AUTODESK. UNIVERSITY

Configuring AutoCAD Plant 3D Isometrics

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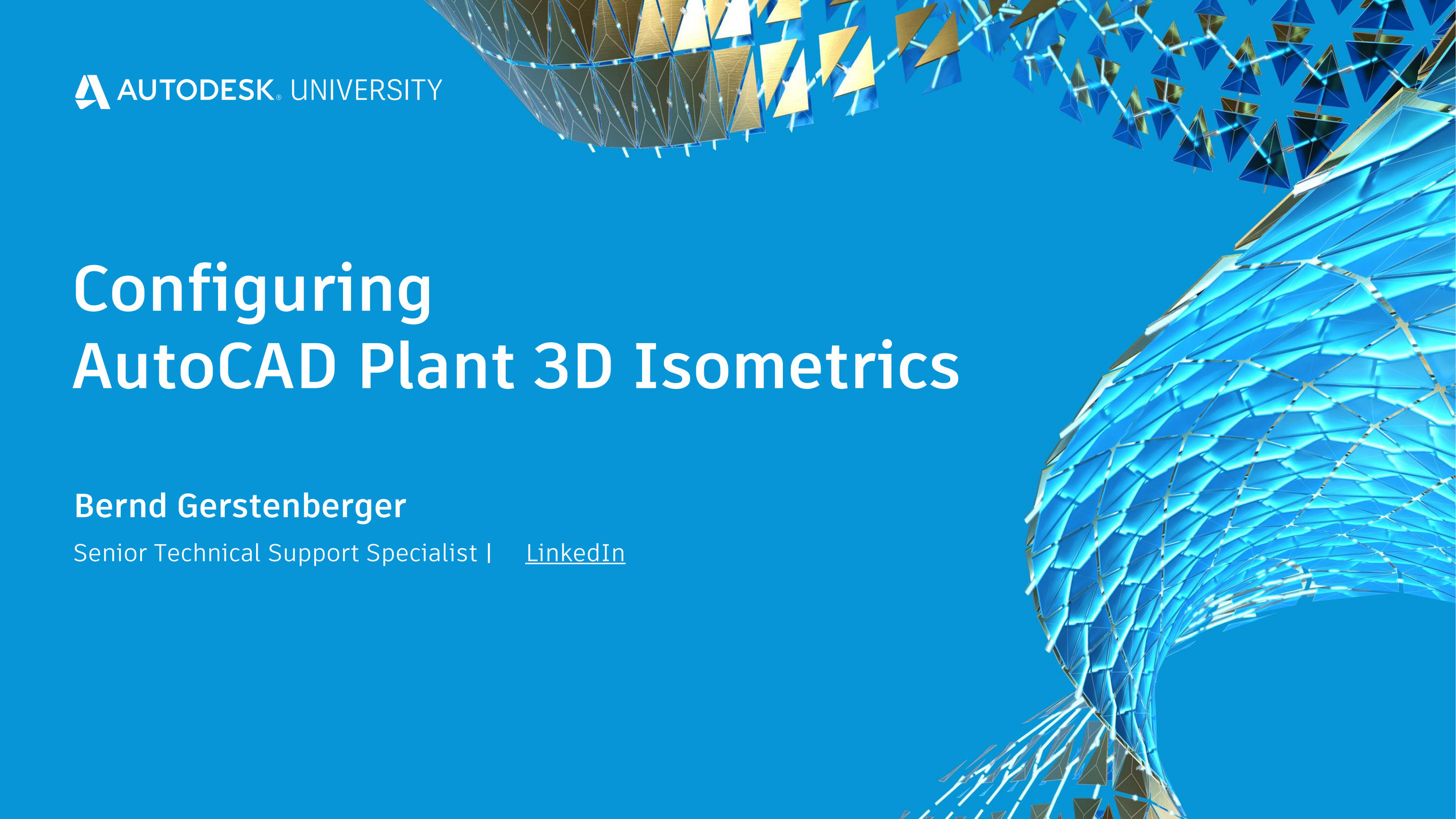


About the speaker

Senior Technical Support Specialist at Autodesk

CAD enthusiast. Working for Autodesk since 2010 in the Technical Support. Formerly gained extensive experience over many years working in different sections of the IT industry: CAD, GIS, PDM, network, database, programming. I’m participating in the blog “In the Pipes” and the video blog series “Plant 3D with the Experts” and I’m writing technical articles for a wide audience on the Autodesk Knowledge Network. Happy to share what I know with others.

Class Summary

How to use the isometric configuration files for your needs

We are talking about all the configuration files which are available to configure isometric drawings to your needs.

Key Learning Objectives

At the end of this class, you will be able to:

- Have an overview of the configuration files for isometric drawings (LO1)
- Use user-defined components for isometric drawings (LO2)
- Configure the *isoconfig.xml* (LO3)
- Do additional customization for isometrics (LO4)

LO = Learning Objectives

Configure the isometrics to your needs!

Overview of the configuration files for isometric drawings

Directory structure for isometrics:

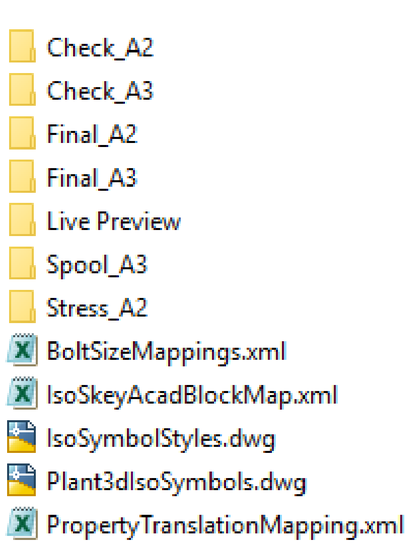
<Project Path>\Isometric

.\<different Iso Style folders>

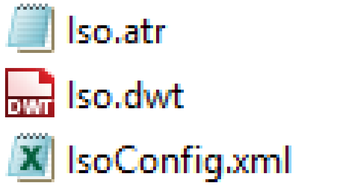
.\<Isometric Style files>

.\<Isometric Project files

Isometric folder



Iso style sub-folder



Overview of the configuration files for isometric drawings

Configuration Files

Isometric Project Files

- BoltSizeMappings.xml LO 4
- IsoSkeyAcadBlockMap.xml LO 2
- IsoSymbolStyles.dwg LO 2
- Plant3DIsoSymbols.dwg LO 4
- PropertyTranslationMapping.xml LO 4

