



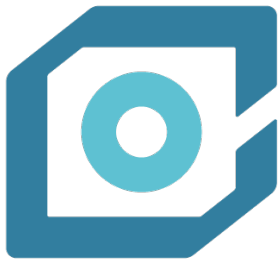
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OPENCAD

OpenCAD – Drawing's requirements

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INTRODUCTION

Originating in the late 1970s, drawing files created with CAD software were saved with the .dwg extension. In the early 1980s, Autodesk® released AutoCAD®, which eventually became the most used CAD software globally and used Autodesk's undocumented and proprietary DWG™ file format (using the .dwg extension).

OpenCAD software is able to read and write .dwg files with excellent AutoCAD compatibility, however, it should be possible to find some lack of compatibility with particular AutoCAD entities.

Introduction to drawing requirements

The scope of the document is to guide the HxGN EAM users understanding what they need to do to make their AutoCAD drawing and specifically related to the content of the drawing, interact with OpenCAD .

Many organizations use AutoCAD drawings to facilitate tracking and maintaining facilities.

Typically, a primary client drawing requirement is the ability to consume current drawings as a data source in combination with spreadsheets to streamline the asset registry creation in HxGN EAM.

So, the ultimate goal is to prepare your CAD drawings to make sure they contain graphic entities that can be used for creating EAM equipment or, at least, to be used as a visual reference of those entities.

The following drawing requirements apply to EAM equipment, also named point assets. Even though linear assets are well managed within HxGN EAM, OpenCAD does not support them.

ORGANIZING DRAWINGS

Assuming that there is an extensive variety of drawings and that all of these can be viewed and managed with OpenCAD, from an organizational point of view, we usually make a distinction between two types of diagrams: Generic diagrams (P&IDs, Plant layouts, Production lines) and Floorplans.

In the next paragraphs you will see what you need to do to make your CAD drawings (the content of the drawings) interact with OpenCAD.

Generic diagram

When dealing with generic diagrams, the main purpose is to leverage the information included in the drawings to facilitate the location of EAM assets and where work is happening.

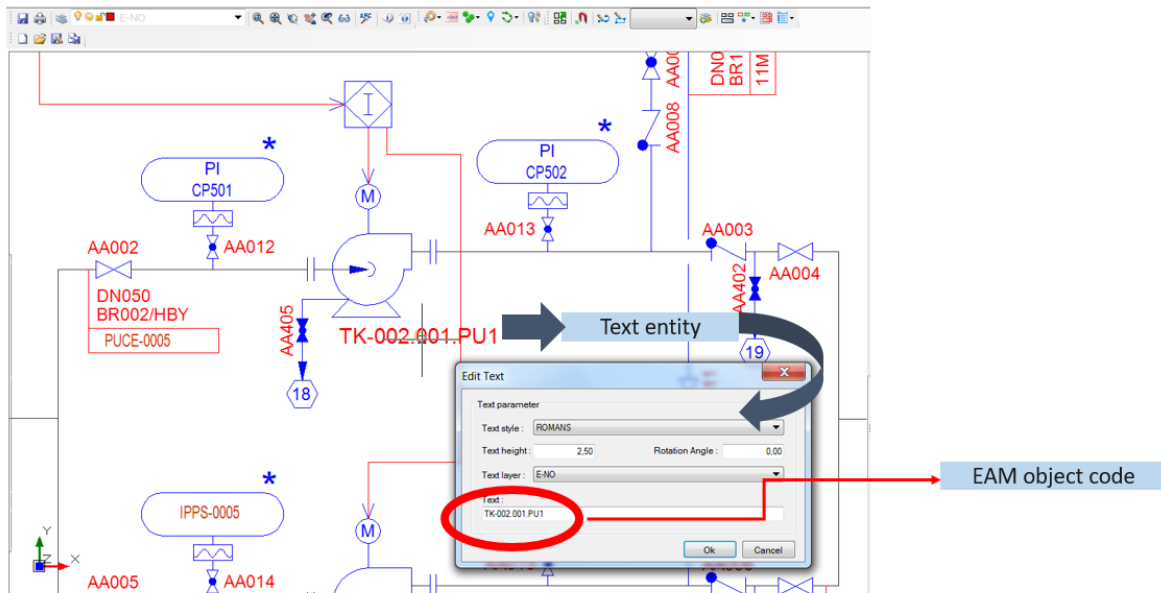
Technical requirements

CAD drawing requirements are:

