



HxGN EAM OpenCAD

Document Attachments

Sommario

Overview	2
<i>Use Cases</i>	2
<i>Prerequisites</i>	3
<i>Setup</i>	3
<i>Uploading document</i>	4
<i>Document update</i>	10
<i>Versioning a drawing (button #2):</i>	10
<i>Upload multiple documents</i>	11
<i>Mass ingestion (button # 3):</i>	11
<i>Viewing document association</i>	17
<i>Lock / Unlock document</i>	17
<i>Viewing document history</i>	18
<i>All version / Last version (button # 8):</i>	18

Overview

OpenCAD integrates with HxGN EAM to manage documents, utilizing drawings that are handled and stored as documents within the HxGN EAM system. It adheres to the HxGN EAM document management process. Understanding this integration is crucial for grasping the concepts described in the following paragraphs.

Use Cases

Most commonly, EAM users leverage OpenCAD as the document owner. In this scenario, the client organization uses the OpenCAD Utility App to edit drawings as needed within HxGN EAM, without connecting to external applications. This assumes that customers have adopted or are willing to adopt OpenCAD's logic for managing their drawings.

Alternatively, customers might choose to use an external application (e.g., AutoCAD) to edit drawings. In this case, the new version is created externally, and the OpenCAD Utility can use this new file to create an updated document version. In both scenarios, EAM will store both the original drawing and the revision. If the customer's goal is to have the "latest and greatest" document in EAM using an external tool like Autodesk, we have a solution. The client updates the drawing and then uploads the file into EAM as a standard document, replacing the existing file in the document record. They will then log into OpenCAD Utility to launch the Document Consistency Process (DCP), allowing OpenCAD to process the files in the backend, trigger auto-discovery, and create a new SVG for visualization.

Prerequisites

OpenCAD Utility provides drawings to HxGN EAM. It is installed on the user's device, in a similar way to the HxGN EAM Import Utility. It communicates with your HxGN EAM tenant via Web Services. When saving the final graphic, the OpenCAD Utility App creates an SVG file which can be displayed within HxGN EAM on any browser.

To install and configure OpenCAD Utility, please refer to the Getting Started guide.

Setup

OpenCAD Utility requires an EAM login because it uses WS Calls to interact with EAM.

You do not have to setup the Utility before the login anymore. EAM tenants can now be directly selected from the dropdown list.

If you do not have your tenant configured yet, please click on the 'Tenant Configuration' button to set up a new tenant as needed.

Enter the HxGN EAM User ID, Password and click 'Login'.

Please make sure the EAM user has enabled the 'Connector' checkbox:

Infor EAM Products

Infor EAM:

Connector:

Analytics:


HEXAGON




User ID

Password:

Tenant:

Remember me

If something prevents the user from logging in, in addition to entering the username, please check the 'User Organization' button next to it and then type the default ORG for that user.

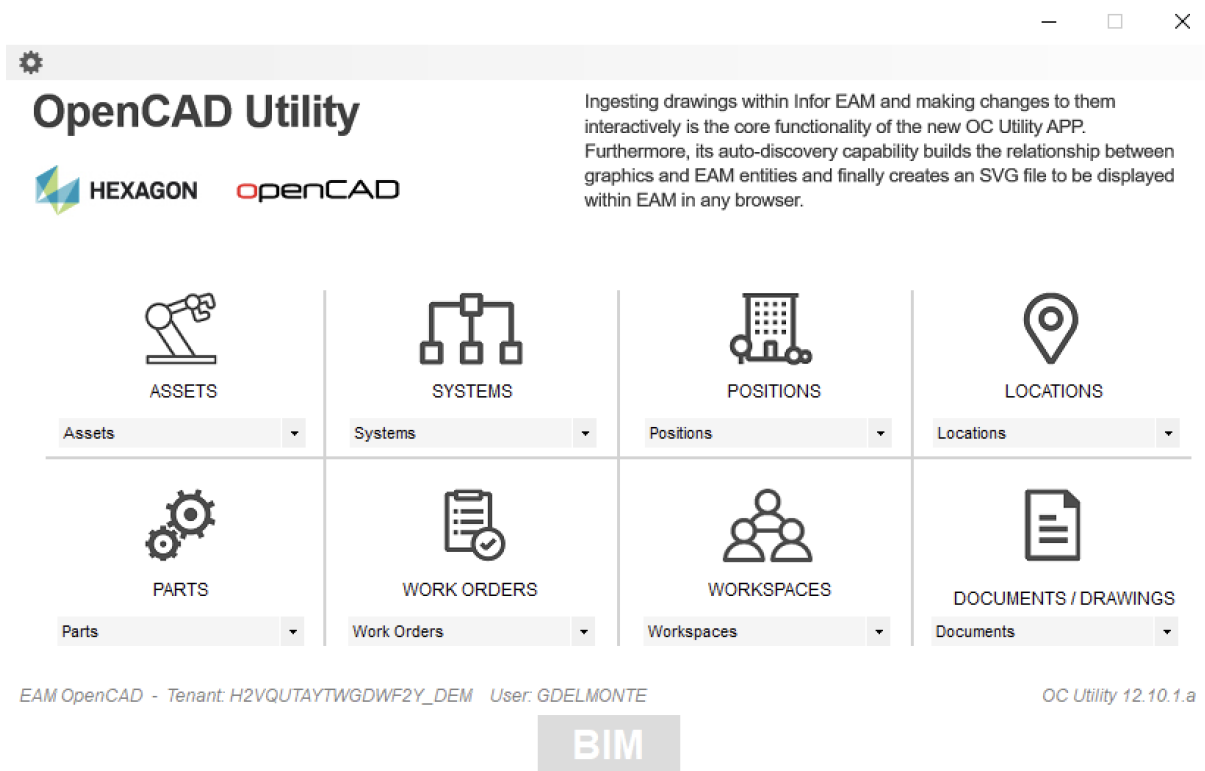
OC_Utility X

User Organization :

Please note that minimum requirements of **EAM Interface Permission** are required to run OpenCAD Utility. Here below a list of those which are essential:

- To login to EAM by using OpenCAD Utility, the user must have the function **BEORGS** with the option “Query” enabled
- To open the user’s session properly and retrieve the correspondent data by using OpenCAD Utility, the user must have the function **BEGDON** with the option “Query” enabled
- To get the data within webservice’s grid by using OpenCAD Utility, the user must have the function **BEGHDA** with the option “Query” enabled

If the entered credentials are correct and match the EAM credentials, the system grants access to the OpenCAD Utility Home Page.



Uploading document

To initiate document uploading within EAM, users must select the EAM entity that will be the drawing ingestion target. For example, by selecting "Position", the OpenCAD App will display the EAM Position according to the user’s access rights. As shown below, the user can leverage EAM dataspies as needed. It is recommended to use this feature to streamline the drawing ingestion process.

Positions

— □ ×

Position VPK TBT		Apply		--No Filter--		Run
Description	Organization	Status	Department	Class		
Pump Pit 001	01	Installed	*	PUMP		
Conveyour Section 001	01	Installed	*	CONV		
Conveyour Section 002	01	Installed	*	CONV		
Tank Farm - Processing	01	Installed	*			
TK-001-001	01	Installed	*	TANK		
TK-001-002	01	Installed	*	TANK		
TK-005-009	01	Installed	*	TANK		
TK-005-010	01	Installed	*	TANK		
TP-001	01	Installed	*	TANK		
TP-005	01	Installed	*	TANK		

Records: 10 of 10 Grid load completed

When a particular piece of equipment is selected, a second screen displays the associated drawings (if available) and allows the user to initiate several processes.

