

```
using System;  
using System.Collections.Generic;  
using System.IO;  
using System.Xml.Linq;  
using combit.ListLabel13;  
using EnergySoftware.Common;  
using EnergySoftware.Properties;
```

```
namespace EnergySoftware.Report  
{  
    /// <summary>  
    /// The XMLFile with the project data is read out and the project report will  
    /// start.  
    /// In addition, the RTF printing of this class is realized.  
    /// Responsible: DON  
    /// </summary>  
    public class PrintClass  
    {  
        protected PrintClass()  
        {  
            ListLabelObj = new ListLabel();  
            ListLabelObj.LicensingInfo = _LizenceKey;  
  
            Rows = new List<ZeilenClass>();  
        }  
  
        #region public Methodes  
  
        /// <summary>  
        /// Singleton to produce the specialized class  
        /// </summary>
```

PV*SOL® premium 2018

Import of 3D Models

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Summary

With PV*SOL® premium 2018 it is possible for the first time to import own 3D models into the simulation environment. Below the file formats supported by PV*SOL® premium are introduced. Workarounds on how custom 3D models can be converted or exported in a supported format are described.

Supported File Formats

The following file formats can be imported into PV*SOL® premium:

Program / Format	Extension
Collada	.dae
Blender 3D	.blend
3ds Max 3DS	.3ds
3ds Max ASE	.ase
Wavefront Object	.obj
Stanford Polygon Library	.ply
LightWave	.lwo
Stereolithography	.stl
DirectX X	.x
Milkshape 3D	.ms3d

3D Models

The following describes which export settings should be considered when converting 3D models to a supported format.

SketchUp

SketchUp is a software for creating three-dimensional models and is available in the versions Make and Pro. The free SketchUp Make offers the possibility to export 3D models in *.dae format. Go to File -> Export -> 3D Model and select COLLADA (*.dae). Before exporting the file, open the options menu and select the following export options:

Triangulate All Faces
Export Texture Maps
Export Edges
Export Two-Sided Faces

<https://www.sketchup.com>

Blender

Blender is a free 3D graphics software for modeling, texturing and animating objects. PV*SOL® premium supports the *.blend file format, which is the native format of Blender files. Here are some recommendations to increase the performance of importing models into PV*SOL® premium:

Choice of Engine (Cycles Render / Blender Render) does not matter.
Remove light and camera objects from the scene.
Combine many individual objects to one object.

<https://www.blender.org/>

Photogrammetry

Photogrammetry involves various methods of measurement and evaluation methods in order to determine the spatial position or three-dimensional shape of an object from photographs and accurate measurement images. Below some tools for 3D modeling using photographs or drone recordings are presented.

Autodesk ReCap Pro

ReCap Pro is a proprietary software from the manufacturer Autodesk, which can create 3D point clouds from laser scans, as well as from video or image material from drones.

Price: See website

<https://www.autodesk.de/products/recap/overview>

Aspect 3D

With Aspect 3D, a 3D point cloud is created from image series, whose points are then connected to a 3D mesh (grid). The images are projected onto the resulting 3D model, resulting in photorealistic textures.

Price: See website

<http://aspect.arctron.de/>

Pix4Dmodel

Automatic processing of drone images to 3D models. Conventional drones without special cameras can be used for the recordings.

Price: See website

<https://pix4d.com/product/pix4dmodel/>

Agisoft

Agisoft is available in a Professional and Standard Edition. The Standard Edition is sufficient for the photogrammetric triangulation of image series to create 3D models.

Price: See website

<http://www.agisoft.com/>

Regard3D

Regard3D is a free open source software for the creation of 3D models from image series.

<http://www.regard3d.org/index.php>