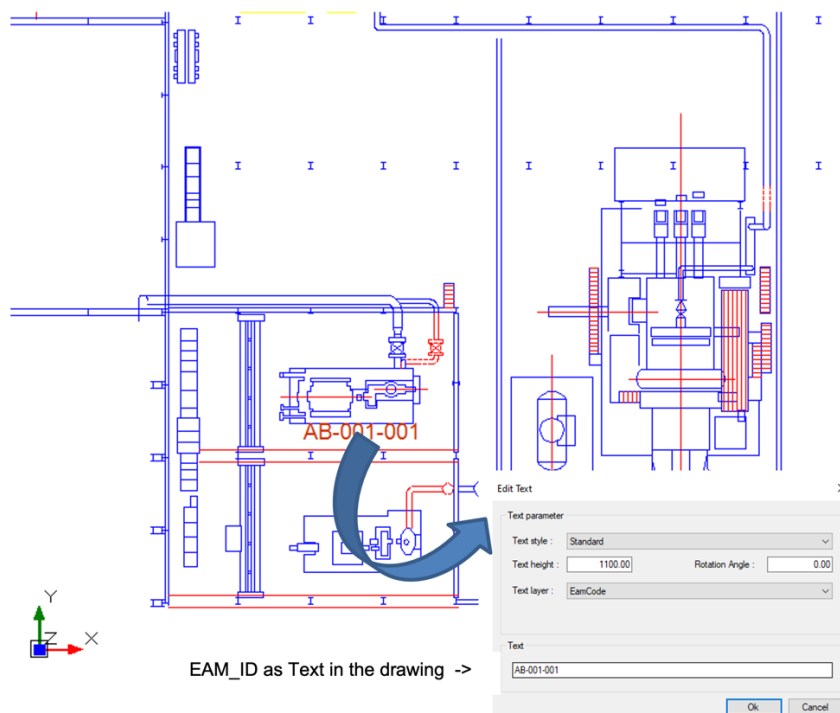
- .dwg file format (.dgn as well)
- File version 2018 or earlier versions

- Having EAM Equipment Code tagged in the drawing as a **text** entity or a **block** entity with EAM Code as a block attribute.
- Model Space is where the objects must reside. Paper Space does not allow to discover entities for Infor EAM.
- No specific layer is required

P&ID use-case



factory layout use-case



FLOORPLAN – Space Planning

When dealing with Floorplans, the main goal is Space Management. Usually, space management drawings display the actual space occupied by tenant or Department. They also contain “Service area” and “vertical penetration area” which make up common space and is denoted using polylines.