Assets list

All Assets		Apply		--No Filter--		Run
Class Icon	Asset	Description	Organization	Status		
Belt@https://dl.dropboxusercontent	BELT_FLAT_002	Water Coaster Fiathill Belt 002	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_FLAT_003	Water Coaster Fiathill Belt 003	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_FLAT_004	Water Coaster Fiathill Belt 004	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_001	Water Coaster Uphill Belt 001	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_002	Water Coaster Uphill Belt 002	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_003	Water Coaster Uphill Belt 003	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_004	Water Coaster Uphill Belt 004	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_005	Water Coaster Uphill Belt 005	ENTERTAINMENT	Install		
Belt@https://dl.dropboxusercontent	BELT_UPHILL_006	Water Coaster Uphill Belt 006	ENTERTAINMENT	Install		
Ride@https://dl.dropboxusercontent	BIG_WHEEL	Big Wheel	ENTERTAINMENT	Install		
Ride@https://dl.dropboxusercontent	BUMPING_CARS	Bumping Cars	ENTERTAINMENT	Install		
Ride@https://dl.dropboxusercontent	CARROUSEL	Carrousel	ENTERTAINMENT	Install		
Ride@https://dl.dropboxusercontent	CENTRIFUGE	Centrifuge	ENTERTAINMENT	Install		
Chemical Treatment@https://dl.dro	CHEMTRT_001	Water Coaster Chemical Treatment Station 001	ENTERTAINMENT	Install		
Chemical Treatment@https://dl.dro	CHEMTRT_002	Water Coaster Chemical Treatment Station 002	ENTERTAINMENT	Install		
Chemical Treatment@https://dl.dro	CHEMTRT_003	Water Coaster Chemical Treatment Station 003	ENTERTAINMENT	Install		
Filter@https://dl.dropboxusercontent	FILTER_001	Water Coaster Filter 001	ENTERTAINMENT	Install		
Filter@https://dl.dropboxusercontent	FILTER_002	Water Coaster Filter 002	ENTERTAINMENT	Install		
Filter@https://dl.dropboxusercontent	FILTER_003	Water Coaster Filter 003	ENTERTAINMENT	Install		

Records: 20 of 89 Grid load completed

+
+
📄
👓
📏
EPC
EPC

8

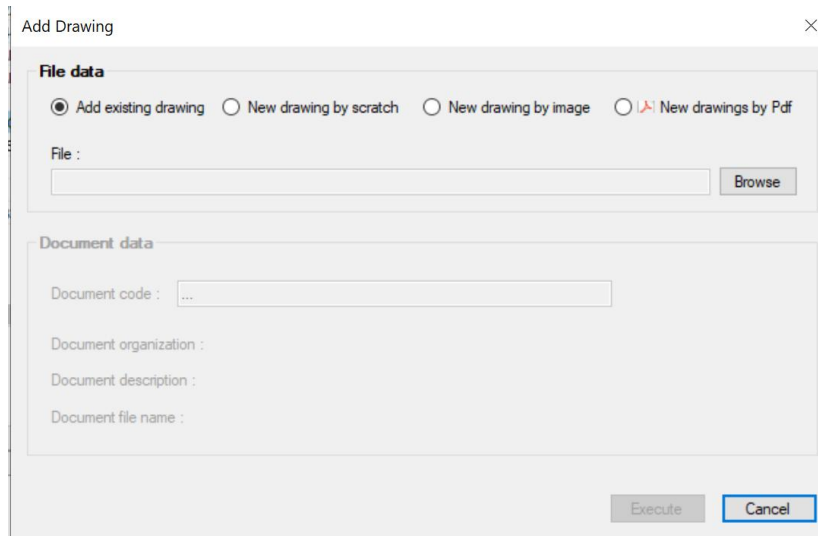
ENTERTAINMENT	117	P-ID OIL	Description	Class	Revision number	File name
					000	P-ID OIL_202352102053.dwg

New drawing (button #1):

There are four options to perform this functionality. The most common one is to add an existing drawing. However, other options could be equally relevant depending on the situation:

- Add an existing drawing
- Create a new drawing by scratch
- Create a new drawing by image (tiff, gif, jpg)

- Create a new drawing by PDF(.pdf)



■ Add existing drawing

- Click on Browse to search the existing file on your environment
- Document code: EAM will assign the unique document code automatically
- Document Org:
 - EAM will take the document ORG from the equipment in case the process started from a given piece of equipment.
 - In the case of uploading a drawing without any association with a particular equipment, the document ORG must be selected by the drop-down list
- Document Description: EAM will take it from the filename but you can change it
- Click on execute to proceed

■ Creating new drawing by scratch

Since OpenCAD can create new CAD files, you may use this new capability to create a new drawing by scratch just to associate it with your equipment. It's a good option in case you need to create your own drawing.

- Input the file name you want to create
- Choose the file format you prefer (.dwg/.dgn/.vdcl)
 - Note: vdcl format is a proprietary OpenCAD file format
- Click on "Confirm" to proceed
- Document code: EAM will assign the unique document code automatically
- Click on execute to proceed

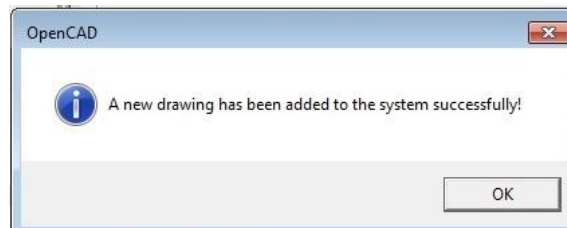
■ Creating new drawing by image

OpenCAD is compatible with more than just CAD files. Its flexibility allows you to use various image formats, such as JPEG and PNG, to locate your EAM assets. This feature enables you to locate assets on a map, regardless of the file format.

Customers often have useful drawings to locate their assets, but these may not be in CAD format, making them difficult to use. OpenCAD overcomes this issue by enabling the use of various image formats through a graphical approach.

1. Click Browse to search the existing file (image format) on your environment
2. Document code: EAM will assign the unique document code automatically
3. Click execute to proceed

The process succeeds if you are getting this message



■ Creating a new drawing through a PDF file

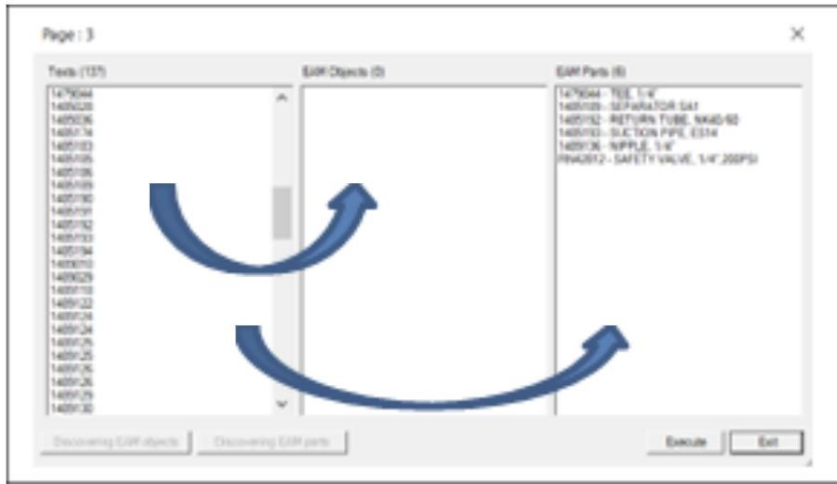
The ability to create a drawing using a PDF document has been introduced in response to emerging customer needs. Utilizing PDF files offers remarkable benefits. First, by using a readable PDF file, OpenCAD can discover EAM entities within the PDF by reading its metadata. Conversely, if the PDF is not readable (e.g., a scanned document), it can still be used to create a drawing, but without the possibility of finding objects or associating EAM equipment. OpenCAD APP (which can be used even without HxGN EAM, before ingesting drawings within EAM) is also capable of opening a PDF file and to convert it to a DWG file.

Note:

This use case is not applicable to EPC.

