Configuring AutoCAD Plant 3D Isometrics

Bernd Gerstenberger
Senior Technical Support Specialist | LinkedIn
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

- Check_A2
- Check_A3
- Final_A2
- Final_A3
- Live Preview
- Spool_A3
- Stress_A2
- BoltSizeMappings.xml
- IsoSketch/AcAdBlockMap.xml
- IsoSymbolStyles.dwg
- Plant3dsIsoSymbols.dwg
- Property/TranslationMapping.xml

Iso style sub-folder

- Iso.atr
- Iso.dwt
- IsoConfig.xml
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)
- IsoKeyAcadBlockMap.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

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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:
  o Adopting the standard Cap-block
  o Save as “AUCap”
Testing the outcome
Configuration of the Isoconfig.xml

Structure of the File

xml
  IsoConfigDefinition
    xmlns:xsd
    xmlns:xsi
    Version
    Name
    Output
    Files
    AdvancedDefault
      FileNameFormat
        DrawingNameFormat
      View
      Geometry
      Units
      Skew
      Split
      Data
      Table
      Logging
      TitleBlock
      LayoutOptimization
      Themes
      Filters
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**

  ![Image showing file details]

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Task 1 for isoconfig.xml

Create for each isometric sheet a separate PCF-file
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
    
  - Afterwards
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:
  o Mapping between British and metric bolt set sizes
  o Setting of alias names for actuator direction

PropertyTranslationMapping.xml
• Will be used for:
  o Mapping property values to display values
Additional adjustments for isometric drawings

Plant3dIsoSymbols.dwg

• Will be used for:
  o Contains block definitions of Iso messages and break point markers.
  o 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
  o Isoconfig.xml points for a metric project to the dimension style “AdskIsometric”

  o 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

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<th>ATTRIBUTES</th>
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<tr>
<td>Attribute1 3dLineGroup.Service</td>
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<td>Attribute2 3dLineGroup.NominalSpec</td>
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<td>Attribute3 3dLineGroup.InsulationThickness</td>
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<td>Attribute4 3dLineGroup.InsulationSpec</td>
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<tr>
<td>Attribute5 Drawing.Unit</td>
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<tr>
<td>Attribute6 General.Project.Number</td>
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<td>Attribute7 General.Project.Tag</td>
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<tr>
<td>Attribute8 General.Project.Name</td>
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<td>Attribute9 General.Project.Description</td>
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</table>

<table>
<thead>
<tr>
<th>BOM-ATTRIBUTES</th>
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<tbody>
<tr>
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<tr>
<td>EngineeringItems.PressureClass</td>
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<td>EngineeringItems.Material</td>
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</tbody>
</table>
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**
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