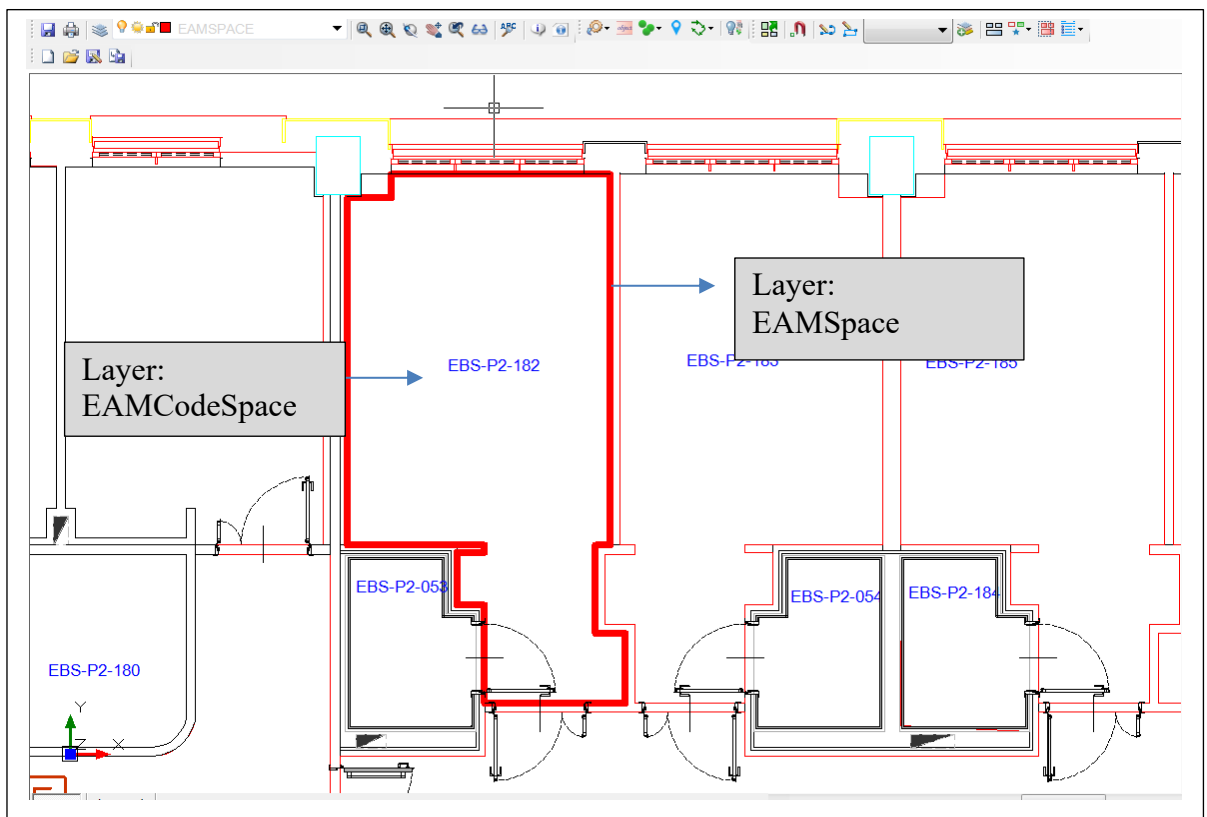
Technical requirements

CAD drawing requirements are:

- .dwg file format (.dgn as well)
- File version 2018 or earlier versions
- Having a closed polyline as Room boundary: polyline can stay on their native layer.
- Having EAM Room Code tagged in the drawing as a **text** or a **block** entity (same as in the generic diagrams): EAM Room Code can stay on their native layer AND be inside the polyline.
- Model Space is where both polyline and room codes must reside. Paper Space does not allow to discover entities for Infor EAM.

Space planning use-case

This standard OpenCAD function is based on the assumption that there must be a matching between EAM asset and tags in the drawings.



Adopting Blocks

Blocks are one of the most important object types in AutoCAD, and they are also very frequently used in almost all types of drawings.

One of the primary reasons for using a block is modifying all its references by changing a single block. For example, if you are using blocks for representing a pump in a P&ID and after adding the pump, you decide to modify the type of pump. In this case, you can adjust the pump block, and all its references used in the drawing will change automatically.

Blocks also help you in keeping the file size under control. A drawing made with blocks for repetitive objects will be far smaller than the drawing, which uses copied instances of repetitive items.

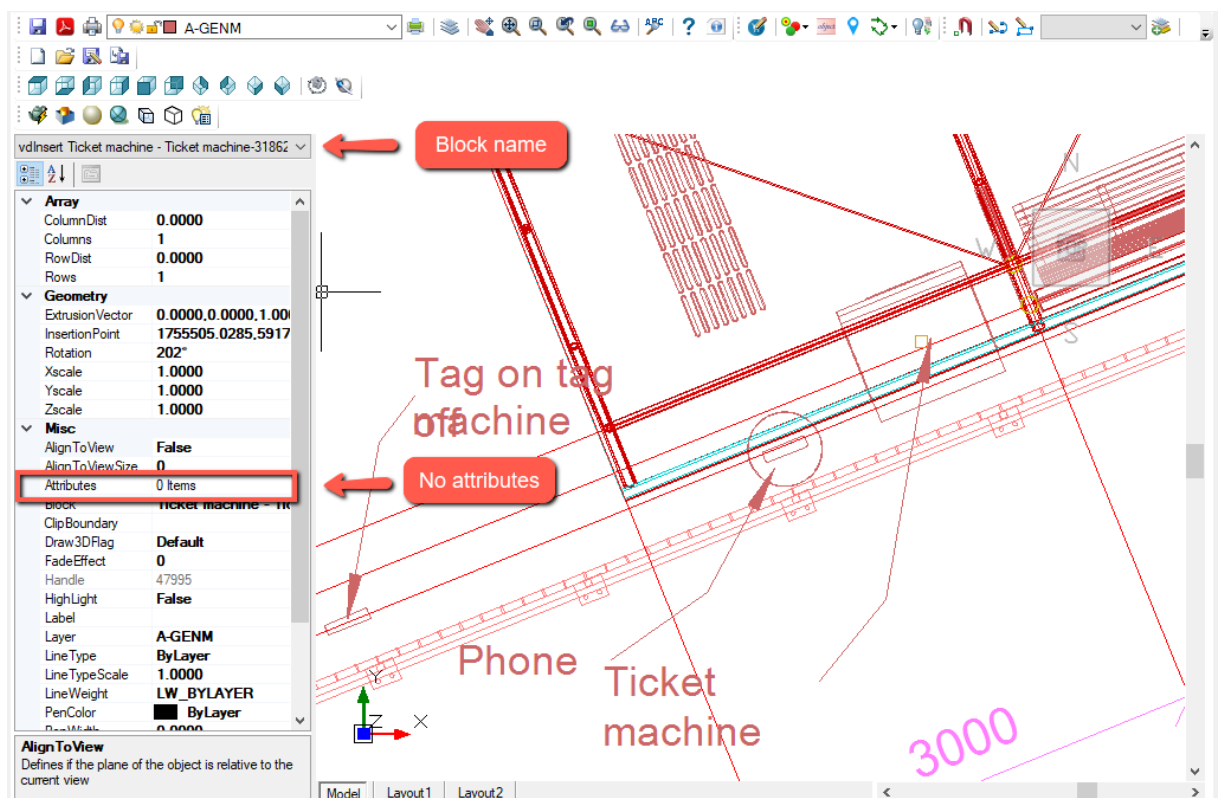
In addition to the benefits mentioned above, adopting blocks in your drawing allows using the OpenCAD function designed explicitly for initiating the equipment creation once the drawing is uploaded within Infor EAM.