Isometric Style Files

- Isoconfig.xml LO 3
- Iso.atr LO 4 (+ LO 3)
- Iso.dwt LO 4

LO = Learning Objectives

Use of user-defined components in isometric drawings

Used files

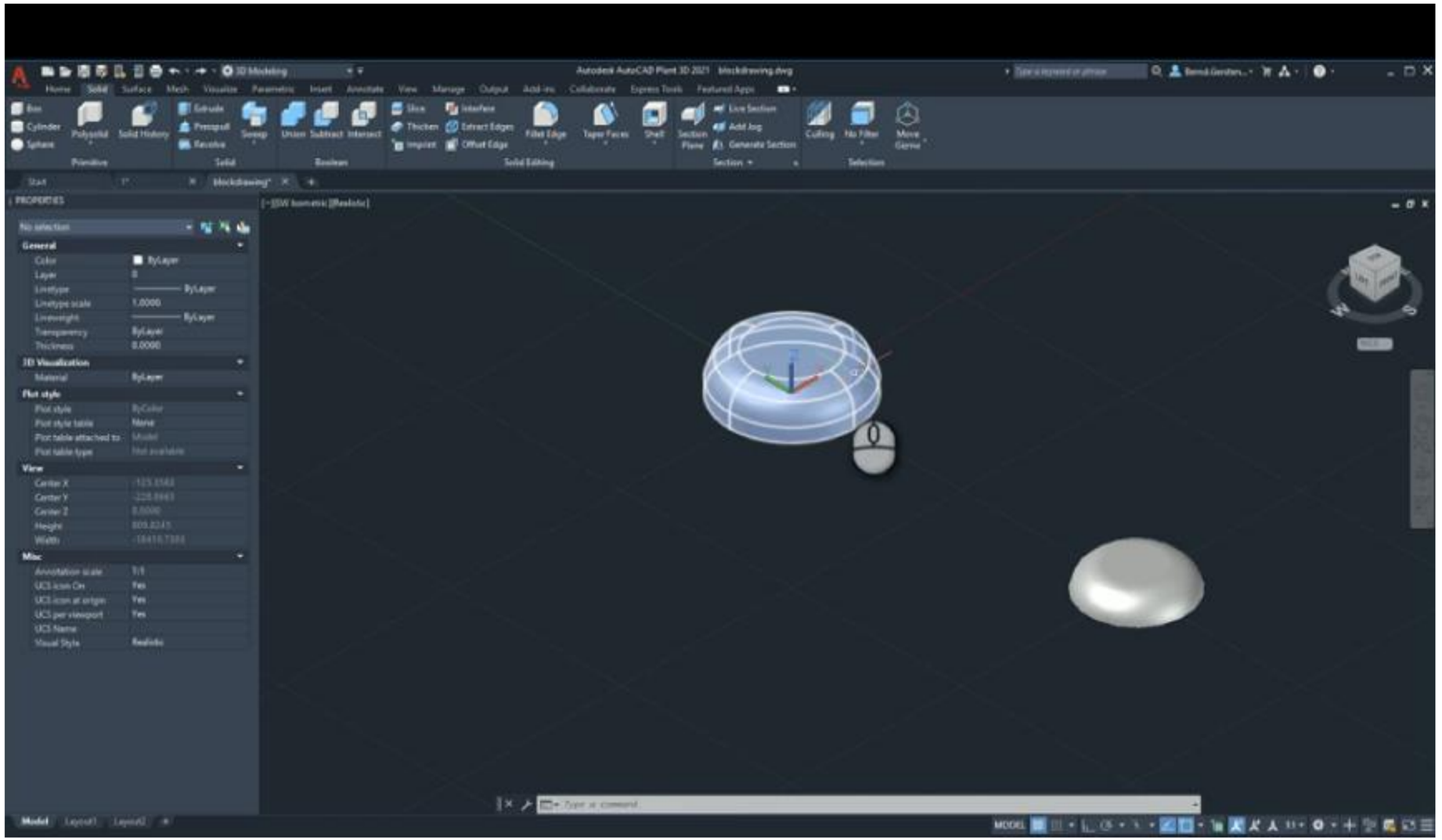
- *Catalog File (*.pcat)*
- *Spec File (*.pspx, *.pspc)*
- *IsoSkeyAcadBlockMap.xml*
- *IsoSymbolStyles.dwg*

Use of user-defined components in isometric drawings

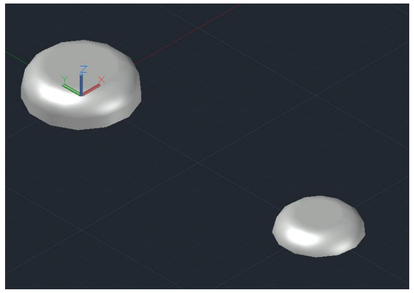
General procedure

- Conversion of an AutoCAD block in a piping component
- Creation of a new catalog component
- Adding this component to a spec
- Adjusting of the IsoSkeyAcadBlockMap.xml
- Adjusting of the IsoSymbolStyles.dwg
- Creation of the model and the isometric drawing

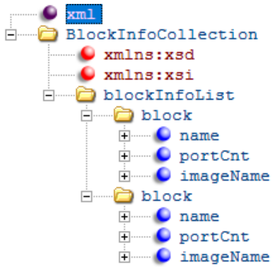
Conversion of an AutoCAD-Block in a Piping Component



Conversion of an AutoCAD-Block in a Piping Component

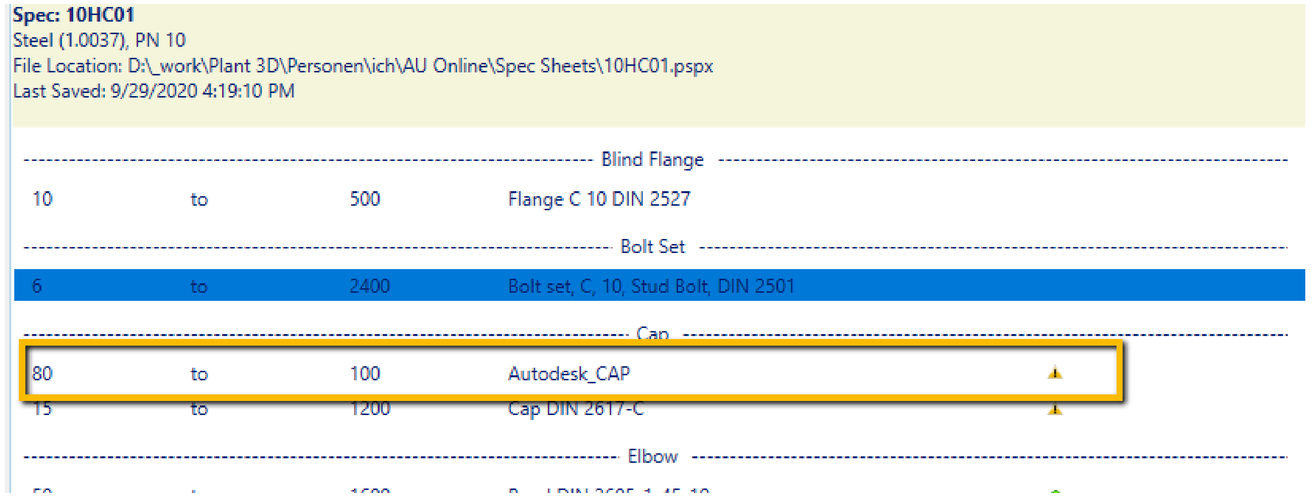


Name	Date modified	Type	Size
blockdrawing.dwg	29.09.2020 12:31	DWG File	71 KB
blockdrawing.dwg.xml	29.09.2020 12:24	XML File	1 KB
blockdrawing.dwg_Cap80.png	29.09.2020 12:24	PNG File	6 KB
blockdrawing.dwg_Cap100.png	29.09.2020 12:24	PNG File	9 KB