Here below the step by step:

1. Click Browse to select the desired .PDF file on your notebook
2. Click Preview to make sure the PDF is correct
3. In the Pop-Up PDF to DWG box, the first column wants us to select what page the drawing is on. Otherwise select all for creating drawings for any pages of the PDF. OpenCAD creates one drawing per page.
4. EAM doc code will be assigned automatically. Double-click on that for changing it as needed
5. EAM doc description will be assigned automatically by using filename_pagnr. Double-click on that for changing it as needed
6. It allows to understand if the PDF is readable. Watching a quantitative result (diverse from 0) means texts have been founded and they might be EAM objects potentially
7. Once texts have been found, we can discover EAM objects in there. Double click on ? (Question mark) for getting a new form showed below:

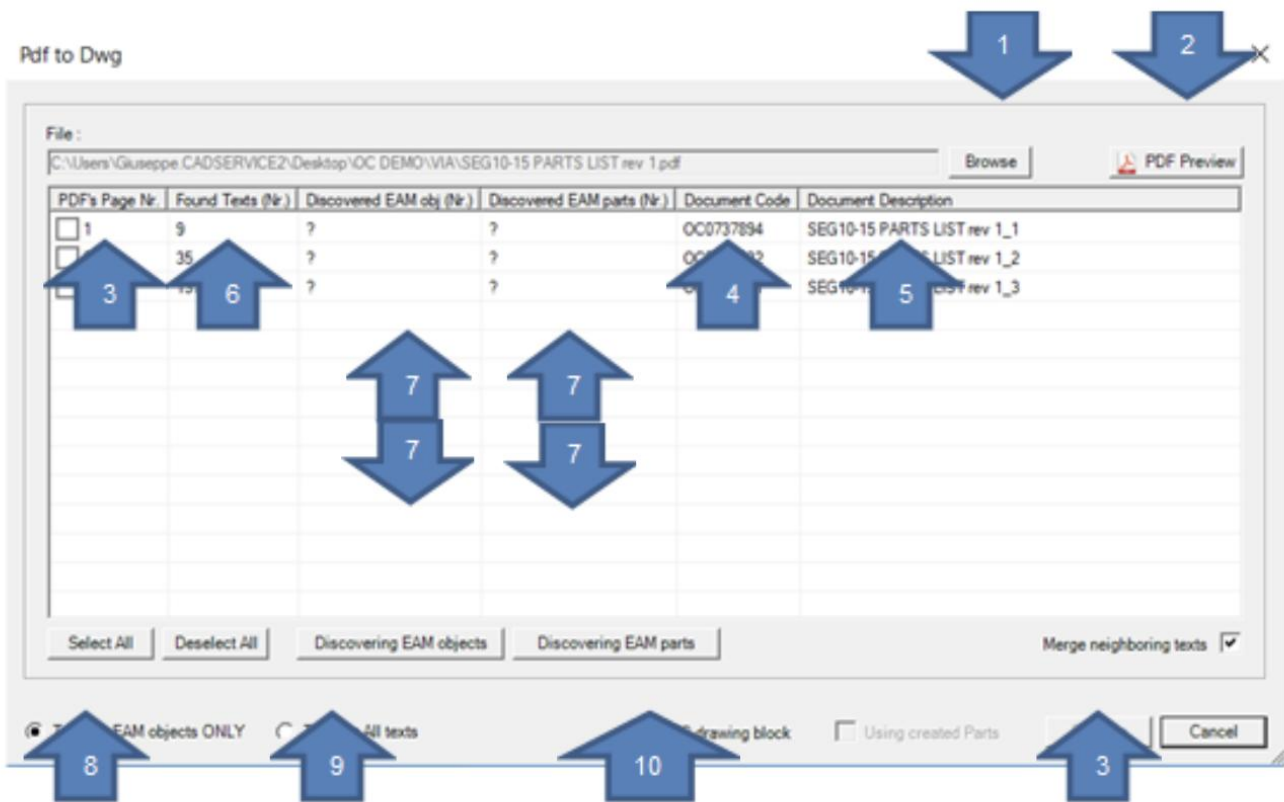


The ability of retrieving EAM entities is essential for getting the pdf tagged automatically by OpenCAD.

For tagging the PDF accordingly with EAM logic, we can use :

8. Select the Checkbox at the bottom for tagging EAM objects only. OpenCAD creates TAG on top of the discovered text for future use of OpenCAD functions such as locating asset, creating WO etc.
9. Select the Checkbox at the bottom for tagging all texts. OpenCAD creates TAG on top of the discovered text for future use of OpenCAD functions such as locating asset, creating WO etc.
10. Click execute to proceed

Pdf to Dwg



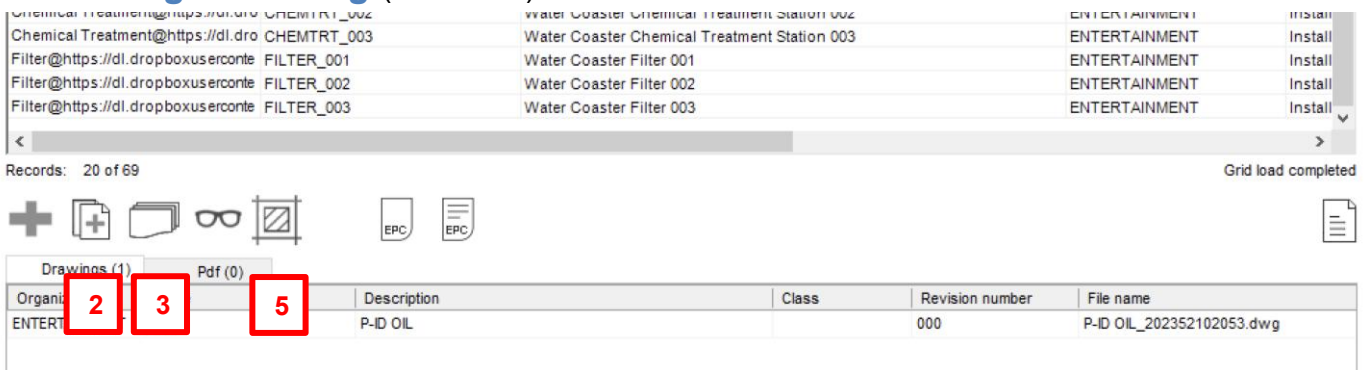
The screenshot shows the 'Pdf to Dwg' application window. At the top right, there are two blue arrows pointing down, labeled '1' and '2'. The main window contains a table with the following data:

PDF's Page Nr.	Found Texts (Nr.)	Discovered EAM obj (Nr.)	Discovered EAM parts (Nr.)	Document Code	Document Description
<input type="checkbox"/> 1	9	?	?	OC0737894	SEG10-15 PARTS LIST rev 1_1
<input type="checkbox"/> 2	35	?	?	OC0737892	SEG10-15 PARTS LIST rev 1_2
<input type="checkbox"/> 3	10	?	?	OC0737893	SEG10-15 PARTS LIST rev 1_3

Below the table are buttons for 'Select All', 'Deselect All', 'Discovering EAM objects', and 'Discovering EAM parts'. A 'Merge neighboring texts' checkbox is checked. At the bottom, there are radio buttons for 'EAM objects ONLY' (selected) and 'All texts', a 'Drawing block' checkbox, a 'Using created Parts' checkbox, and a 'Cancel' button. Numbered callouts 1-10 point to these elements: 1 and 2 (top right arrows), 3 (checkboxes), 4 (Document Code), 5 (Document Description), 6 (Found Texts), 7 (Discovering buttons), 8 (EAM objects ONLY), 9 (All texts), 10 (Drawing block), and 3 (Cancel button).

Document update

Versioning a drawing (button #2):



The screenshot shows a list of documents in the top pane and a table in the bottom pane. The table has columns for 'Organiz', 'Description', 'Class', 'Revision number', and 'File name'. The 'Organiz' column contains the value 'ENTERT'. Three buttons are highlighted with red boxes: button 2 is over the 'Organiz' column, button 3 is over the 'Description' column, and button 5 is over the 'Revision number' column.

Organiz	Description	Class	Revision number	File name
ENTERT	P-ID OIL		000	P-ID OIL_202352102053.dwg

Allows to select an existing document (already ingested) and then uploading a drawing as a new document version of the selected document.

The versioning coding convention is the following:

A progressive suffix starting with _001 will be added to the document code, and OpenCAD will populate the document version (EAM document field) with that suffix. So, this rule allows to create 999 versions max per drawing.