UNDERSTANDING BLOCKS

In the context of AutoCAD, blocks are the collection of geometries that act as a single object, and they can be used in a drawing repetitively. The blocks which are used in the drawing are called block references and if you modify the block, all its references change automatically.

You can also keep track of block data using attributes. The attributes are information such as manufacturer name, part number etc, which is associated with a block and can be easily extracted to an excel file.

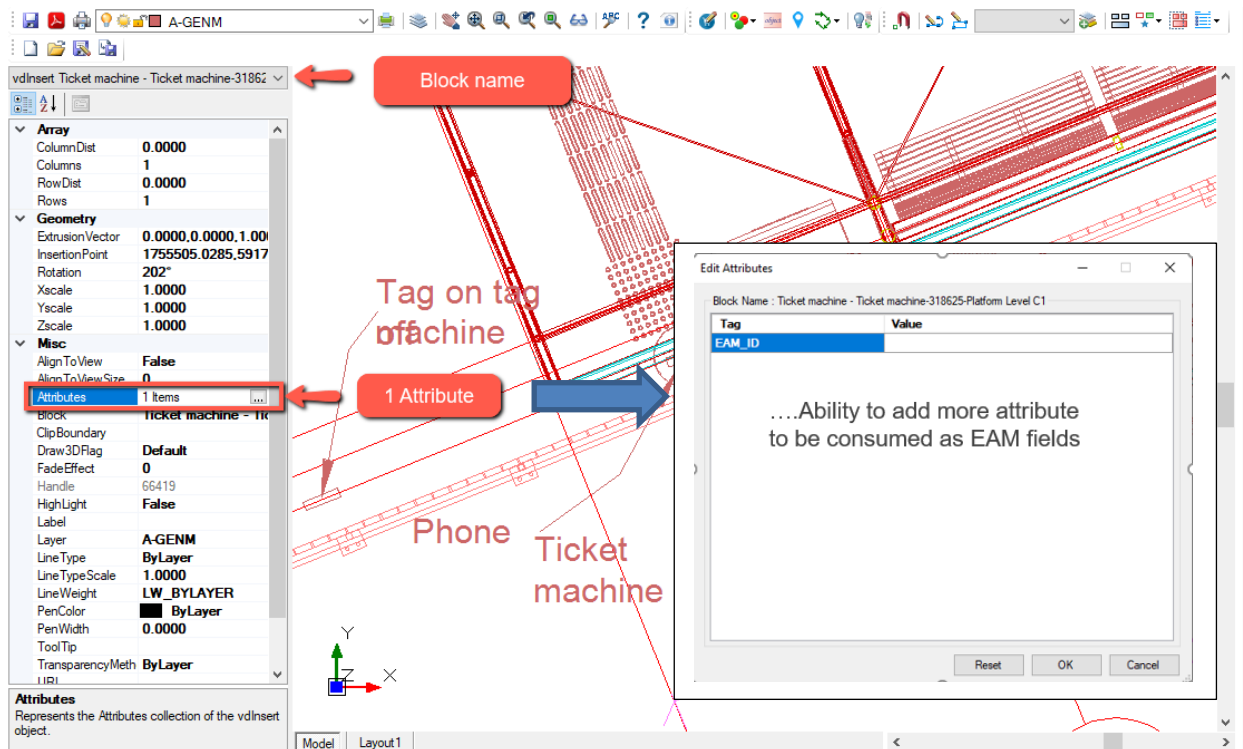
Example of block with no attributes



defining attributes

The attributes are mandatory for using OpenCAD auto-discovery capability, so it is recommended to adopt block with attributes. For doing the match between EAM unique ID and the block in any reference it has been used, it is necessary to set one attribute. For the scope of this document and EAM OpenCAD requirement, it would be called EAM_ID.