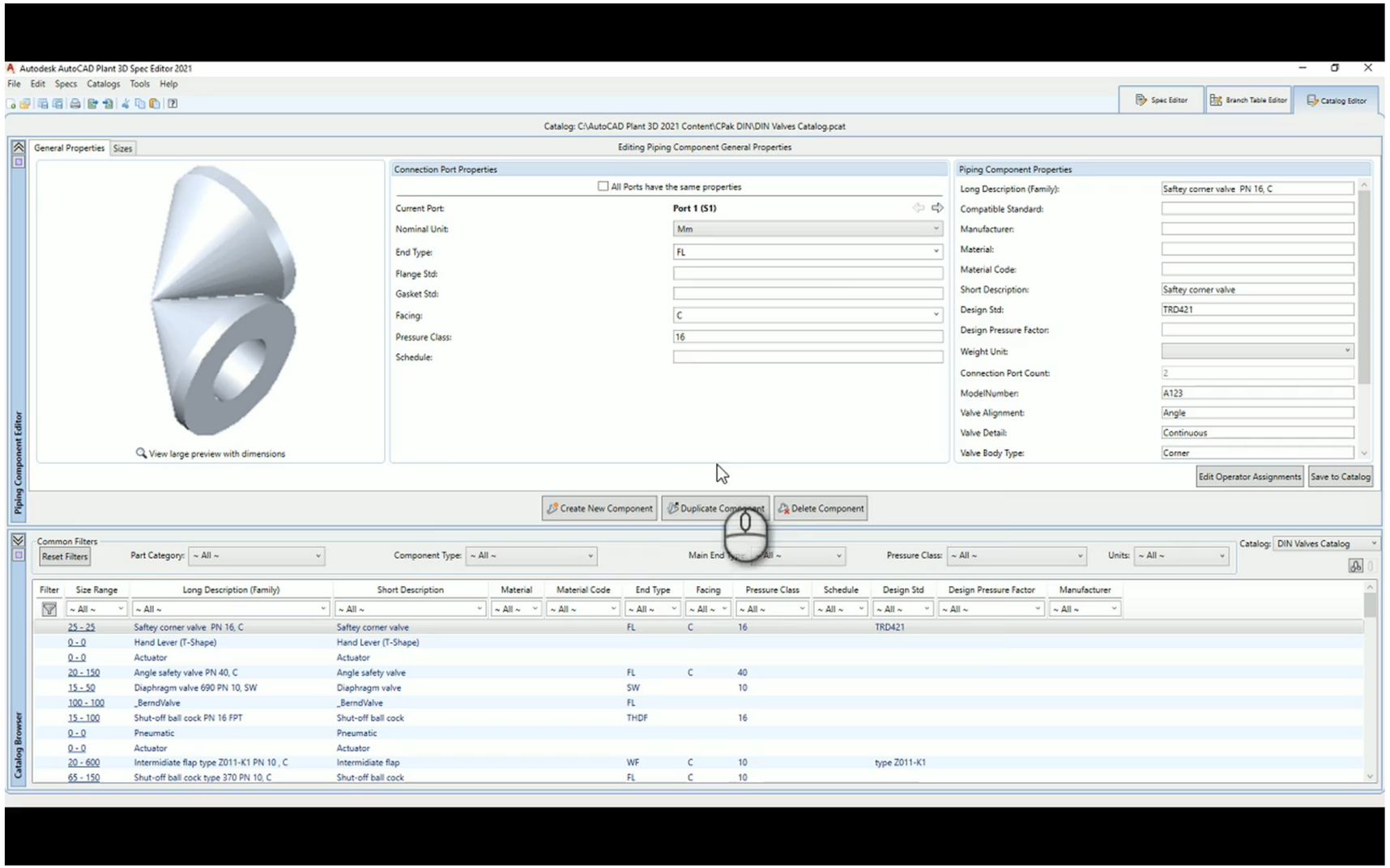

```
version="1.0" encoding="utf-8"

http://www.w3.org/2001/XMLSchema
http://www.w3.org/2001/XMLSchema-instance


Cap100
1
blockdrawing.dwg_Cap100.png

Cap80
1
blockdrawing.dwg_Cap80.png
```

Creating a block-based component



Note: The Iso Symbol Type defines which information gets included on the isometric drawing. For example, certain objects, like caps, get a callout, indicating that it closes the end of the pipeline.

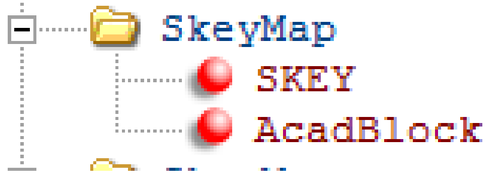
Creating a block-based component

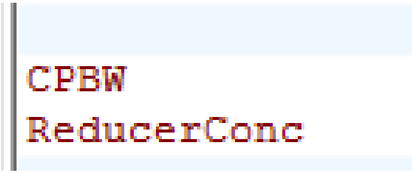


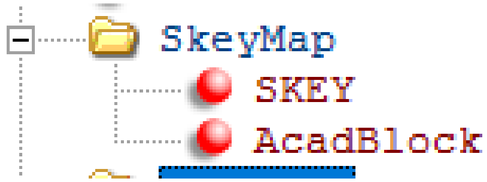
Customizing the IsoSkeyAcadBlockMap.xml

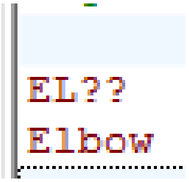
General Structure

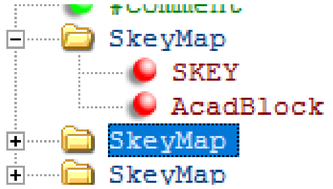
- SKEYMap with two attributes: SKEY and AcadBlock
- The SKEY will be mapped to an AutoCAD block, which is saved in IsoSymbolStyles.dwg
- Wildcard (?) can be used
- Additional, specific SKEY Mappings, like for operators
  - See Handout