Note: It is recommended not to manually populate the document version field because the OpenCAD versioning process handles it.

However, if necessary, please do that by using numeric values only.

OpenCAD uses it properly, but any manual intervention in this field might cause an issue.

Editing a drawing already ingested (button #5):

Note:

Please remember that from the moment that the user enters to the 'Modify Drawing' functionality, nobody else can modify that drawing. When a user attempts to edit a drawing which is in use by another user, a warning message will be displayed.

At the end of the edit phase of the drawing the session will be completed by uploading the updated drawing and then it is available for future changes or revisions by other users.

During the drawing editing phase, clicking the 'Save' button will save the graphical work locally on your laptop, not yet in the HxGN EAM Application Server. This local saving is useful because a user may perform graphical activities over several work sessions, and only at the end will the drawing and data be finally updated on the server.

Once the drawing editing process has been completed, OpenCAD proceeds to upload the updated file. At that point, OpenCAD completes the visualization process correctly for every EAM user. Please consider that the auto-discovery is part of that process, and that it is triggered by OpenCAD every time the upload occurs.

When you close the edit phase OpenCAD will ask you to choose one of the options below:

1. **Save the changes and upload the drawing**
2. **Save and versioning**
3. **Exit without changes**

4. Saved temporarily for a privileged use. In this case the drawing can be changed only by the user. This option is available **ONLY** if the proper install parameter has been set (CADSAVET=Yes). For more details see Admin User chapter

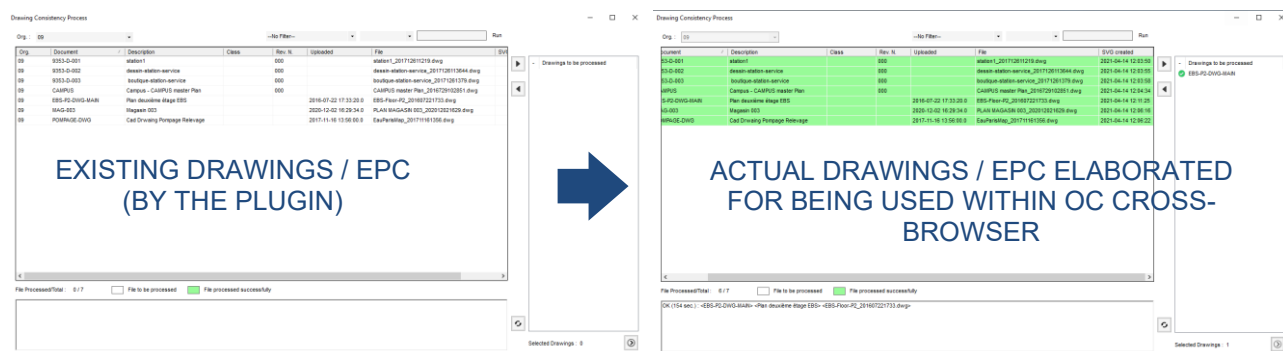
Option 1: The updated drawing will overwrite the existing one

Option 2: Versioning capability allows to upload the updated drawing as a version of the original.

For the versioning coding convention, please refer to the previous paragraph.

Drawing Consistency Process has been designed to harmonize existing drawings with the new OpenCAD Cross-Browser solution. The OpenCAD Utility APP enables mass elaboration of drawings to be displayed in the new OpenCAD SVG GUI.

This process is essential for existing SaaS and on-premise customers who have already ingested drawings using the OpenCAD plugin. It ensures a seamless transition of drawings to the new release without any additional effort.

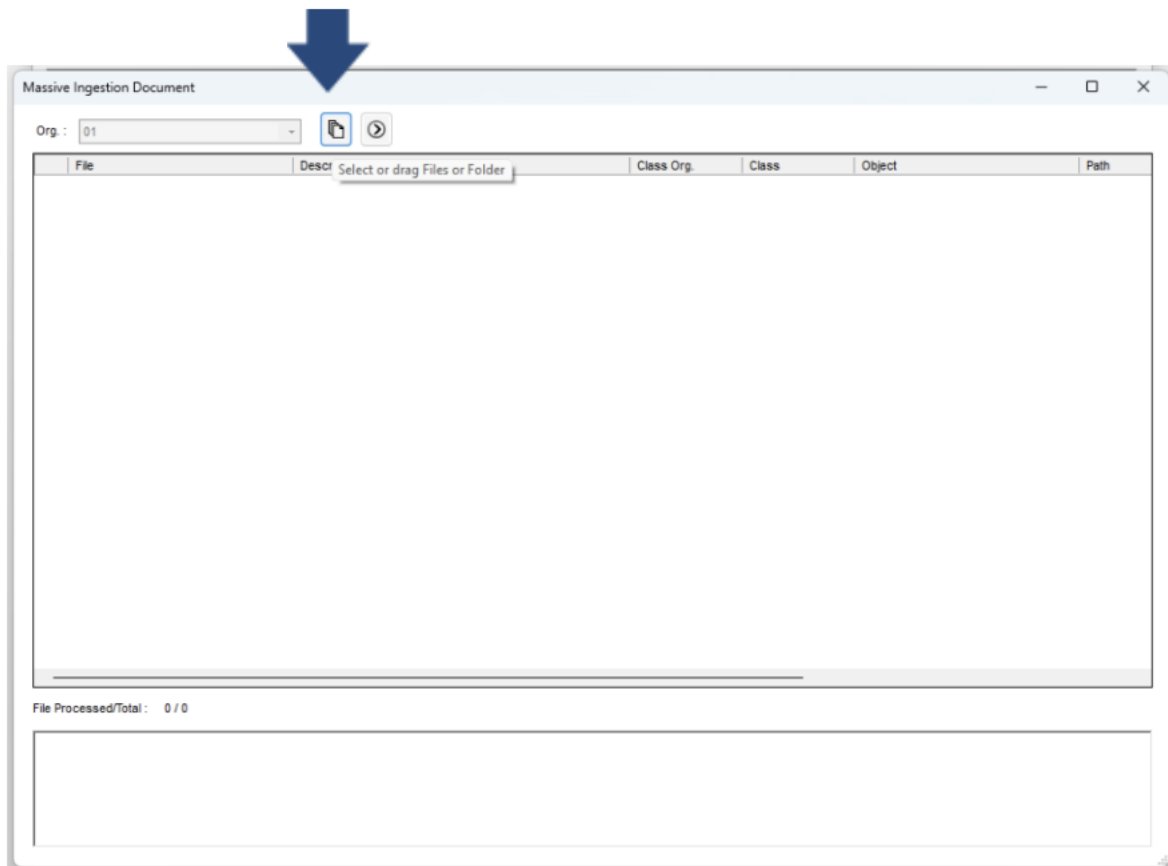


Once the mass elaboration has been completed, OpenCAD reports the detailed result of the entire process via a text file, including the list of drawings that OpenCAD could not elaborate, if any.