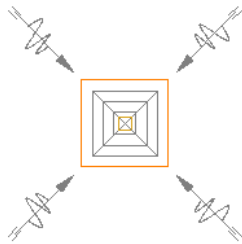
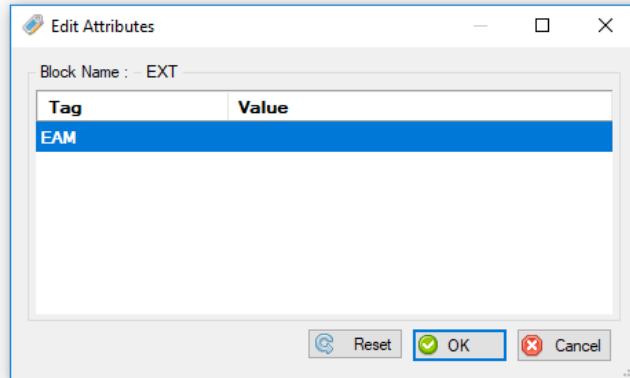
Example of the same block which was re-defined with one attribute



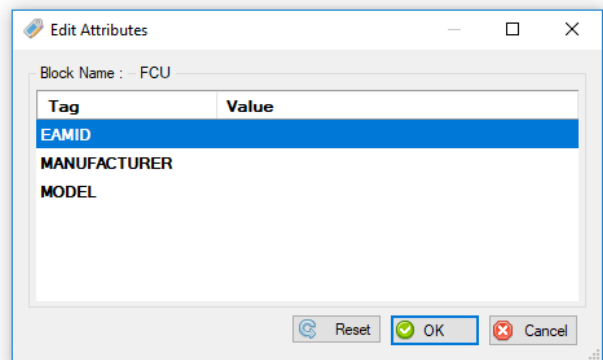
a few block example




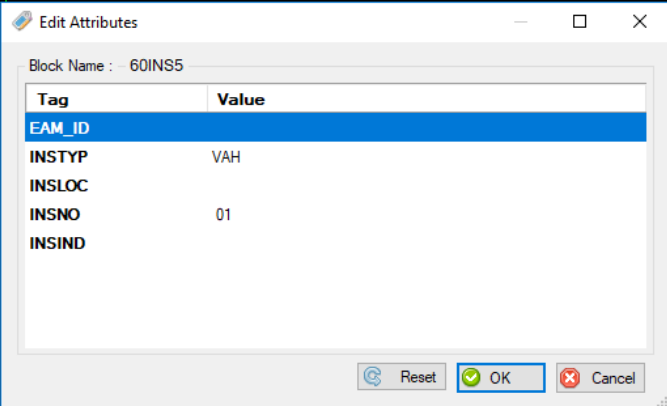
Block name : EXT
Any layer is valid



Block name : FCU
Any layer is valid







Tag	Value
EAM_ID	
INSTYP	VAH
INSLOC	
INSNO	01
INSIND	

Block name : 60INS5
Any layer is valid

OC_INVENTORY

Many organizations are facing the challenge of rapid site expansion. Leveraging spreadsheets and drawings with no consistency it's an extremely daunting task. We're offering HxGN EAM OpenCAD capabilities (OC_Inventory) to streamline the creation of assets by leveraging existing drawings.

Time spent adjusting equipment IDs for identical assets is extremely time consuming.

We're suggesting leveraging OpenCAD auto-numbering capabilities during the upload process to easily generate unique equipment IDs for your assets.

OC_Inventory can be configured in order to get EAM capable of recognizing block and consuming their associated attribute data.

