Export of 3D models and scenes from SketchUp to VideoCAD

Version 2.5 Edition for VideoCAD4-VideoCAD9

Starting from version 9.1 VideoCAD offers convenient direct import of 3D models without using SketchUP.
You can import 3D models from files: *.dxf, *.3ds, *.ase (3D Studio max), *.dae, *.xml (Collada), *.obj, *.stl and more than twenty 3D formats. You can download 3D models in Collada format (*.dae) from free SketchUP 3D Warehouse library (https://3dwarehouse.sketchup.com/), use 3DS Max models from designer's libraries, 3D models from game model libraries, create 3D models in SketchUP, save them in *.dae and import in VideoCAD.

See more: http://www.cctvcad.com/videocad_help/index.html?prim_import3dmodels.htm

Any 3D models and scenes which can be opened in **SketchUp** can be added to the VideoCAD library. Lots of 3D models can be downloaded from Internet for free.
https://3dwarehouse.sketchup.com/
You can also create models and scenes in **SketchUp** yourself.

To open and edit the 3D models, to create and publish your own 3D models you need **SketchUp** 3D editor http://www.sketchup.com

There are 2 versions of **SketchUp**:

- the free version that allows to work with 3D models, create scenes, but does not allow exporting these models and scenes into other CAD formats.
- the paid version **SketchUp Pro**, allowing to export models and scenes into other CAD formats and import 3D models from many CAD formats: AutoCAD (*.dxf, *.dwg), 3DS Files (*.3ds), COLLADA files (*.dae), DEM (*.dem, *.ddf), IFS files, Google Earth files.

For importing 3D models from free online 3D Warehouse library to VideoCAD the free SketchUp version is suitable.

But if you need to import your 3D models in AutoCAD formats (*.dxf, *.dwg), you will need a paid version.

You can download free **SketchUP Make** here https://www.sketchup.com/download/all or here https://help.sketchup.com/en/article/60107.

This manual presents a step-by-step description of insertion a new 3D model into the VideoCAD library.
You don't have to be a proficient user of **SketchUp** provided you have a ready-made model. You might need supplemental information, though.

Order of work:

1. Installing the VideoCAD plugin into SketchUp

1.1 Download and install **SketchUp** http://www.sketchup.com
*You can download free **SketchUP Make** here https://www.sketchup.com/download/all or here https://help.sketchup.com/en/article/60107.*

1.2.1 For **SketchUp 2016** and newer add the plugin as Extension.
Select **Main menu of SketchUP>Window>Extension manager>Install extension**
Then open **videocad.rbz** from the **files** folder in this archive.

1.2.2 For older SketchUp versions copy **videocad.rbs** script file from the **files** folder in this archive to **/ Plugins /** folder in the installation directory of **SketchUp**.

Default directories for installing plugins:

C:\Users\YOUR USERNAME\AppData\Roaming\SketchUp\SketchUp [n]\SketchUp\Plugins

SketchUp 2013: *C:\Program Files\SketchUp\SketchUp [n]\Plugins.*

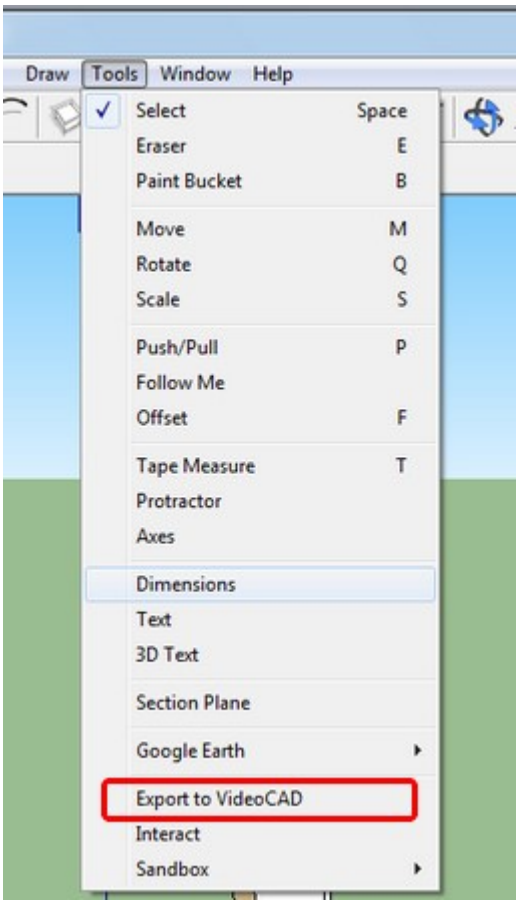
SketchUp 8 and older: *C:\Program Files\Google\Google SketchUp [n]\Plugins.*