Upload multiple documents

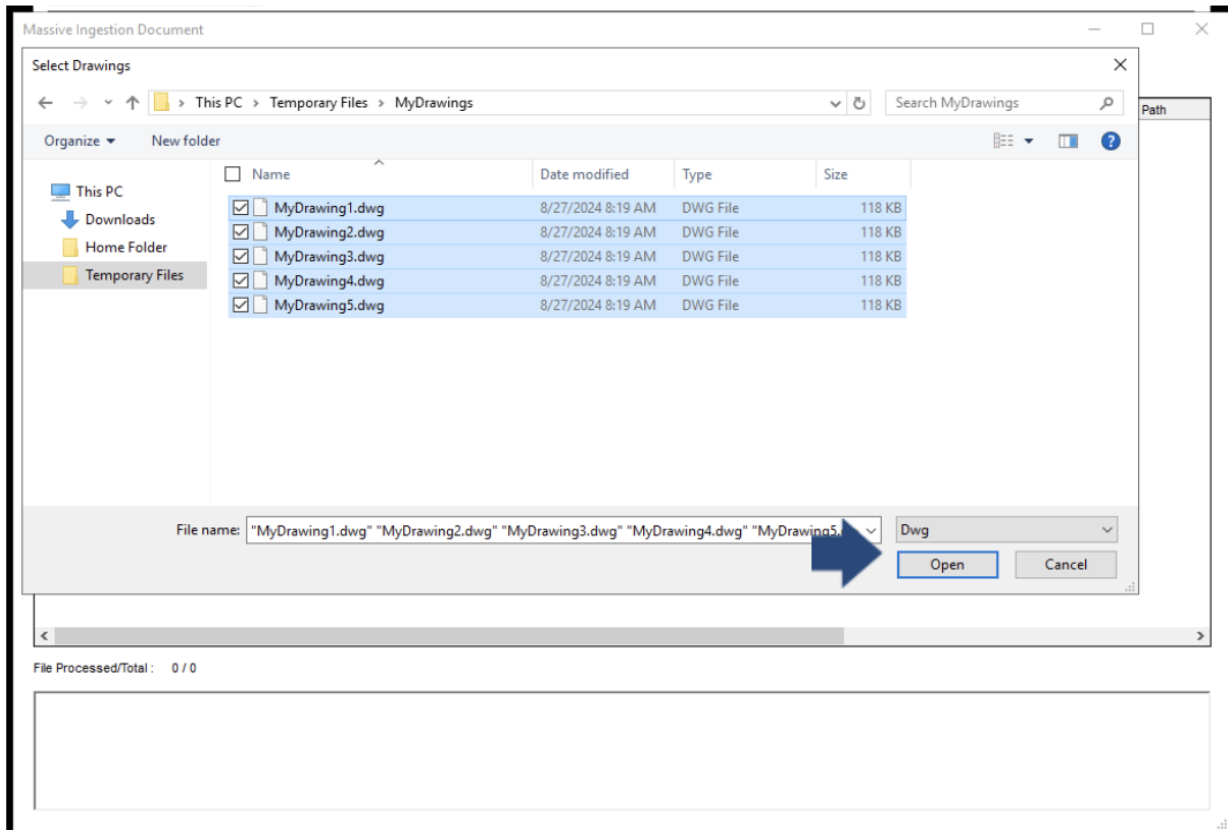
Mass ingestion (button # 3):

With the "Massive Ingestion Document" functionality it is possible to insert multiple drawings (which are stored in a particular folder that the user can select) into EAM at the same time. The functionality creates the EAM documents, links them to the selected object, provides for the self-discovery of any objects present in the drawings and creates the SVG file. To proceed with inserting documents, use the "Massive Ingestion Document" button (button # 3). Then proceed with the "Select drag Files or folder" button to access the selection phase of the files to insert.

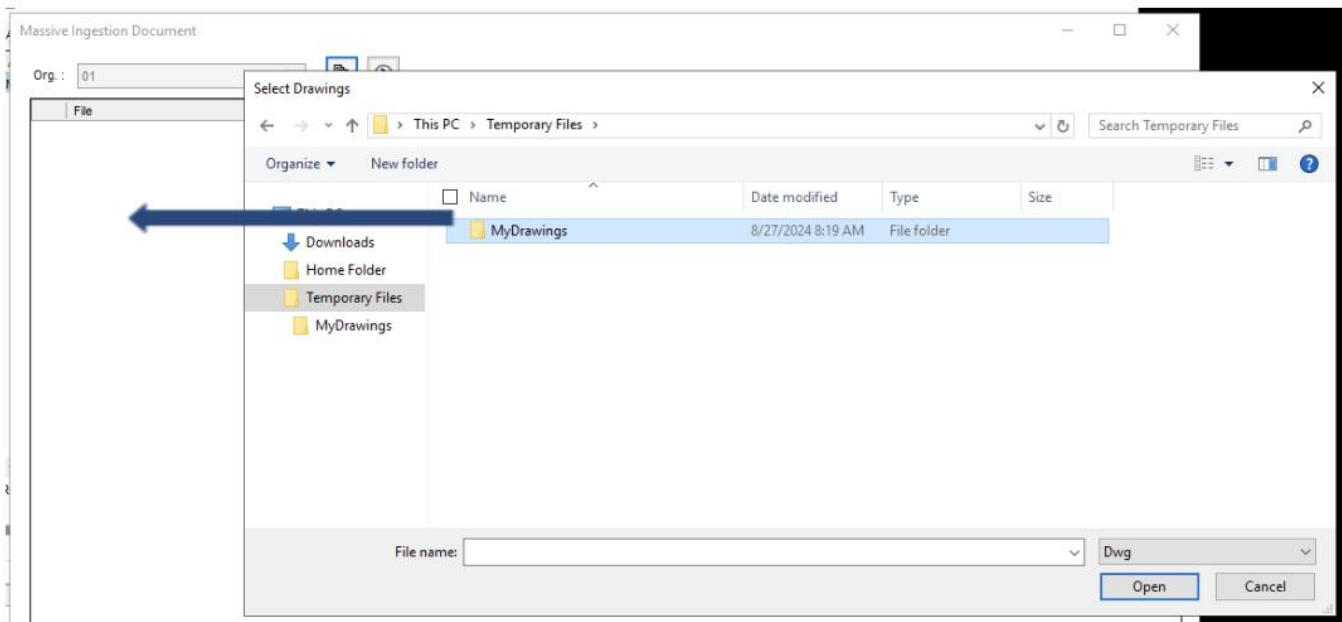


File selection can be performed in two ways:

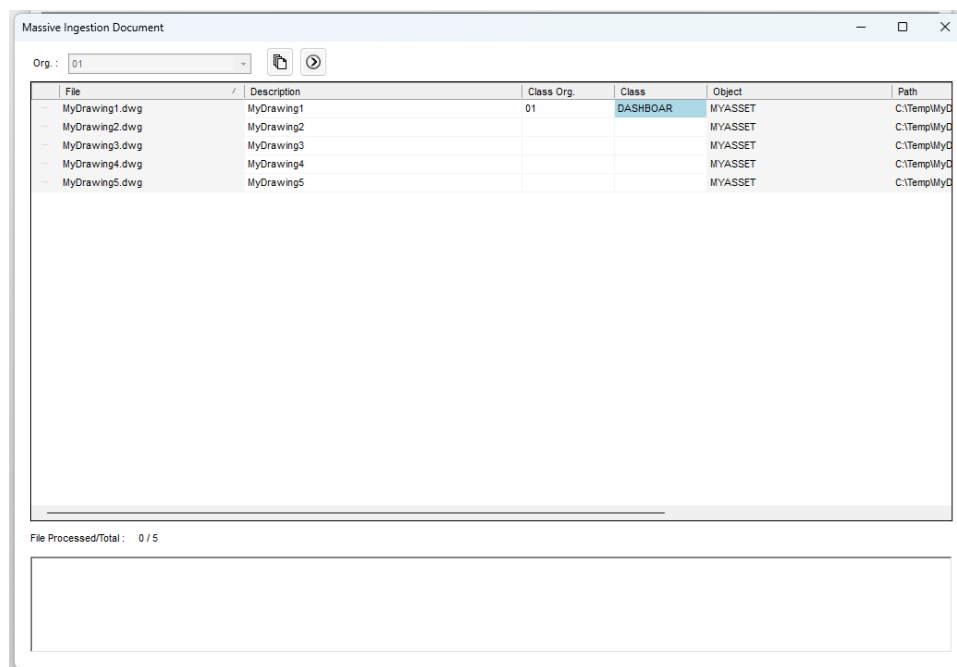
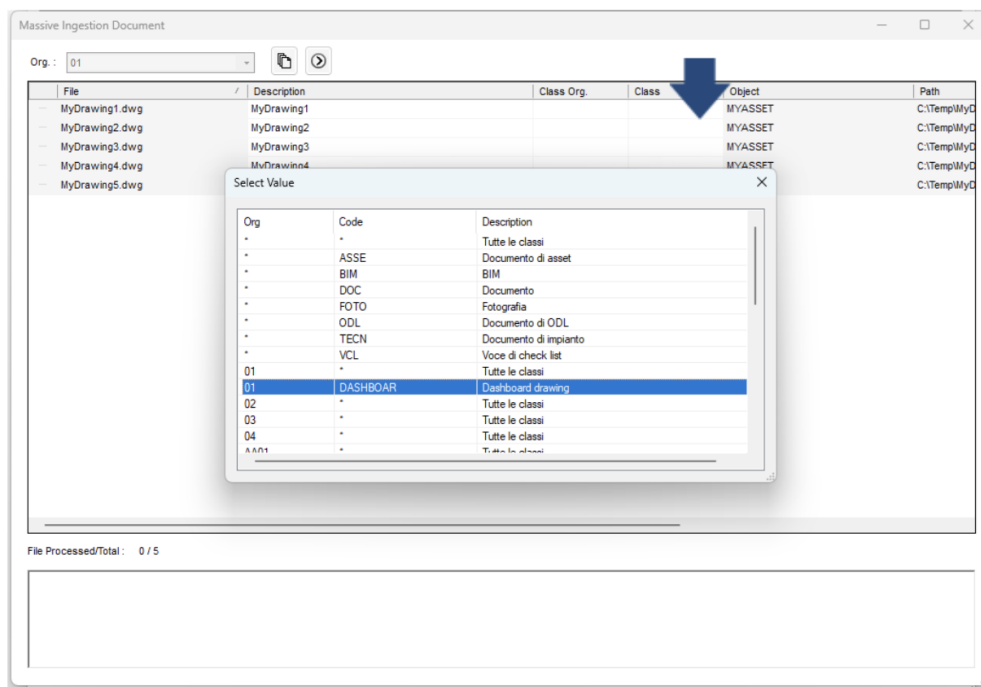
1. By selecting one or more drawings and then clicking the “Open” folder button:



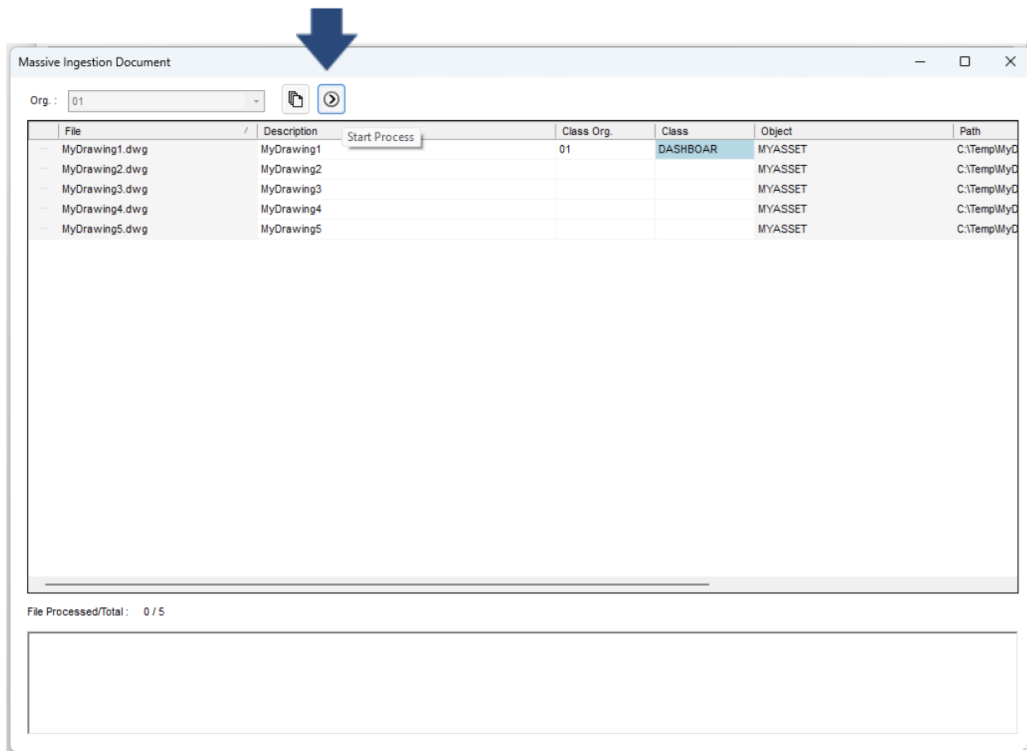
- By dragging one or more files or by dragging the entire folder. If the folder is dragged, only the dwg and dgn files present in the folder itself will be considered:



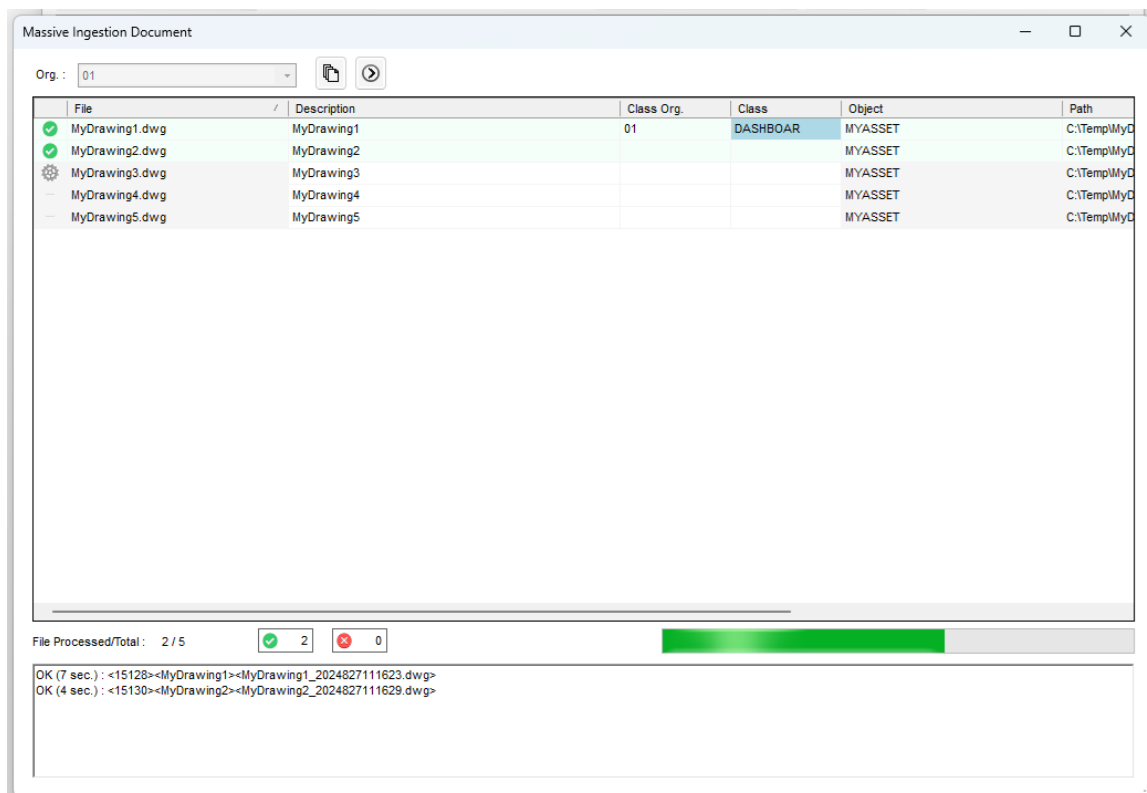
Once the drawings have been selected, it is also possible (not mandatory) to enter the class of documents that will be created. To insert the class, just click in the 'Class' or 'Class Org' data cell and the list of the classes that can be used will appear:



