils ne comportent pas de digits pour le « sous-type » et le champ « connexions » n'est composé que d'un seul digit (entrée et sortie forcément identiques).

Exemples :

THF/ASME_B16.9/RAOO/BB : Réductions concentriques BW qui répondent à la norme ASME B16.9

THF/TROUVAY_CAUVIN/FGBD/BF : Brides à collerette du fournisseur Trouvay & Cauvin en séries #600.

THF/ASME_B36.10/A/A : Tubes qui répondent à la norme ASME B36.10

Le détail complet de la codification des « type », « sous-type » et « connexions » est donné en annexe 1.

Afin de pouvoir se repérer facilement dans la hiérarchie sans avoir à connaître par cœur toute la codification, il est nécessaire de créer un TEXT au dessus de chaque CATE. Le nom de ce TEXT sera le RTEXT du SDTE (Cf.4.3) où les virgules sont remplacées par des « _ » et sans la partie « norme ». Ce nom doit être précédé par le nom de la CATA.

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Les primitives de représentation des composants doivent avoir l'attribut **tuflag** à **true** et les volumes de reservation et d'obstruction doivent quand à eux avoir l'attribut **tuflag** à **Off**. Cela permet d'afficher dans DESIGN les volumes de réservation et d'obstruction en transparent même si le niveau d'affichage est réglé sur 9 ou 10.

Des exemples d'affichage dans **DESIGN** en fonction du paramétrage de la fenêtre **Graphics Settings** (level et niveau d'obstruction) sont donnés dans le manuel méthodologique ISO3MM1PPPPNOX2949 « Conception d'une maquette 3D PDMS 12 »

En résumé :

	Niveau de représentation	Obstruction
Primitives de représentation*	En fonction du niveau de détail : 0-3 ; 4-6 ; 7-10 ; 0-10 …	0
Volumes de réservation	9-10	1
Volumes d'obstruction	9-10	2

*** Pour les éléments catalogués qui n'ont pas de volume d'obstruction (fitting par exemple) le niveau d'obstruction des primitives de représentation doit être à 2.**

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Extracts of an EDF-CIT redacted by ORINOX

The manuals can be more or less detailed (training reminders or instructions only) depending on the client's needs.

3. Staff training

ORINOX also proposes training sessions for all PDMS and E3D modules (DESIGN, MODEL, DRAFT, DRAW, ISODRAFT, PARAGON, PROPCON, ADMIN…) to train teams in proper catalogue use and maintenance. The complete list of our training sessions is available at ORINOX.com.

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4.7. ORINOX standard solutions

The methods of creating and managing piping catalogues with PDMS is designed to meet the specific needs of our clients. ORINOX also offers standard elements for EN, ASME, and SMS piping, ready for immediate use.

The complete list of available components can be viewed on the ORINOX website:
http://www.orinox.com/prestations/expertise-catalogue-multi-discipline-aveva-pdms-e3d

A variety of piping design specifications that adhere to EN, ASME, or SMS are also already available, equipped with the most commonly used elements of each specification.

In order to meet the most urgent needs of our customers, the catalogues developed using the methodology detailed above are available immediately to begin **PDMS** or **E3D** projects as quickly as possible. These specifications allow the preliminary steps of projects to begin while others define the final specifications to be used.

5. STEELWORK CATALOGUE

The ORINOX methods for piping catalogue creation are also compatible with **PDMS** and **E3D** steelwork catalogues. The generic geometry methodology and the component creation application can be used on steelwork elements.
However, the steelwork specification being far less complex than the piping specification, we usually create them using **AVEVA** methods.

6. OTHER CATALOGUES

ORINOX also creates other types of catalogues (HVAC, cable trays, equipment) using **AVEVA** methods.
When large catalogues of these types need to be created, ORINOX is capable of developing tools and applications adapted to each type of catalogues to ensure efficiency and compliance of input data. Our experience and knowledge also enables us to develop customized tools for **AVEVA** solutions using several languages (PML, C#, PML.NET).

7. RESULTS

ORINOX's expertise is designed to quickly and simply create **PDMS** and **E3D** catalogues, and to deliver them to customers in a reliable and operational form for any task, including geometric element and specification creation.

ORINOX guarantees maintenance and updates for all client catalogues.

In order to begin projects as quickly as possible, ORINOX offers its customers a range of complete EN, ASME and SMS-compliant specifications. Projects can be drafted in **PDMS** or **E3D** without having to wait for calculations to be completed.

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