Creating System Isometrics in AutoCAD Plant 3D

AutoCAD Plant 3D 2014

Production Iso vs. Quick Iso

AutoCAD Plant 3D supports two types of Isometric drawing: a Production Iso and a Quick Iso.

> Production Iso's are the final fabrication drawings that are issued for production. They are generated by line number and are recorded in the project database.
>
> Quick Iso's may be generated from multiple line numbers or ad-hoc runs of pipe that have been selected manually from the plant model, but they are not intended to be project deliverables and so are not recorded in the project database.

System Iso

A System Iso is a drawing of a process system, a collection of related pipe runs that could include multiple line numbers. The standard configuration of AutoCAD Plant 3D does not provide a mechanism for defining a process system or for producing a System Iso.

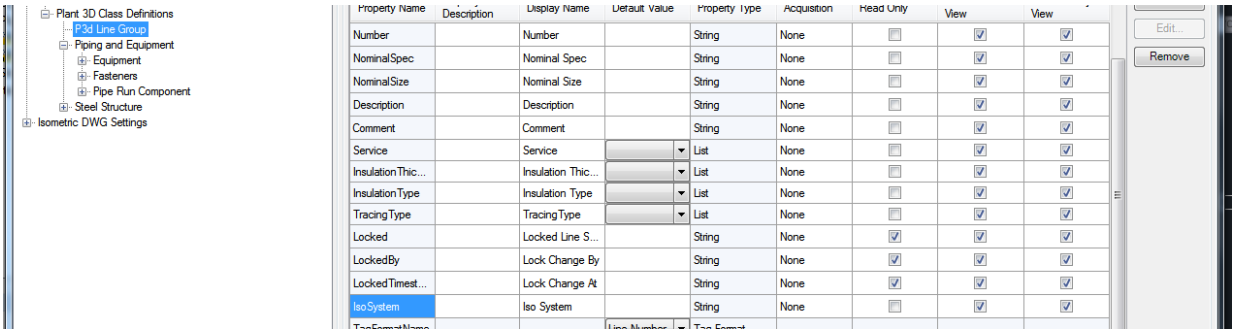
This White Paper proposes a mechanism by which System Iso's may be defined and generated in AutoCAD Plant 3D. To do this, changes must be made to Project Setup and a new Isometric Style must be defined.

System Iso's will not, however, be recorded in the project database if they are generated as Quick Iso's.

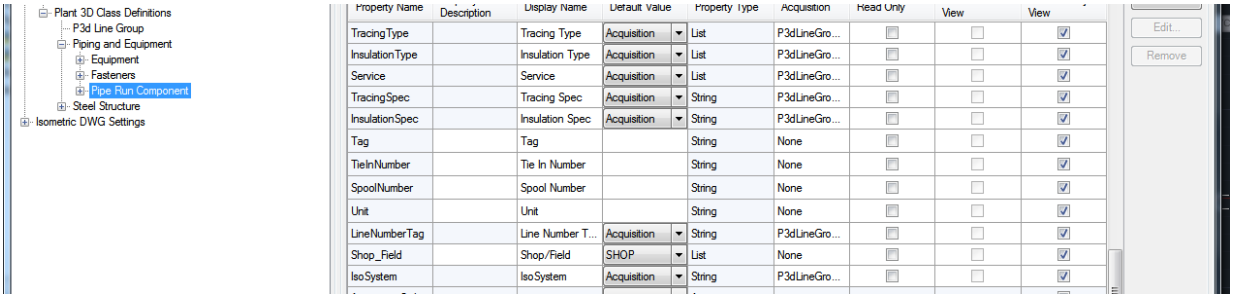
Project Setup

To identify a process or piping system a new property needs to be added to the P3DLineGroup and PipeRunComponent Classes in Project Setup.