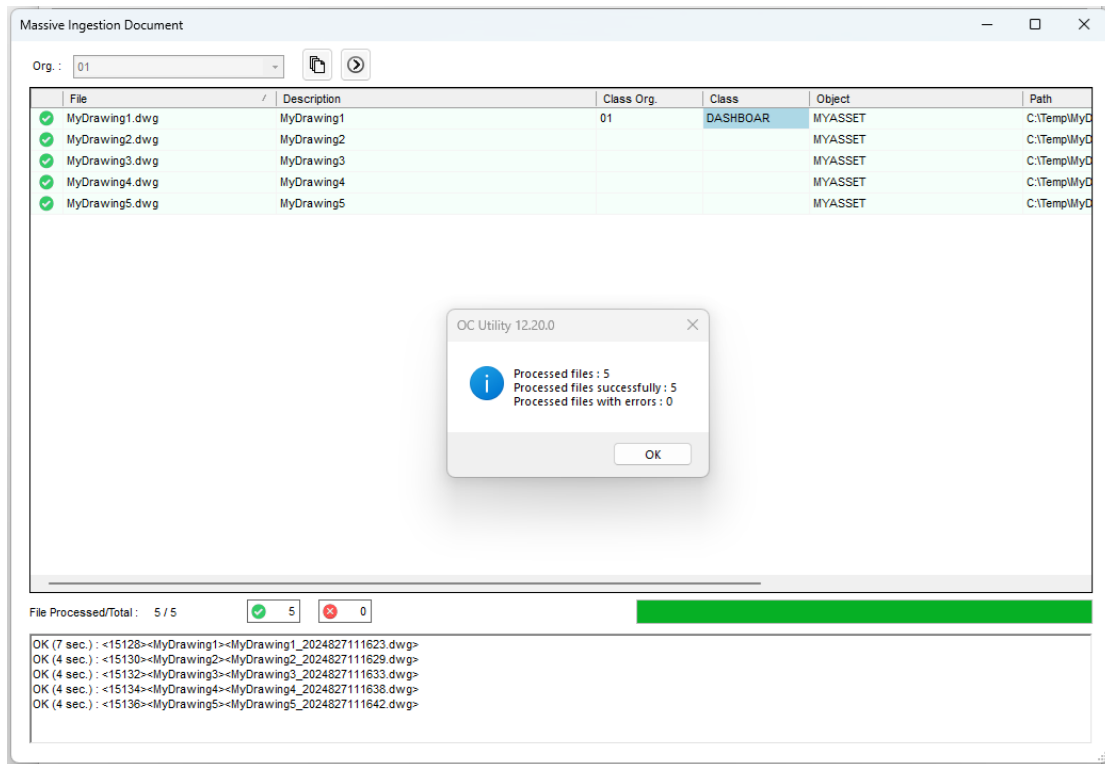
To start the document insertion phase, click on the “Start Process” button:



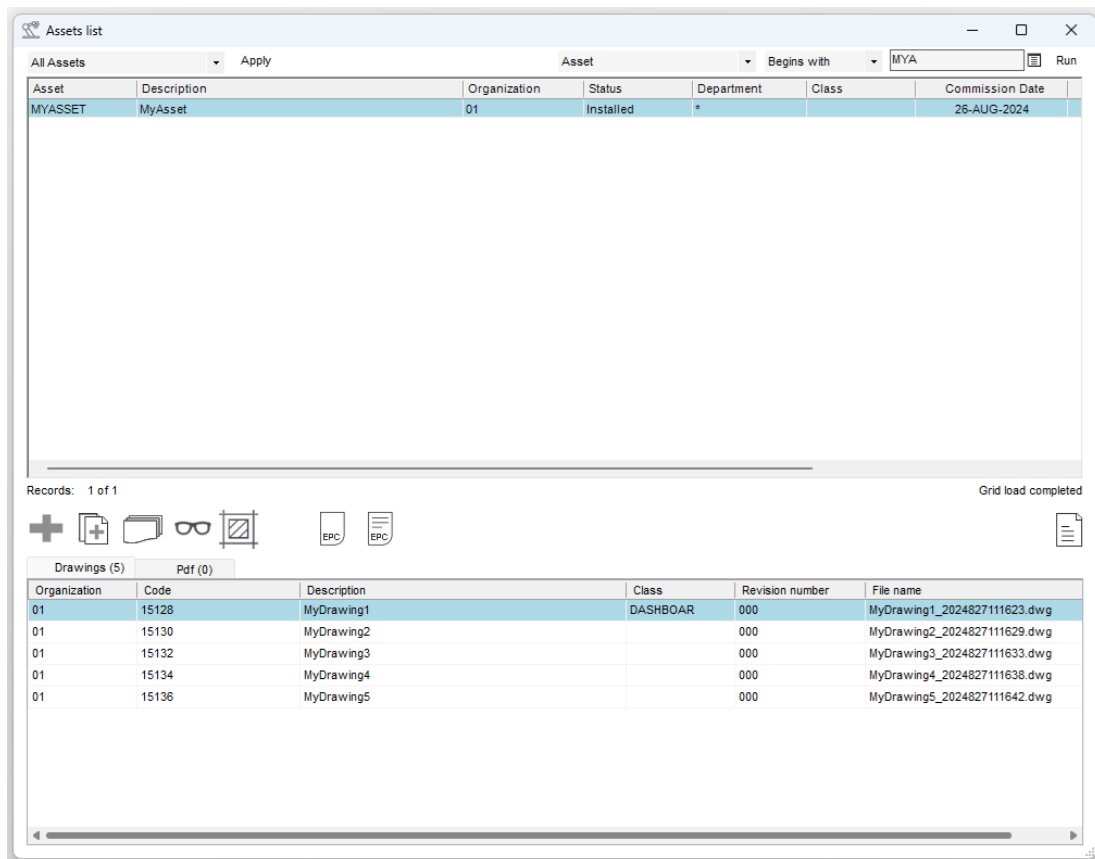
Processing in progress...



At the end of the insertion activity, a report of the processing performed will be presented:



By closing the form, you can find the newly inserted documents:



Viewing document association

On the Documents tab of the Equipment screen, you can view any drawing directly associated to an Equipment.

If a drawing is displayed in the 'OpenCAD' tab but there is no directly associated drawing in the Documents tab of the Equipment, this means that the association was carried out by the Auto-discovery Engine.

The Auto-discovery feature of OpenCAD automatically creates references by the system between EAM Equipments and CAD entities such as text and block with attributes. These references are stored in a particular EAM custom table specifically designed by OpenCAD.

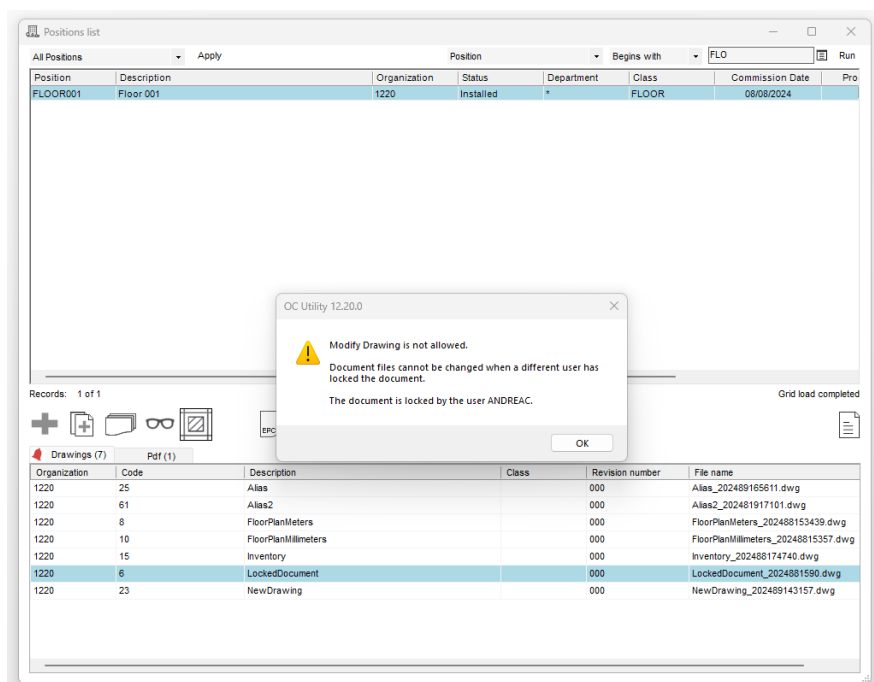
It represents the context for building queries that are always intended to represent EAM data graphically associated with EAM tags in our drawings. Auto-discovery makes these references during the drawing's first ingestion and every time the EAM user updates the drawing.