[n]- number of SketchUP version

Please see the actual information of plugin/extension installation in the last SketchUP version on http://www.sketchup.com

1.3 Restart **SketchUp.**

In the main menu of SketchUp, **Tools** submenu, the new **Export to VideoCAD** item must appear.



2. Searching a necessary 3D model in the 3D Warehouse

2.1 Launch **SketchUp**.

2.2 Choose in the **SketchUp** Main menu: **File>New**. A new clear file will be created.

2.3 Choose in the **SketchUp** Main menu**: File>3D Warehouse>Get models**. The 3D Warehouse site will be opened.

To access to the library Internet connection is needed.
If you cannot get access to the 3D Warehouse via SketchUP menu, please find and download any 3D model from the 3D Warehouse directly https://3dwarehouse.sketchup.com/
Then open the downloaded 3D model file in SketchUP.

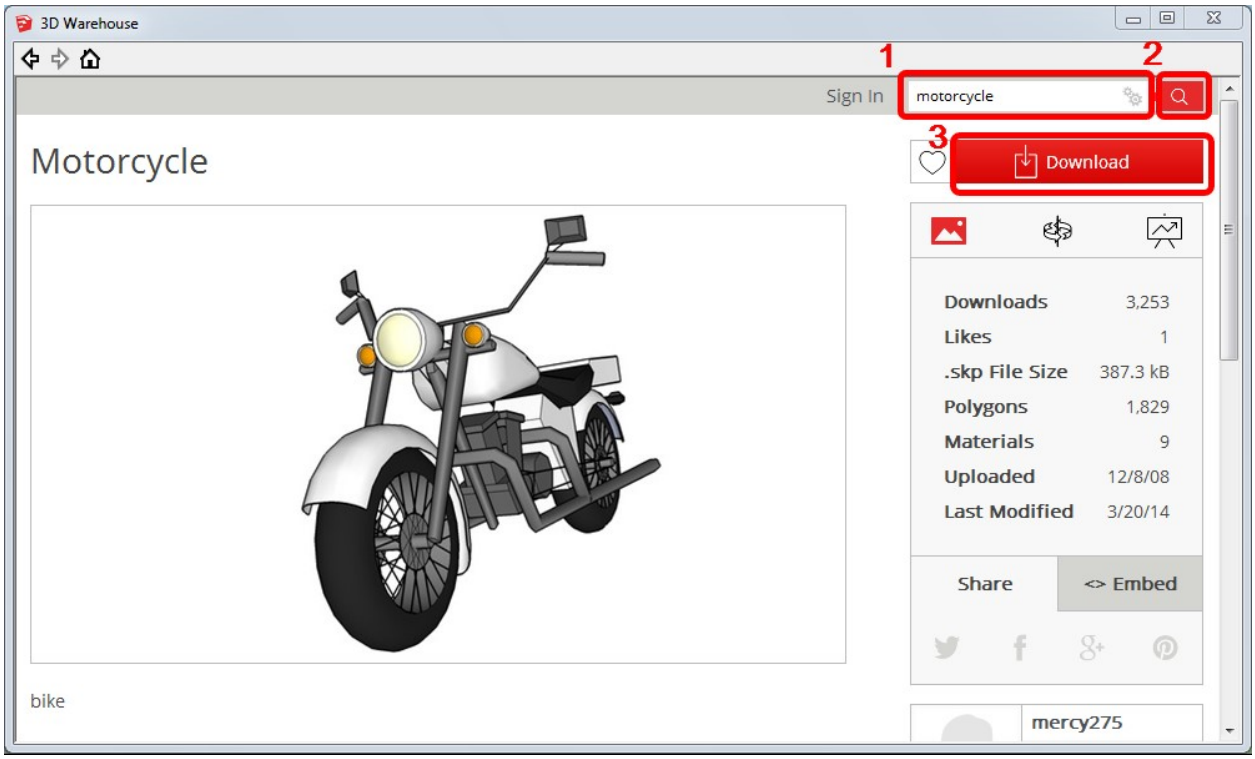
2.4 Enter the name of an object whose model you are looking for (in English) into the search box and click **Search**  .