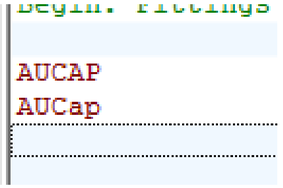








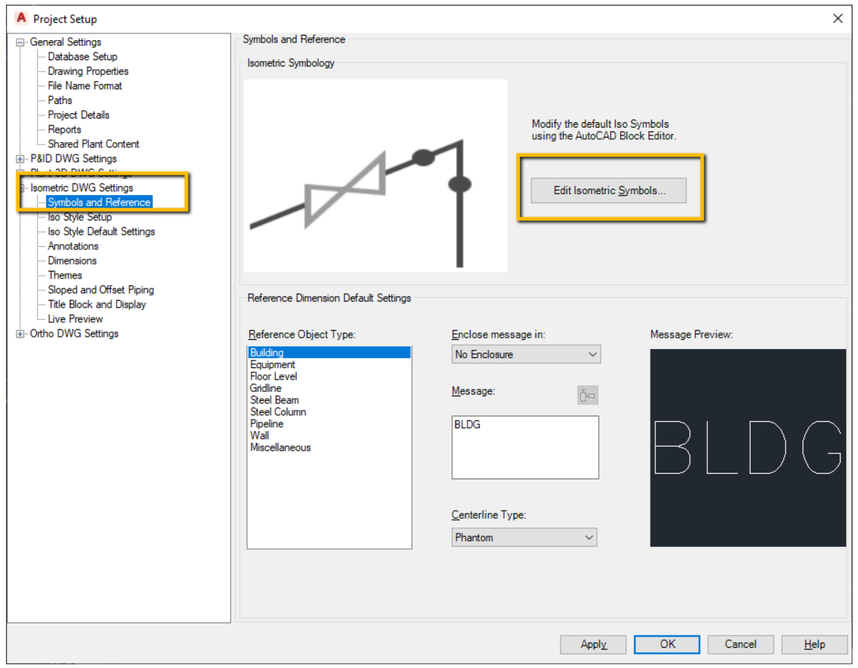


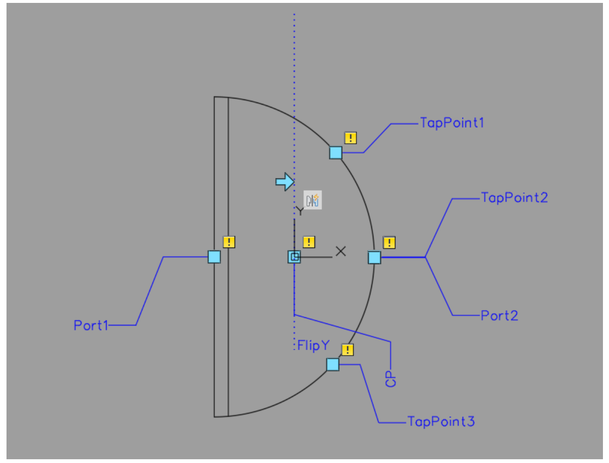


Customizing the IsoSymboStyles.dwg

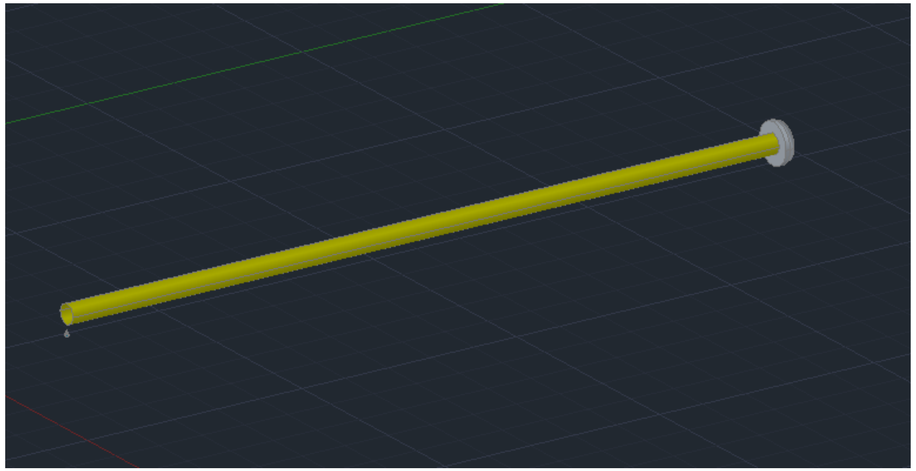
Notes

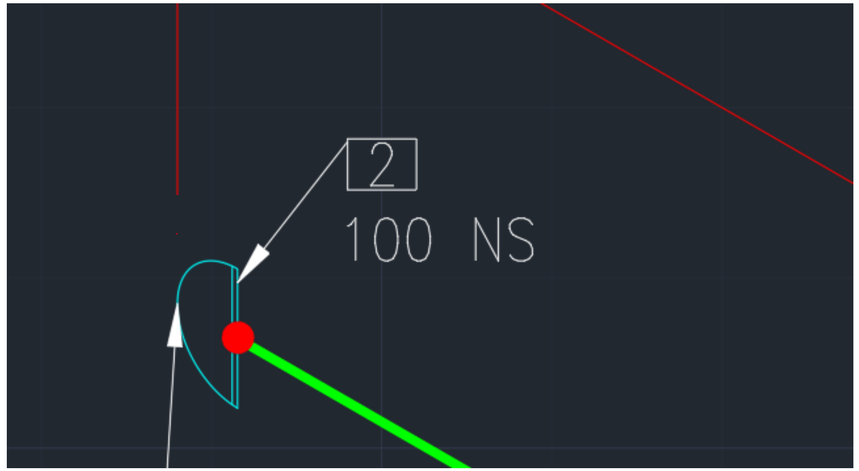
- All iso symbol blocks for components are saved in this drawing.
- Access with Project Setup, node “Isometric DWG Settings – Symbols and References”, button “Edit Isometric Symbols…”.
- Task:
  - Adopting the standard Cap-block
  - Save as “AUCap”





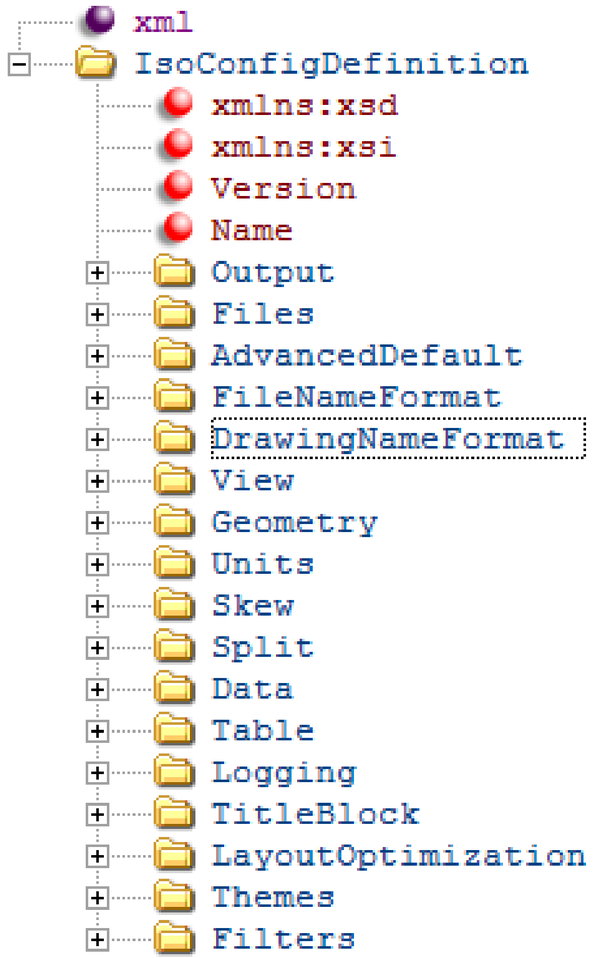
Testing the outcome





Configuration of the Isoconfig.xml

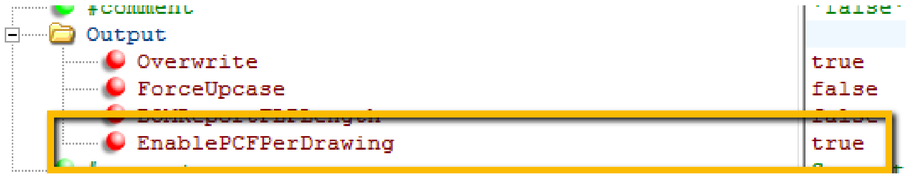
Structure of the File



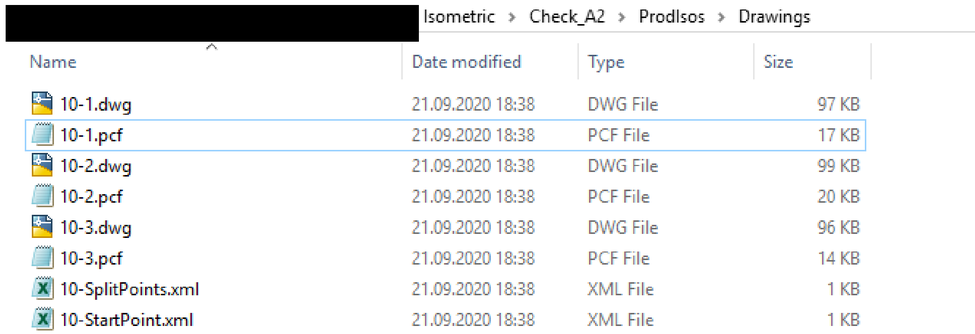
Task 1 for isoconfig.xml

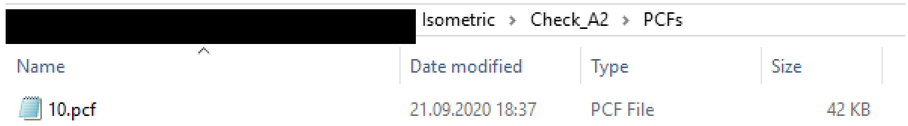
Create for each isometric sheet a separate PCF-file

- **Solution**
  - In node “Output” set the attribute “EnablePCFPerDrawing” to “true”.