The Auto-Discovery engine is built into the OpenCAD Utility. It provides the relationship between the graphics and the HxGN EAM entities. When saving the final graphic, the OpenCAD Utility App creates an SVG file which can be displayed within HxGN EAM in any browser.

Lock / Unlock document

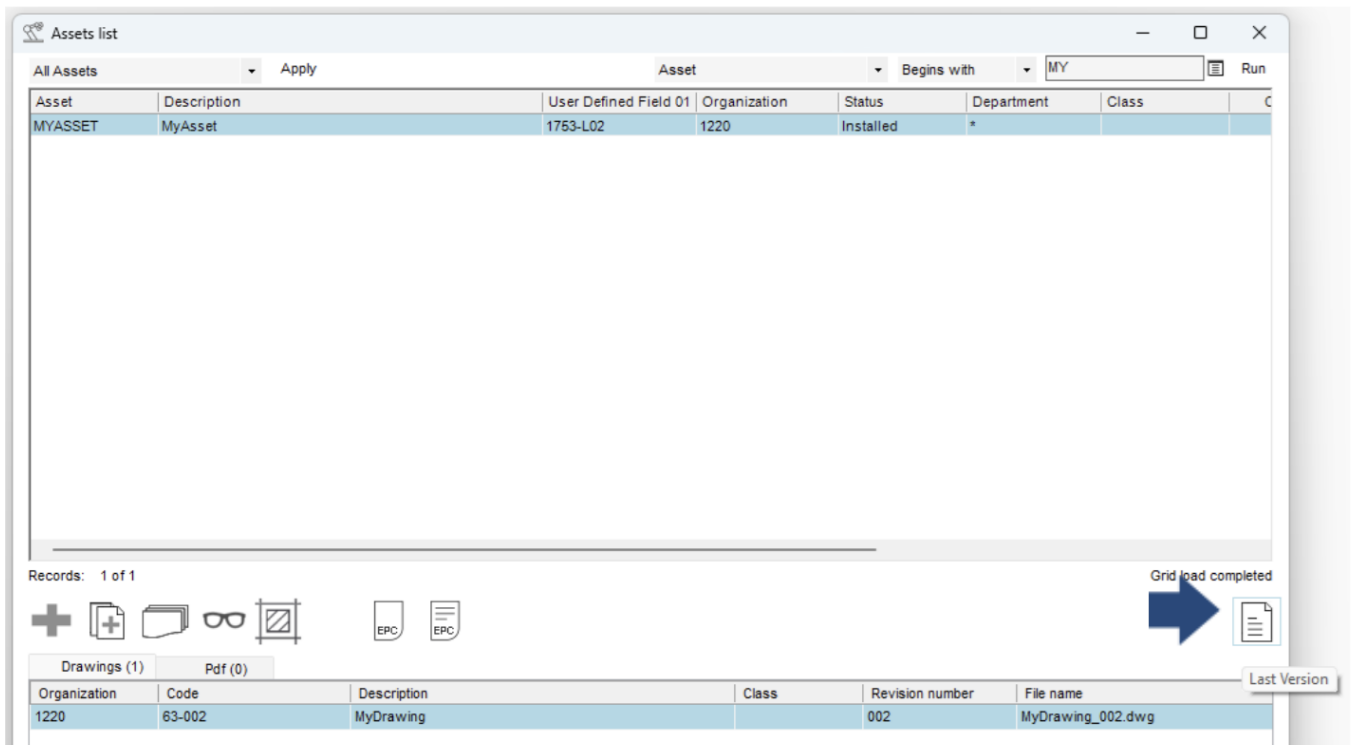
OpenCAD is compliant with EAM Lock Document and Unlock Document options.

Therefore, if a User tries to edit via OpenCAD Utility APP a drawing (dwg file) locked by another User through the EAM "Lock Document" functionality, the editing of the dwg will be prevented:



The first (the default one) recovers the drawings always presenting the latest version for each drawing.

This mode is called “Last Version” and is based on the EAM query OC0009B:



Assets list

All Assets Apply Asset Begins with MY Run

Asset	Description	User Defined Field 01	Organization	Status	Department	Class
MYASSET	MyAsset	1753-L02	1220	Installed	*	

Records: 1 of 1 Grid load completed

Drawings (1) Pdf (0)

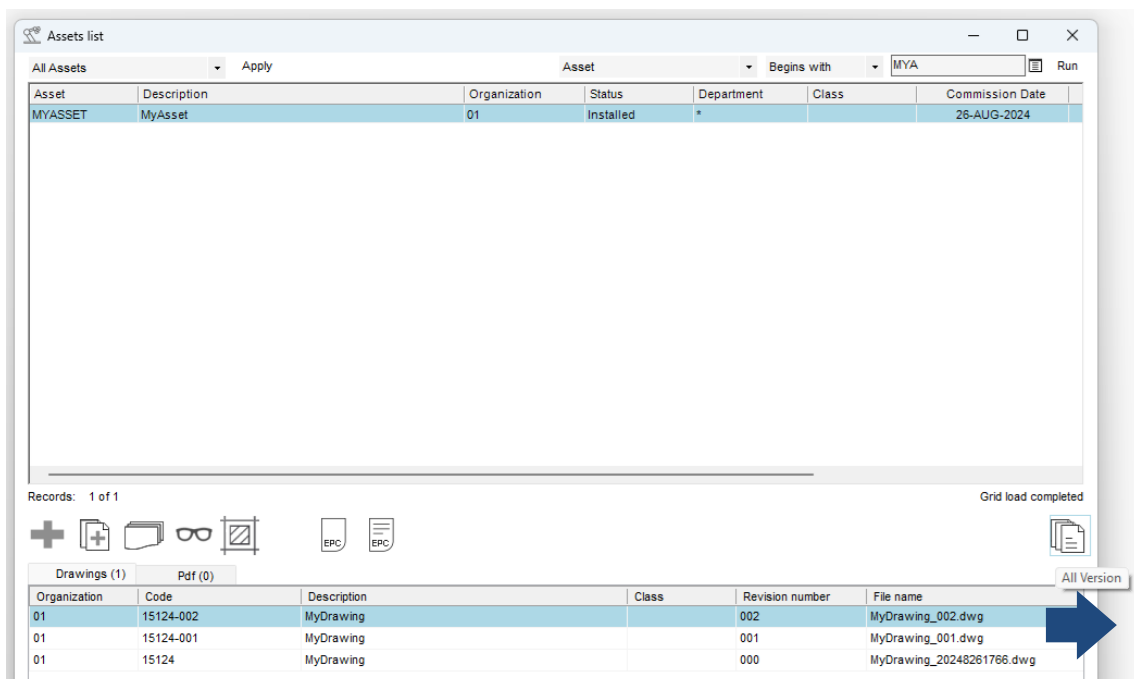
Organization	Code	Description	Class	Revision number	File name
1220	63-002	MyDrawing		002	MyDrawing_002.dwg

Last Version

The second, called "All Version", recovers and lists all possible versions of a drawing.

By version we mean those drawings that have been versioned using OpenCAD features and criteria (see Document update section above).

The “All Version” mode is based on the EAM query OC0008B:



Assets list

All Assets Apply Asset Begins with MYA Run

Asset	Description	Organization	Status	Department	Class	Commission Date
MYASSET	MyAsset	01	Installed	*		26-AUG-2024

Records: 1 of 1 Grid load completed

Drawings (1) Pdf (0)

Organization	Code	Description	Class	Revision number	File name
01	15124-002	MyDrawing		002	MyDrawing_002.dwg
01	15124-001	MyDrawing		001	MyDrawing_001.dwg
01	15124	MyDrawing		000	MyDrawing_20248261766.dwg

All Version

It is important to note that if the drawings are viewed with the "All Version" mode, modification of the drawings is only permitted for the drawing that identifies the latest version (major version). If you attempt to edit a drawing that is not the latest version, a message will be displayed and the edit will be blocked.