2.5 In the appeared list of 3D models, select the most appropriate model and click on it.

In order to improve performance, it is recommended to choose a 3D model without excessive amount of detail with minimal amount of polygons, preferably without textures.

2.6 In appeared page with the image of the model , click **Download**.

When you are asked **Load this directly into your SketchUp model**? click **Yes**.



2.7 The selected model will appear in the SketchUp window. Move the model to the origin of coordinates.

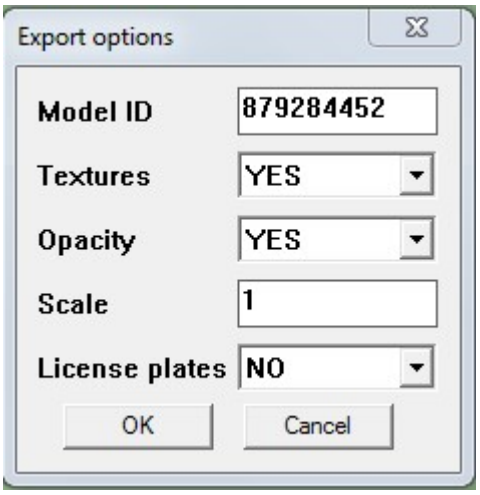
Edit and scale the 3D model if necessary. See SketchUp documentation for detail.

3. Export chosen 3D model into VideoCAD file format

3.1 Select a model (models) on the scene if you don't wish to export the scene as a whole. Use the **Select**  tool.

3.2 Choose in the **SketchUp** Main menu:**Tools>Export to VideoCAD**.

3.3 The **Export options** box will appear.



In the **Model ID** box a random number will be generated. You can leave this number without changes.

*VideoCAD identifies 3D models only by **ID**, not by names. All models in VideoCAD must have different **IDs**. Models with equal **IDs** will lead to errors in displaying them. It is recommended to use **ID** not less than 100.*

Attention! If the 3D model is designed for VideoCAD7 or previous version of VideoCAD, then in the Opacity and Textures boxes NO must be selected, otherwise errors may occur when working with such model in VideoCAD7 or previous versions of VideoCAD.

Select **YES** in the **Textures** box if you want to export the 3D model with textures (for VideoCAD8 and latest versions).

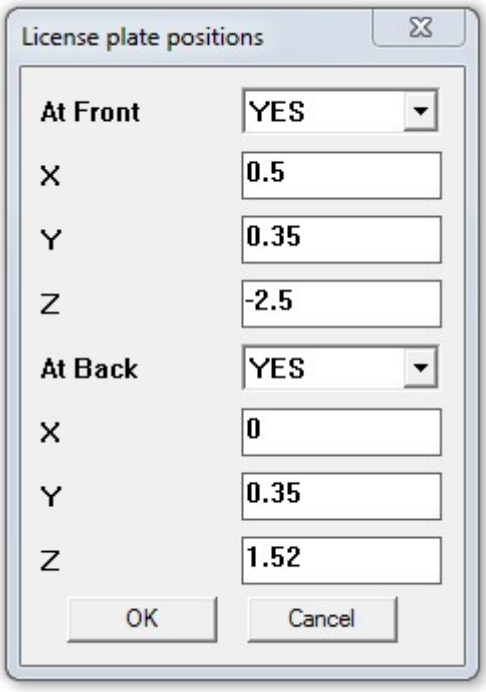
*Texture files will be saved into a folder **<model name>_textures** in the same directory where the file of the 3D model **<model name>.vcm** is saved. When you move the saved model file, the folder with textures must be transferred together with the main file.*