- **Result**





Task 1 for isoconfig.xml

Create for each isometric sheet a separate PCF-file

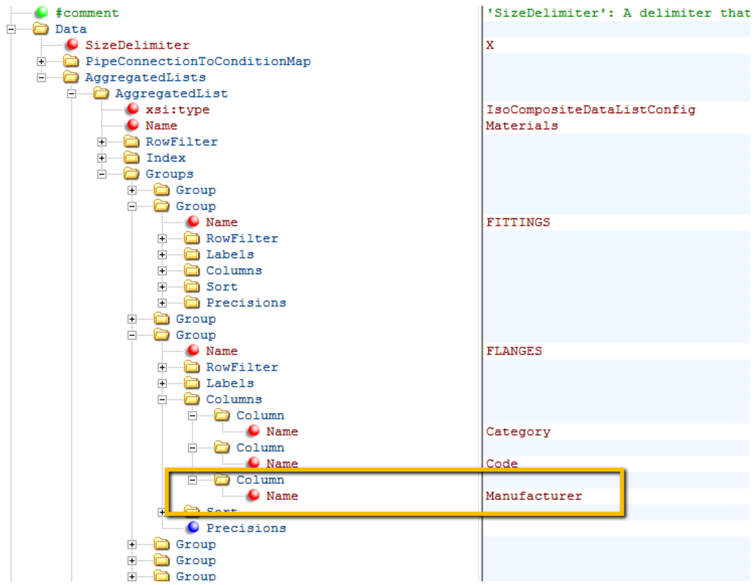
020 › Projekt › AU Online Project › Isometric › PCF Per Drawing › ProdIsos › Drawings

Name	Date modified	Type	Size
Task1-1.dwg	29.09.2020 20:22	DWG File	127 KB
Task1-1.pcf	29.09.2020 20:22	PCF File	23 KB
Task1-2.dwg	29.09.2020 20:22	DWG File	143 KB
Task1-2.pcf	29.09.2020 20:22	PCF File	25 KB
Task1-3.dwg	29.09.2020 20:22	DWG File	116 KB
Task1-3.pcf	29.09.2020 20:22	PCF File	13 KB
Task1-SplitPoints.xml	29.09.2020 20:22	XML File	1 KB
Task1-StartPoint.xml	29.09.2020 20:22	XML File	1 KB

Task 2 for isoconfig.xml

Separating components in the BOM, which have different values for property “Manufacturer”

- **Solution**
  - To see a better result, add property “Manufacturer” as a new column to the bill of material



- **Result**
  - Before

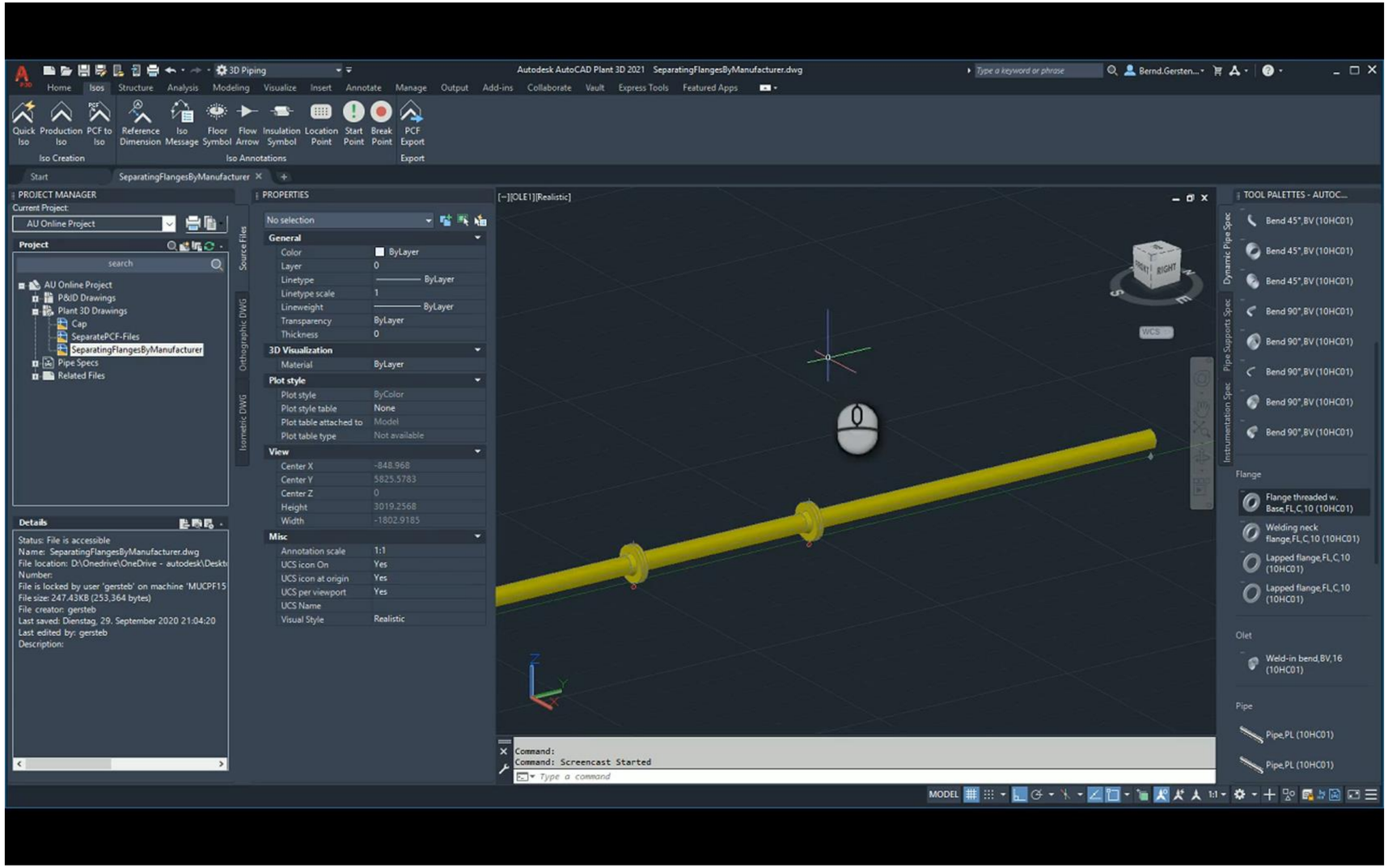
2	4	100	FLANGE C DIN 2632	DESKAUTO AUTODESK