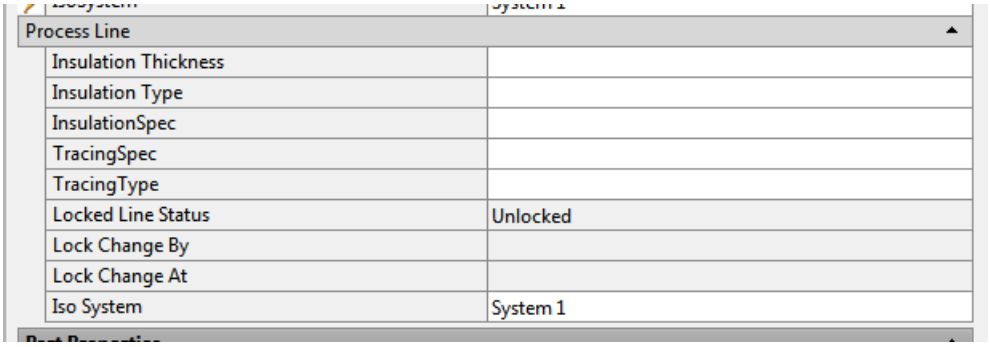
In this example, the property IsoSystem is added to P3DLineGroup class as a String property



and also added to PipeRunComponent class as an Acquisition property set to acquire its value from P3DLineGroup.IsoSystem.



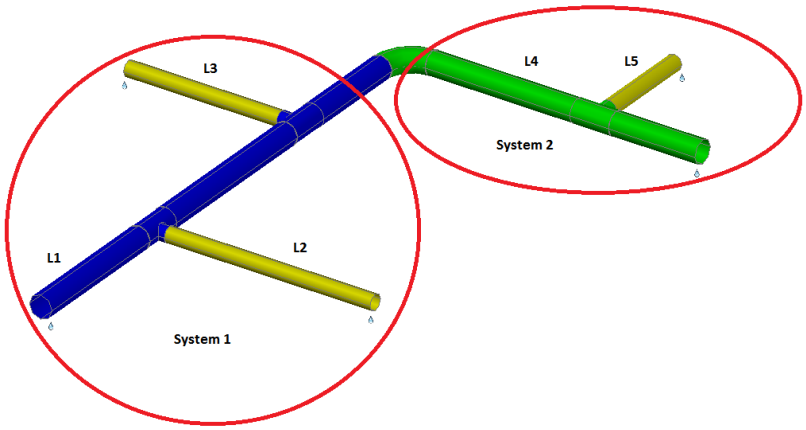
The IsoSystem property may now be used to define a process system during the modelling process. To do this, the IsoSystem property of related pipe run components may be set in the Process Line section of the AutoCAD property window.



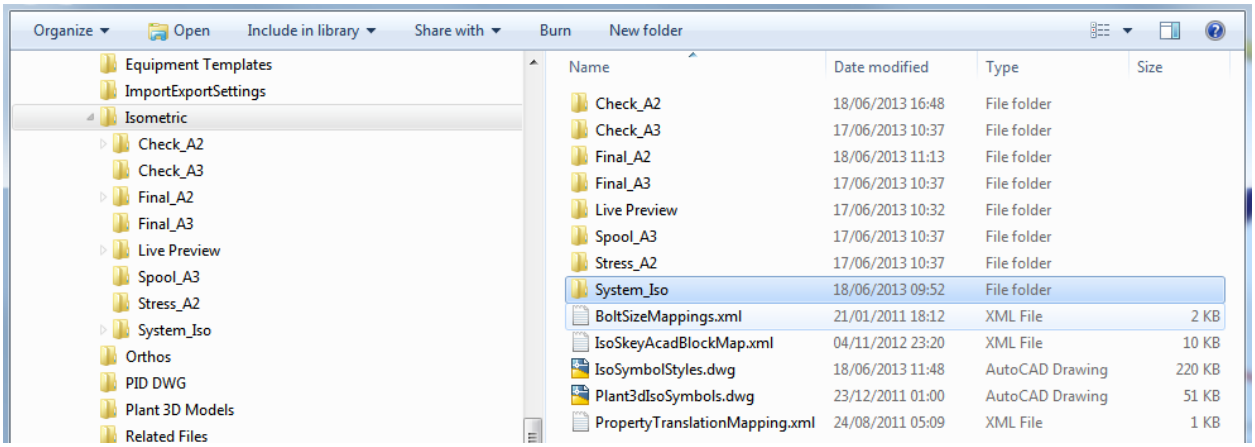
or alternatively it may be set through the Data Manager Window.