The OC configuration allows to set up:

- EAM entity type (A,P,S)
- EAM Parent Equipment
- EAM mandatory fields (ID, Description, Department, Status, etc)
- User Defined Field
- Custom Field

OpenCAD - Inventory configuration

Block Name	Object Type	EAM Screen	Partial Code	Room Parent	Space Type Room	Nr. fields
1UEQ	ASSET	OSOBJA	No	No		9
2UEQ	ASSET	OSOBJA	No	No		9
48U RACK	ASSET	OSOBJA	No	No		6
EXT	ASSET	OSOBJA	No	Yes	Netta	6
FCU	ASSET	OSOBJA	No	Yes	Netta	8
LOC_ID	POSITION	OSOBJP	No	Yes	Netta	6
Space_4attr	POSITION	OSOBJP	No	Yes	Netta	6

Configured Usable Blocks : 3 of 9

Block Name : FCU

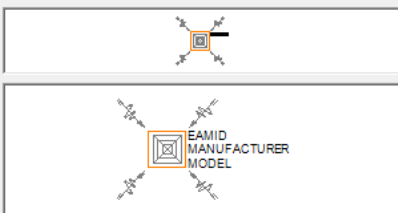
Object Type : ASSET

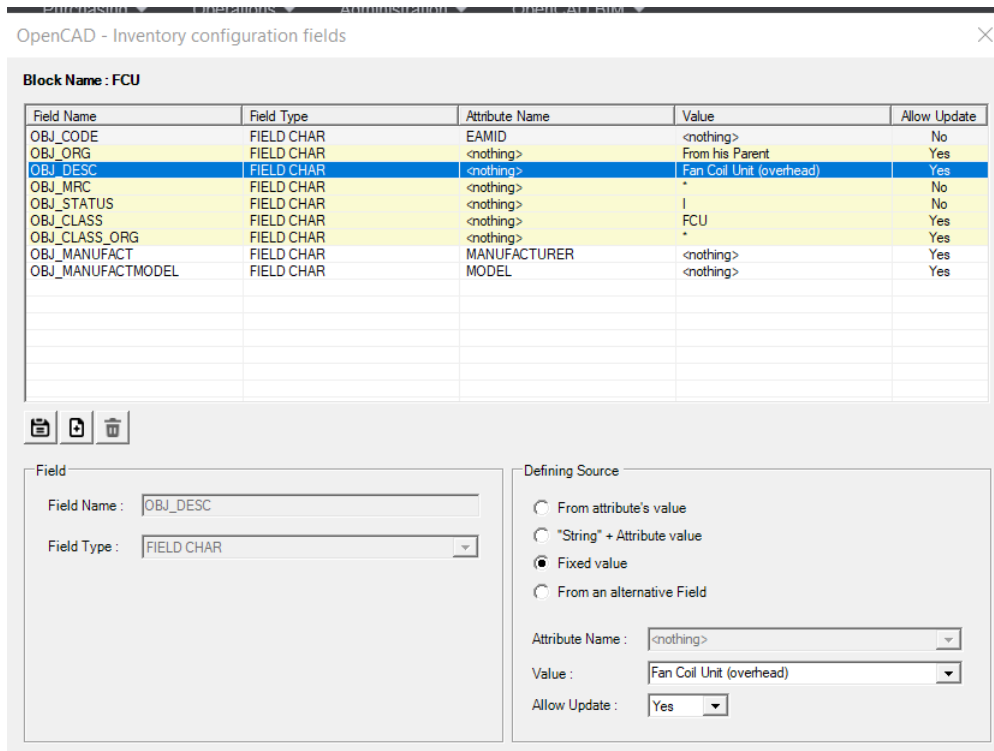
EAM Screen : OSOBJA

Partial Code : No

Room Parent : Yes

Space Type Room : Netta





Technical Requirements – Absorb AutoCAD Drawings into EAM OpenCAD

Client's facility drawings are created and maintained in AutoCAD. A primary requirement of any EAM OpenCAD project is the ability to absorb AutoCAD drawings as a data source for EAM. Data and information contained in drawings will be used to create a baseline in EAM and to build a solution for users to create work orders.

Applying OpenCAD's Ingestion Capabilities

Once the drawings have been digested equipment can then be created. Each block that has been defined with EAM attributes will be identified during this process and create the corresponding EAM equipment within the database. OpenCAD will also allow for the synchronization of asset hierarchy and define entire structures within the database. These drawings can be extremely complex so space layers can be leveraged to segment that data that needs to be loaded and EAM will only pull blocks that have ALL REQUIRED attributes (or fields) defined against it. And of course since we left out the EAM ID attribute on our blocks and enabled the auto-numbering capabilities EAM will designate the next EAM ID in the database sequence to our equipment. This seamless integration allows for a simplified, streamlined and automated way of generating massive amounts of equipment with their unique IDs and corresponding data.