  - Afterwards

2	2	100	FLANGE C DIN 2632	DESKAUTO
3	2	100	FLANGE C DIN 2632	AUTODESK

Task 2 for isoconfig.xml

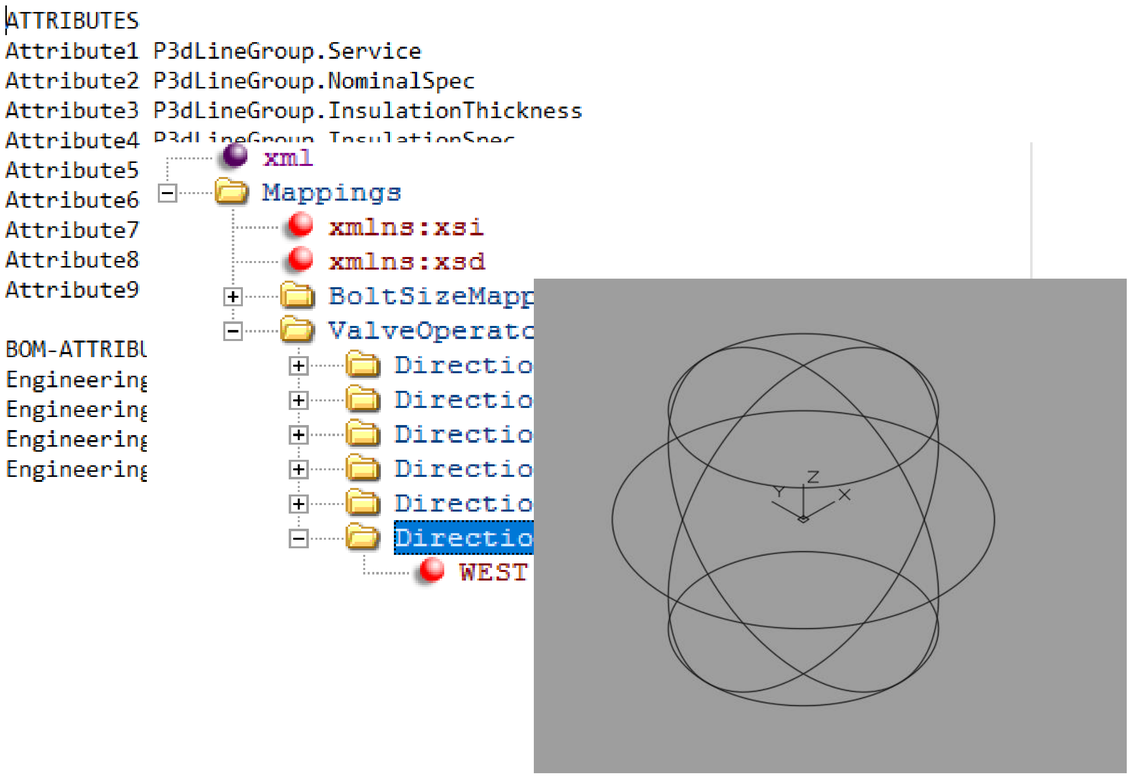
Separating components in the BOM, which have different values for property “Manufacturer”



Additional adjustments for isometric drawings

Affected Files

- *BoltSizeMappings.xml*
- *Plant3dIsoSymbols.dwg*
- *PropertyTranslationMapping.xml*
- *Iso.dwt*
- *Iso.atr*



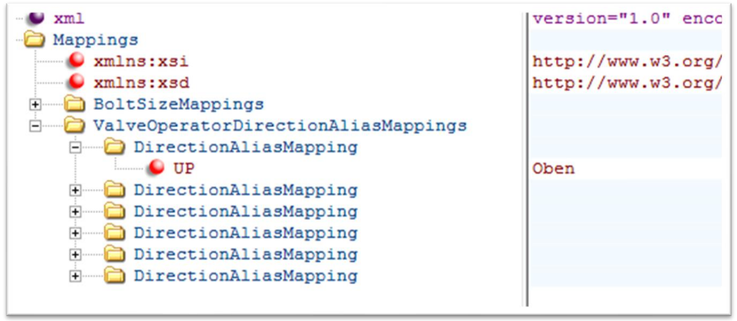
Additional adjustments for isometric drawings

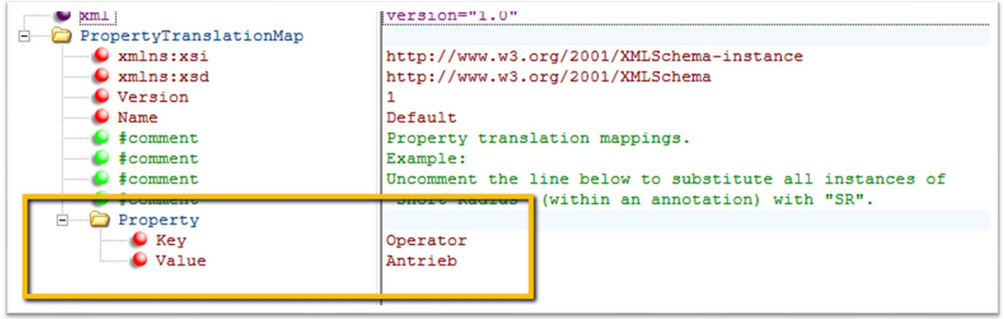
BoltSizeMappings.xml

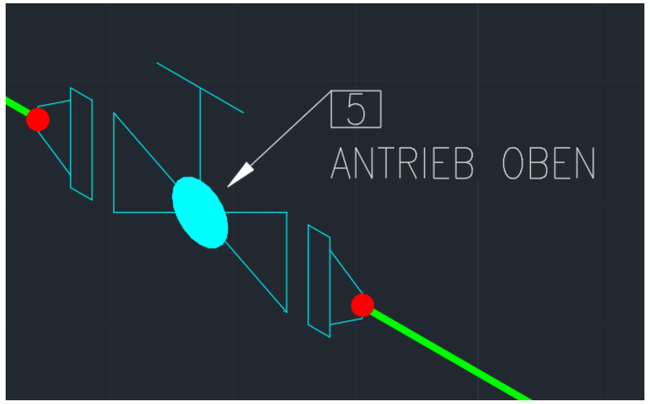
- **Will be used for:**
  - Mapping between British and metric bolt set sizes
  - Setting of alias names for actuator direction