Isometric Style

The simple Plant 3D piping example below, consists of 5 lines, numbered L1 – L5. They have been grouped into 2 systems, System 1 and System 2, using the IsoSystem property. To generate the 2 System Iso's from this model, a new Isometric Style needs to be created, called System_Iso in this example.



The quickest way to create the System_Iso Isometric Style is simply to copy and rename an existing style. For example, to create the new style from the Check_A2 style, copy and rename the Check _A2 folder to System_Iso inside the Isometric project folder.



Iso.atr File

The new IsoSystem model property must be included in the BOM Attribute List of the new style to make it available to the Isometric software during the generation procedure. To do this, a new entry must be added to the end of the `BOM-ATTRIBUTES` list that is found in the file iso.atr in the System_Iso folder. The file is a simple text file and can be edited with any standard text editor. For example:

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

Isoconfig.xml File

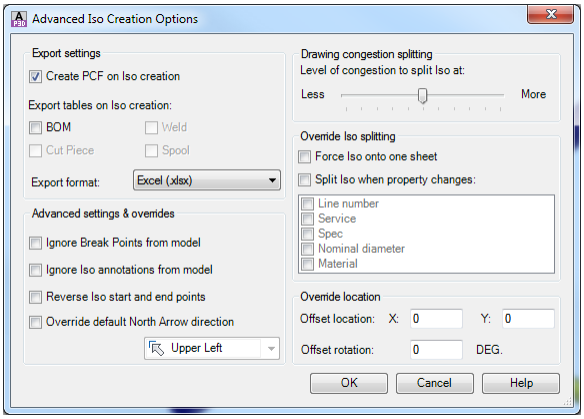
To use the IsoSystem property to split the Iso, the isometric configuration file that is used to generate the Iso must be modified. The file isoconfig.xml is a simple text file that is found in the System_Iso folder and can be edited with any standard text editor. The section <Model split…> must be modified to force the Iso to split when the IsoSystem property changes. For example:

```
<Model Split="true" ModelSplitMethod="PropertyChange">
 <!-- Properties defines the option to split isos on changes of properties -->
 <!-- Both 'PropertyChange' and 'Filter' can be empty. -->
 <!-- 'PropertyChange': Specifies which property change will trigger the split. -->
 <!-- 'Filter': Specifies the designated item (which can be thought of as multiple properties)
    where the split should take place. For example, Filter="Type='Gasket' AND Category='ERECTION-ITEM'". -->
     <Properties PropertyChange="IsoSystem" Filter="" />
</Model>
```

Isometric Generation

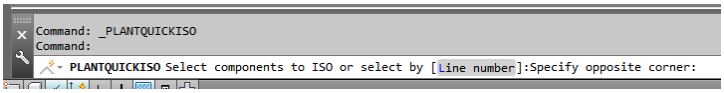
When a System Iso is generated from a signal line number, the Iso may be generated as either a Quick Iso or a Production Iso. However, when the System Iso inludes multiple line numbers, it can only be generated as a Quick Iso.