Select **YES** in the **Opacity** box if you want to export the 3D model with transparency elements (for VideoCAD8 and latest versions).

In the **Scale** box, you can specify scale of exported 3D model.

If your model is a **car** and you want it to be displayed with **license plates** – select **YES** in the **License plates** box. Having another model not a car leave **NO** in the **License plates** box.

Click **OK**.



3.4 If you have chosen **YES** in the **License plates** box then the **License plate positions** box will appear. If you have chosen **NO** then a dialog box of saving model will appear, see **Step 3.5**

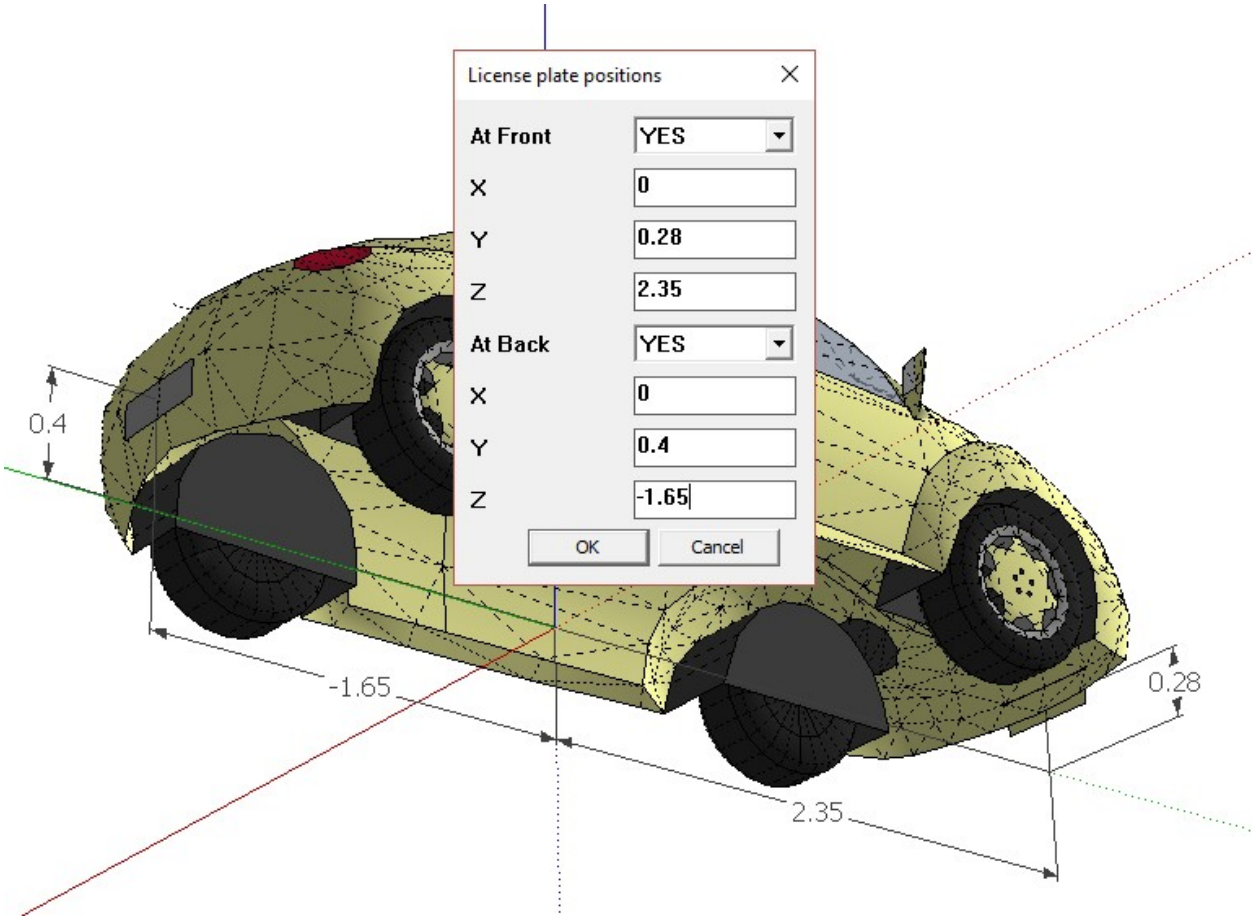
In the **License plate positions** box choose **YES** in the boxes:

- **At Front** – to display the front license plate
- **At Back** – to display the back license plate

Insert **coordinates of the front and back license plates**

into **X,Y,Z** boxes **in meters relative to the origin of coordinates in SketchUp.**

Perhaps you will need several attempts to select right positions of the License plates.



Click **OK**.

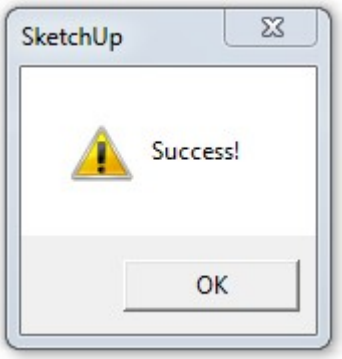
*In VideoCAD9, in the **3D models** window, **Sizes** tab, you can add license plates and set their location for already imported 3D models.*

3.5 In the **vcm file location** dialog, enter the file name with ***.vcm** extension and click **Save**.

The path of saving must not contain non-latin characters, model's filename must begin from a letter and must not contain spaces!

The export operation can take some time depending on complexity of the model.

When the operation will be finished, the **Success!** message will appear.



4. Installing the new model into VideoCAD

Installation procedures of 3D models into VideoCAD8 and previous VideoCAD versions are different. Starting from VideoCAD8 the installation has become faster and more convenient.

4.1 Installing the new model into VideoCAD8 and next versions

4.1.1 In VideoCAD Main menu choose **3D models>Add 3D model**.
Open the obtained *.vcm. file.
*If the loading 3D model has textures, in the same directory where the *.vcm file is located, a folder with textures must be located. The folder must be named <model name> _textures. Plugin of export from SketchUP automatically creates the folder with textures in the save directory of the model.*

4.1.2 After opening the file, the 3D Models window will appear, the 3D model will be loaded in the window. Projection of the 3D model will be displayed in the 3D Models window.

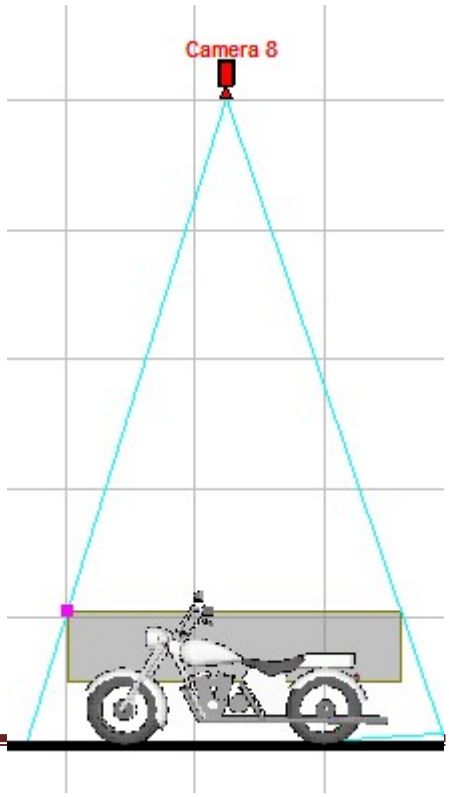
4.1.3 Stretch the 3D Models window to adjust resolution of the projection.
To improve performance, it is recommended to set the minimum required resolution (minimum size of the 3D Models window).