PropertyTranslationMapping.xml

- **Will be used for:**
  - Mapping property values to display values



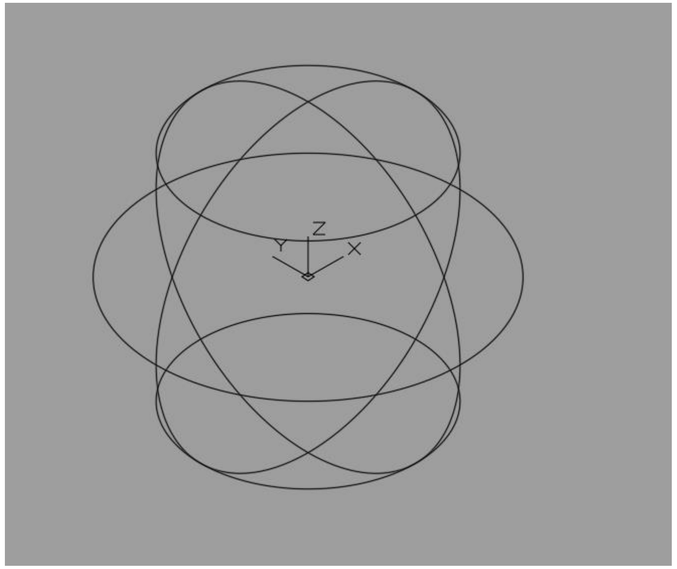


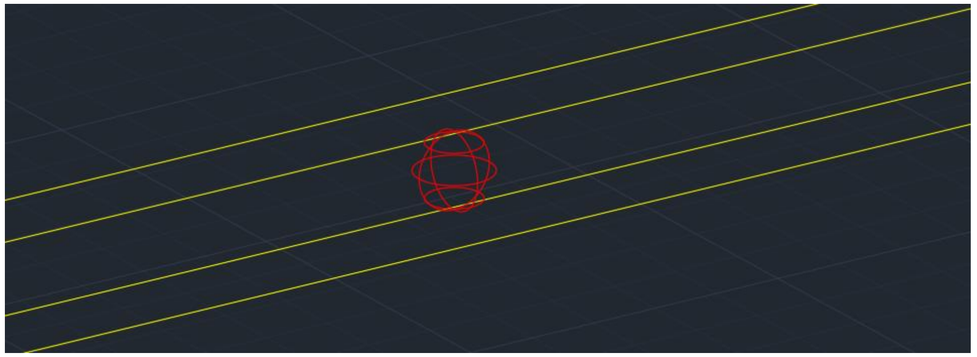


Additional adjustments for isometric drawings

Plant3dIsoSymbols.dwg

- **Will be used for:**
  - Contains block definitions of Iso messages and break point markers.
  - These blocks are used by both: the 3D model and the isometric drawing.

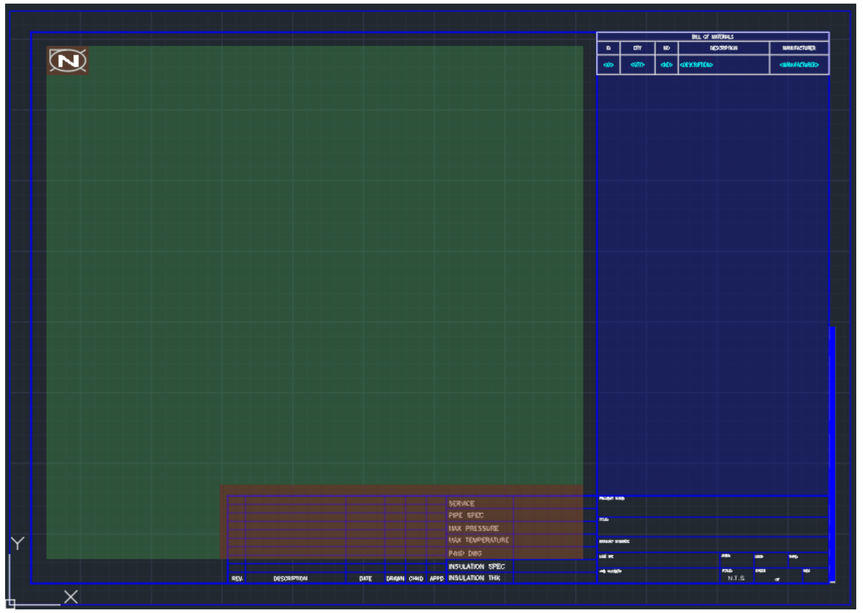




Additional adjustments for isometric drawings

Iso.dwt

- **Will be used for:**
  - Drawing template for isometric drawings
  - Will be opened from Project Setup
  - Following will be saved:
    - Tables
    - Draw area and no-draw area
    - North arrow
    - Title block and attribute mapping
    - LDT setting
    - Several styles, like text styles, …
    - Layer configuration



Task for Iso.dwt

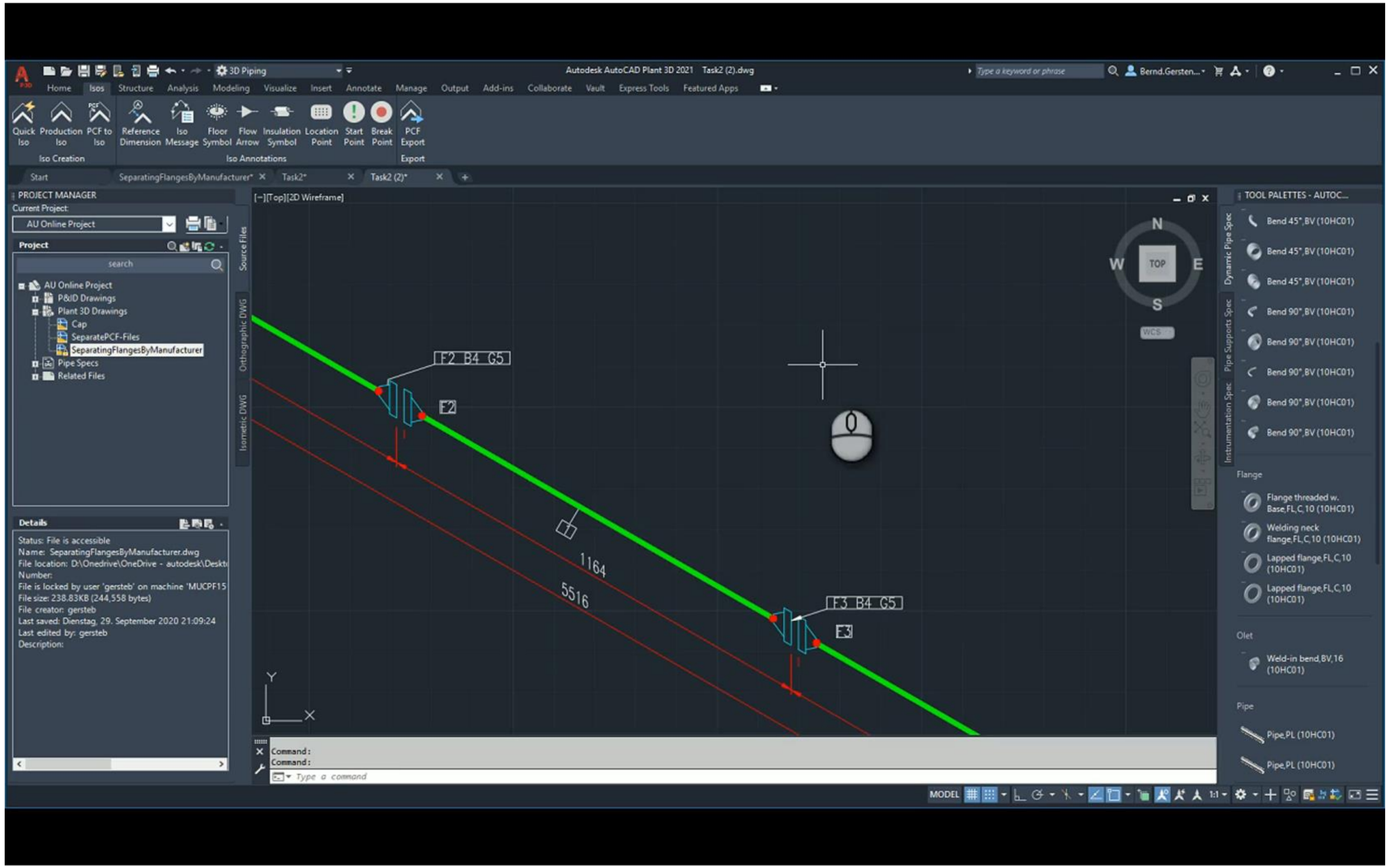
Adding alternative dimensions to the isometric drawing

