

## Advanced Isometric Settings - Layout Optimization

In AutoCAD Plant 3D 2014 Extension 2 the Isometric configuration (*IsoConfig.xml*) file has a new LayoutOptimization section that allows you to adjust the layout of Isometric drawing files. Enabling optimization allows for additional computing time to consider multiple solutions. The candidate solutions are generated and qualified using the settings in the new LayoutOptimization section.

New projects created with AutoCAD Plant 3D extension 2 have layout optimization enabled by default. To enable optimization in existing projects, you can create a new project to use as a template. Copy the <LayoutOptimization> section of the new *IsoConfig.xml* into your existing Iso Style.

**Note:** In AutoCAD Plant 3D extension 2 you must manually edit *IsoConfig.xml* to modify layout optimization settings. These settings are currently not available in Project Setup.

### LayoutOptimization

The *LayoutOptimization* element contains 3 sub-elements:

```
</TitleBlock>...</TitleBlock>
<!-- Layout optimization parameters -->
<LayoutOptimization>
    <DimensionOptimization TargetPercentage="0.25" Enabled="true" TimeLimit="300" DepthLimit="3" />
    <AnnotationOptimization Enabled="true" DesiredSeverity="10" TimeLimit="-1" TargetPercentage="25" Depth="2" ScaleFactor="30" LogDetails="0" />
    <SplitOptimization SheetTargetFitness="50" MaxComponents="100" MinComponents="25" Depth="3" TimeLimit="300" PreserveLoops="false"
        BranchLimit="3" />
</LayoutOptimization>
```

*AnnotationOptimization element:* This section controls annotation and dimension text placement. When annotations and dimension text are placed, the code generates multiple solutions and chooses the best one based on a quality metric. The section has the following attributes:

Attribute Name	Value	Description
Enabled	“true” or “false”	If true, the optimization will be performed. True by default
DesiredSeverity	Positive integer number	The quality of the annotation and dim text placement. The smaller the number, the better the expected quality and the longer the average computing time required. As a rule, below 10 is considered excellent quality and below 50 is acceptable quality.
Scale Factor	Positive number	Specifies the precision of annotation placement. A higher scale indicates better precision and longer the average computing time required. The default value is 30 for imperial projects and 1 for metric projects. As a rule, do not exceed 90 for Imperial projects or 3 for metric projects.

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TimeLimit	Positive number	Specifies how much time in seconds to spend searching different annotation layout solutions. The default value is -1 which means to search indefinitely.
TargetPercentage	Positive number	Specifies the percentage of layout improvement after which additional solutions are no longer considered. The default value of 25 specifies to stop generating additional solutions once a solution is found that improves by 25 percent.
Depth	1, 2, 3	Specifies how many solutions to consider. 1 – Minimal solutions, 3 – Maximum. The default is 2.
LogDetails	0,1,2,3	The level of annotation placement detail written to the log file. 0 – disabled. 3 – verbose. The default is 0.

*DimensionOptimization element:* This section specifies the optimization of the dimension lines. Candidate solutions are created with different dimension lines. A solution is then chosen based on the DesiredSeverity attribute in the AnnotationOptimization element.

Attribute Name	Value	Description
Enabled	“true” or “false”	If true, the optimization is performed. True by default
TargetPercentage	Positive number	Specifies the percentage of layout improvement after which additional solutions are no longer considered. The default value of 25.
TimeLimit	Positive number	Specifies the maximum number of seconds allowed to search layout solutions. The default value is 300.
DepthLimit	Positive number	Specified how many solutions to consider. 1 – Minimal solutions, 3 – Maximum. The default is 2.

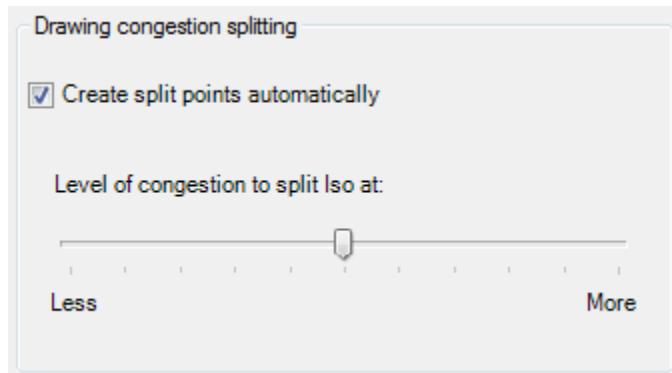
*SplitOptimization.* This section controls how the model is split automatically into multiple sheets during the congestion split.

Attribute Name	Value	Description
SheetTargetFitness	Positive number	The quality of the sheet. If the sheet layout severity exceeds this number, the sheet is preserved. Otherwise the Iso is split. The default value is 50. Lowering this number can result more sheets. Raising this number can result in fewer sheets.
MaxComponents	Positive number	The maximum number of components that may reside on a single sheet. If the number of components on the sheets exceeds this number the Iso is split regardless of the SheetTargetFitness value. Increasing this number together along with TargetSheetFitness may result in placing the entire model on one sheet. The default value is 100.
MinComponents	Positive number	The minimum number of components on a sheet. The optimization will try to avoid creating a sparse drawing. This setting is ignored if SheetTargetFitness cannot be met. The default value is 25.

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BranchLimit	Positive number	Specifies how many split points to try of the highest priority per model. The default value is 3.
Depth	Positive number	Specifies how many split solutions to generate. 3 is the by default.
TimeLimit	Positive number	Specifies the maximum number of seconds allowed to search layout solutions. The default value is 300.
PreserveLoops	True or False.	Places the loop on one sheet (true) or not (false). Loops may have a significant impact on time required. This value is ignored if TargetSheetFitness cannot be met. The default value is false.

*Congestion factor:* In Project Setup, Isometric SWD Settings, the Advanced Defaults have a Level of Congestion to Split Iso setting. This setting relates to SheetTargetFitness.



The Less and More slider setting applies to fitness values as follows:

Leftmost Less = SheetTargetFitness \* 0.5

Medium = SheetTargetFitness

Rightmost More = SheetTargetFitness \* 1.5

This means that the default SheetTargetFitness value ranges from 25 to 75. Note: If the default setting is already in the desired range, changing the Level of Congestion to Split Iso may not result in more or less sheets.