4.1.4 Then click on the **Save projection** button and close the 3D Models window. After this, the 3D model will appear in the VideoCAD menus and can be placed in the Graphic area.
For more details of the 3D Models window please see VideoCAD help system.

4.2 Installing the new model into VideoCAD7 and older versions

4.2.1 Copy the ***.vcm** file of your model to **/Models/** folder in VideoCAD installation directory.

4.2.2 Launch VideoCAD. The new model will appear in the **Constractions>3D model** menu. You can place it, and watch it through video cameras. Though you will not have the image of the model in the Graphics window. It will look like a gray rectangle instead.



4.2.3 Place the model and a camera next to it. Direct the camera downwards at the model. In **3D window main menu** choose **Image>Save as *.bmp** and save the image into the file.

The model image size in pixels must be minimum-acceptable not to slow-down redrawing speed.

4.2.4 Open the obtained image in **Paint** or another graphics editor and cut it out exactly along the borders of 3D model projection. Fill the free gaps with **Teal** color **(**R=0 G=128 B=128). The **Teal** color will be transparent when displaying the model projections.

4.2.5 Rename the ***.bmp** file with the same name as the ***.vcm** model file and copy it to /**Models**/ folder in VideoCAD installation directory.

4.2.6 If you are going to place model not only in the horizontal projection, but also in the vertical projection (it is possible since VideoCAD 6), then make side view image of the model in the same way as you have made the image of model view from above (items **4.1.3, 4.1.4**).
Rename the obtained ***.bmp** file with the same name as the ***.vcm** model file but with the '**_v**' ending and copy it to **/Models/** folder in VideoCAD installation directory.

4.2.7 Launch VideoCAD. The new model is ready for use.

5. Artifacts of imported 3D models

Some wrong details of 3D models are not visible in SketchUP, but show up after exporting as artifacts.
The artifacts can be eliminated by examining the properties of incorrectly imported elements and then correcting them in SketchUP before exporting. With the help of SketchUP tools almost all 3D models can be imported to VideoCAD.

5.1 Many artifacts disappear if you explode the model before importing.

5.1.1 Select the **Select**  tool.
5.1.2 Select the model by capturing it by the selection frame.
5.1.3 Right click on the model. In the pop-up menu, select **Explode**.
5.1.4 Repeat 5.1.2 and 5.1.3 while the **Explode** item is available in the pop-up menu.

5.2. Color distortion or "holes in the model" are corrected by assigning to the outer side of all faces the material with the desired color. If the color is already assigned to the outside face, try reassigning the color. Replace black color by gray.
In some models, the inner side of faces looks outward. You can reverse the faces using the Reverse Faces tool. Instead of reversing faces, you can color both sides of polygons by the same color.

5.3. If the top of the model is not directed upwards, then you need to rotate the model in SketchUP so that the blue axis is directed upwards of the model. It is recommended to rotate the model so that the green axis is pointing back to the model.

5.4 "Spots" on transparent polygons disappear if each glass is combined into a separate group with the Make Group tool before exporting.

5.5 Texture losses are caused by non-Latin characters in file names of textures, texture resolution is too high, or unreadable texture file formats.
The resolution can be reduced in Paint. You can read unreadable graphic formats and convert them to jpg using the free Xnview program. After the conversion, you need to open the * .vcm file in a text editor and correct all old texture file names to new ones.

This manual is accompanied by the sample file **motorcycle.skp** and resulted files of the motorcicle model **motorcycle.vcm, motorcycle.bmp, motorcycle_v.bmp**. You can find these files in the **files** folder.

Wishing you success in using VideoCAD!

Please, do not hesitate to ask for more information and technical support support@cctvcad.com.