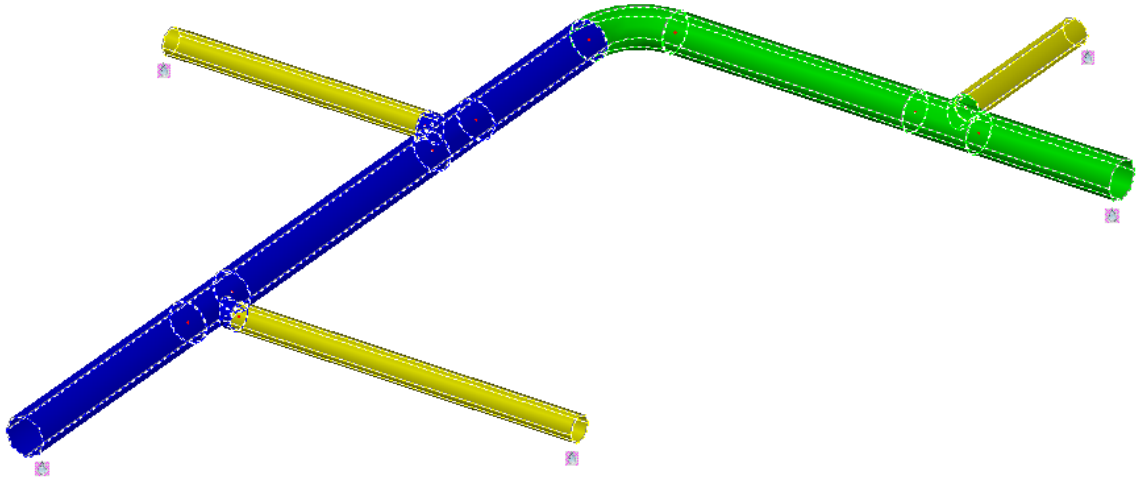
Once the lines have been selected, in the Advanced options window, the option “Split Iso when property changes” and all options below it must be cleared.



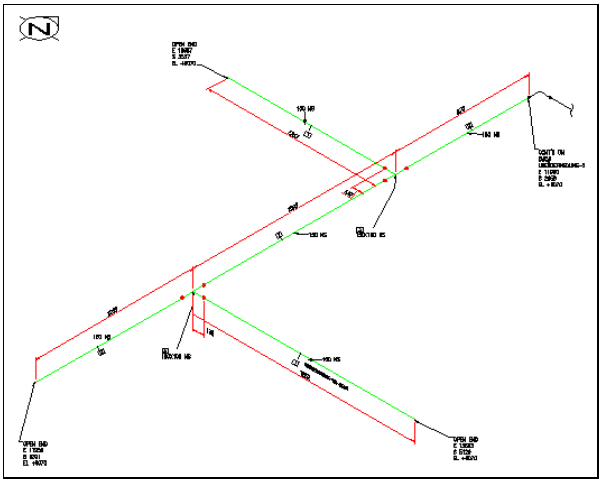
Example

In the example, the Quick Iso command has been used and the entire model selected using a right to left crossing window.

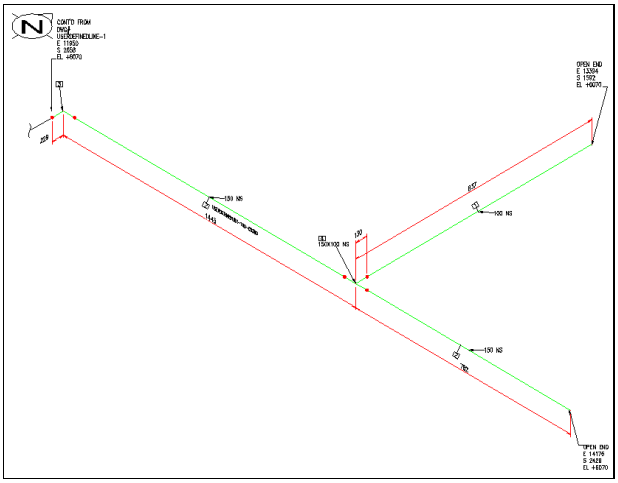




The resulting Iso's are shown below:



Iso 1



Iso 2