- **Solution**
  - Isoconfig.xml points for a metric project to the dimension style “AdskIsometric”

  - This style is saved in Iso.dwt and can be modified there
    - Command DIMSTYLE

Task for Iso.dwt

Adding alternative dimensions to the isometric drawing



Additional adjustments for isometric drawings

Iso.atr

- **Will be used for**
  - Making the attributes known to the isometric engine
  - The file extension ATR stands for Attribute.
  - Two sections:
    - ATTRIBUTES
    - BOM-ATTRIBUTES
  - Title block uses only attributes from section ATTRIBUTES
    - Project properties
    - Drawing properties
    - Pipeline **group** properties
    - LTD-properties

```
ATTRIBUTES
Attribute1 P3dLineGroup.Service
Attribute2 P3dLineGroup.NominalSpec
Attribute3 P3dLineGroup.InsulationThickness
Attribute4 P3dLineGroup.InsulationSpec
Attribute5 Drawing.Unit
Attribute6 General.Project_Number
Attribute7 P3dLineGroup.Tag
Attribute8 General.Project_Name
Attribute9 General.Project_Description

BOM-ATTRIBUTES
EngineeringItems.Schedule
EngineeringItems.PressureClass
EngineeringItems.Material
```

Task for iso.atr

Export the class property “Wall Thickness” to a PCF-file

- **Solution**
  - “Wall Thickness” belongs to the class “Piping and Equipment”, which will be called “EngineeringItems” in Iso.atr.
  - Add to section “BOM-ATTRIBUTES” the row “EngineeringItems.WallThickness”

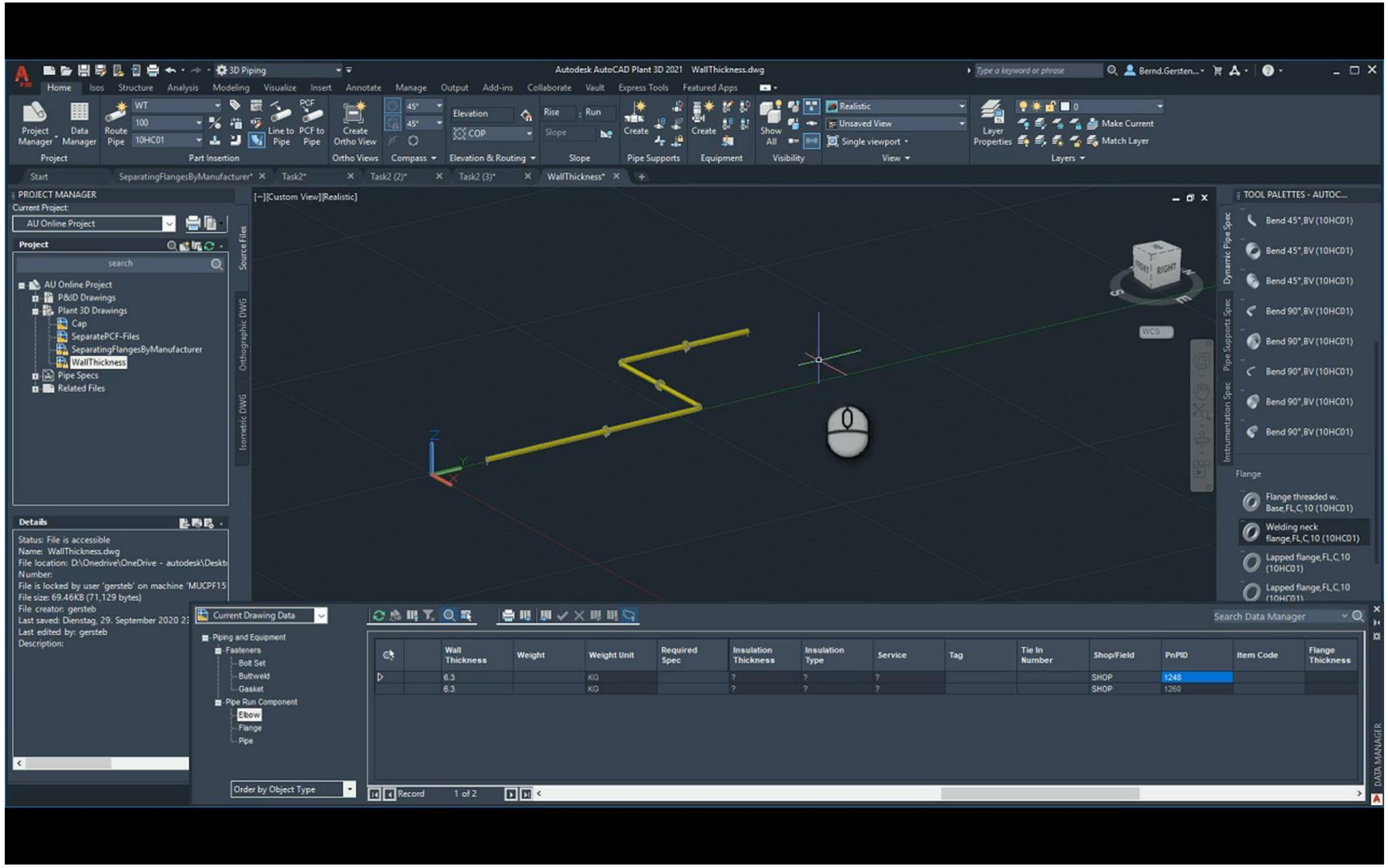
- **Result**

```
ATTRIBUTES
Attribute1 P3dLineGroup.Service
Attribute2 P3dLineGroup.NominalSpec
Attribute3 P3dLineGroup.InsulationThickness
Attribute4 P3dLineGroup.InsulationSpec
Attribute5 Drawing.Unit
Attribute6 General.Project_Number
Attribute7 P3dLineGroup.Tag
Attribute8 General.Project_Name
Attribute9 General.Project_Description

BOM-ATTRIBUTES
EngineeringItems.Schedule
EngineeringItems.PressureClass
EngineeringItems.Material
EngineeringItems.WallThickness
```

```
PIPE
    END-POINT        9373.2561    1043.8202    -598.0701    100.0000
    END-POINT        9373.2561    2027.6729    -598.0701    100.0000
    ITEM-CODE  10HC01-1380
    ITEM-DESCRIPTION  Pipe DIN 2448
    FABRICATION-ITEM
    PIPING-SPEC  10HC01
    TRACING-SPEC
    COMPONENT-ATTRIBUTE1    BOMCOLUMN_Material_
    COMPONENT-ATTRIBUTE2    BOMCOLUMN_WallThickness_3.6
    COMPONENT-ATTRIBUTE3    BOMCOLUMN_SCHClass_
    WEIGHT  0.0000
```

Task for iso.atr

Export the class property “Wall Thickness” to a PCF-file



Configure the isometrics to your needs!

Useful links

- Blog “In the Pipes”
- Video Blog Series “Plant 3D with the Experts
- Video collection “Configuring AutoCAD Plant 3D Isometric”
- Configuring AutoCAD Plant 3D Isometrics – AU Class 2014
- Autodesk Knowledge Network