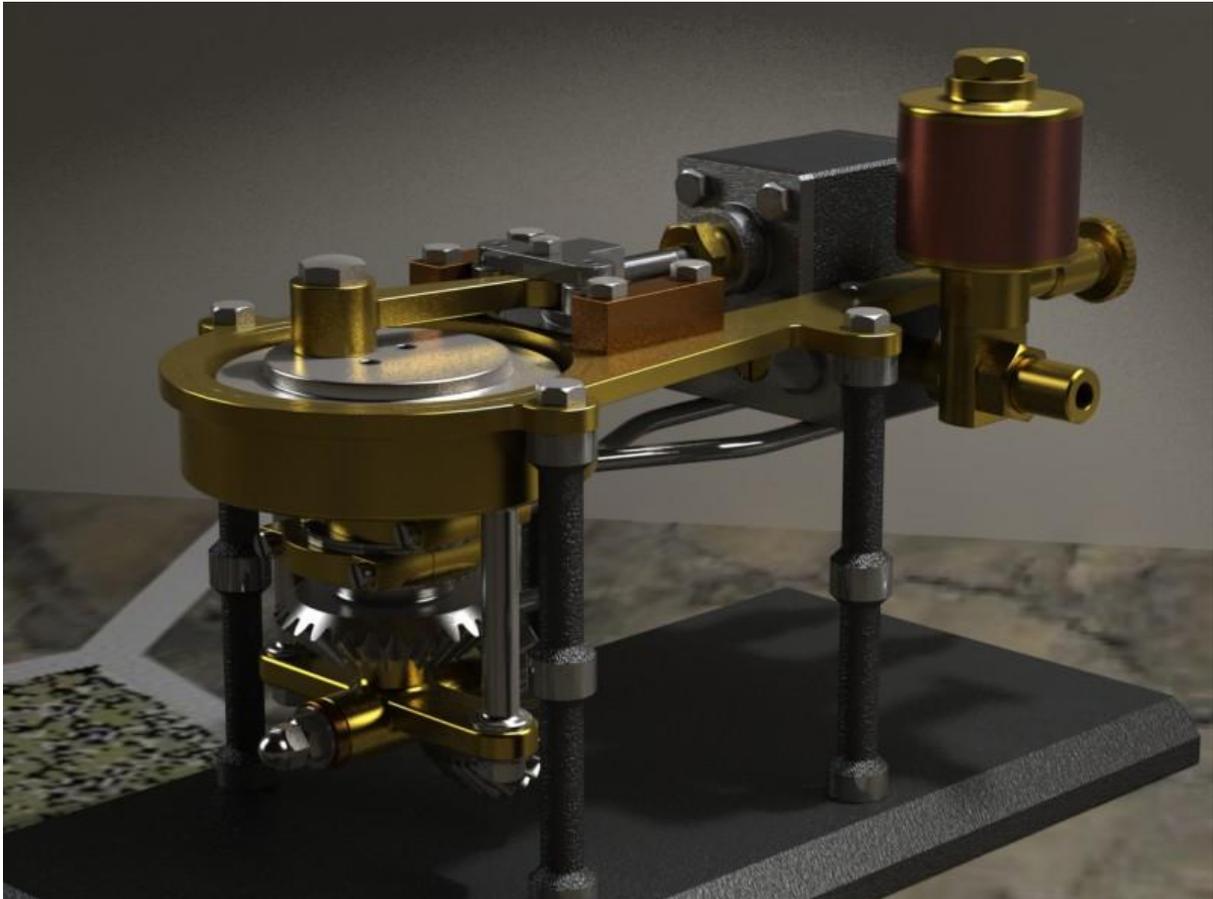


# Render Tutorial

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There are many aspects to rendering. Most of these are best when they are unnoticed. The overall task is to combine a variety of subtle effects to create an image that looks like a photograph of a real object.

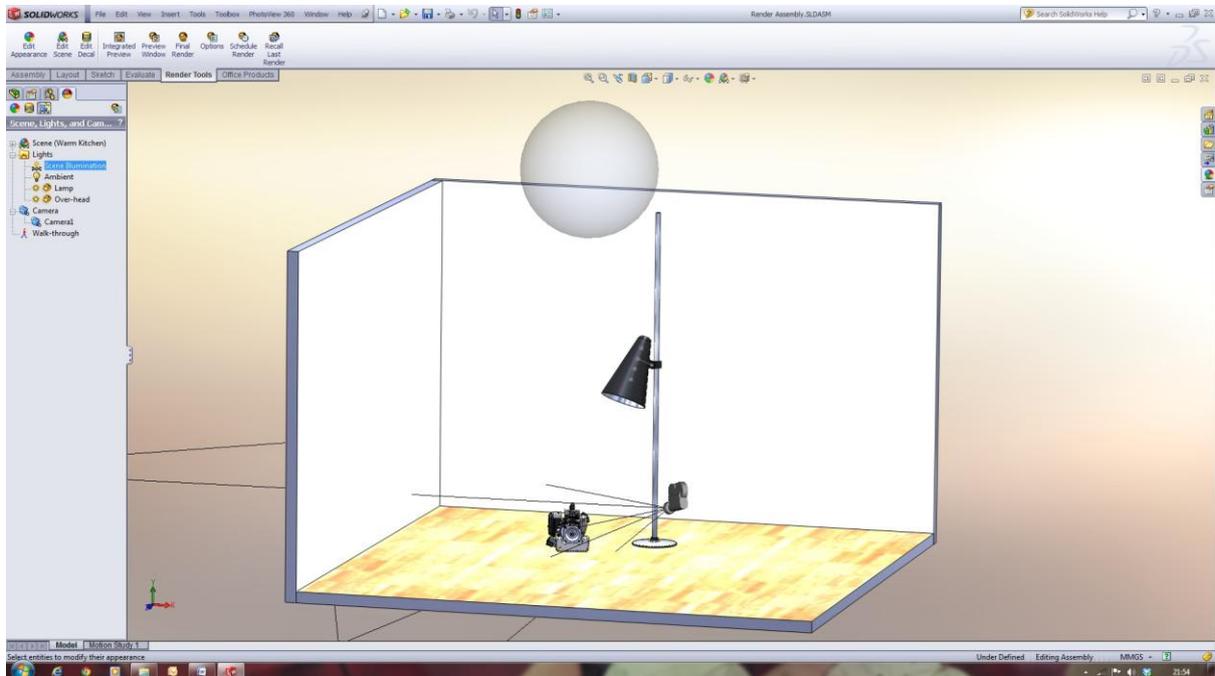


**Appearances:** One of the most important things to do is to apply appropriate material finishes (or appearances) to each part.

- A 'polished' metal appearance often looks too reflective and unrealistic. For metal, I find a 'satin' finish looks most like a real polished one.
- 'Cast' metal finishes are also too reflective. I've never seen a highly reflective rough cast finish in reality; they tend to be quite matt so turn down the 'specular amount' and 'reflection amount'.
- Set the scale of the texture especially if more than one part has the same finish. SolidWorks will apply a texture at different scales to different parts so for consistency they need to be set manually.
- A 'high gloss plastic' finish tends to be too reflective. A 'medium gloss plastic' tends to give a more realistic representation of shiny plastic. Also check the 'blurred reflections' box otherwise you'll end up with a mirror finish.

- A textured plastic finish is good for textured plastic and textured paint. Remember to set the scale of the texture.
- Semi-transparent appearances take forever to render. You may want to avoid these.

**Model:** Including small fillets or chamfers on all the edges 'catch the light' and can make the item look more realistic.



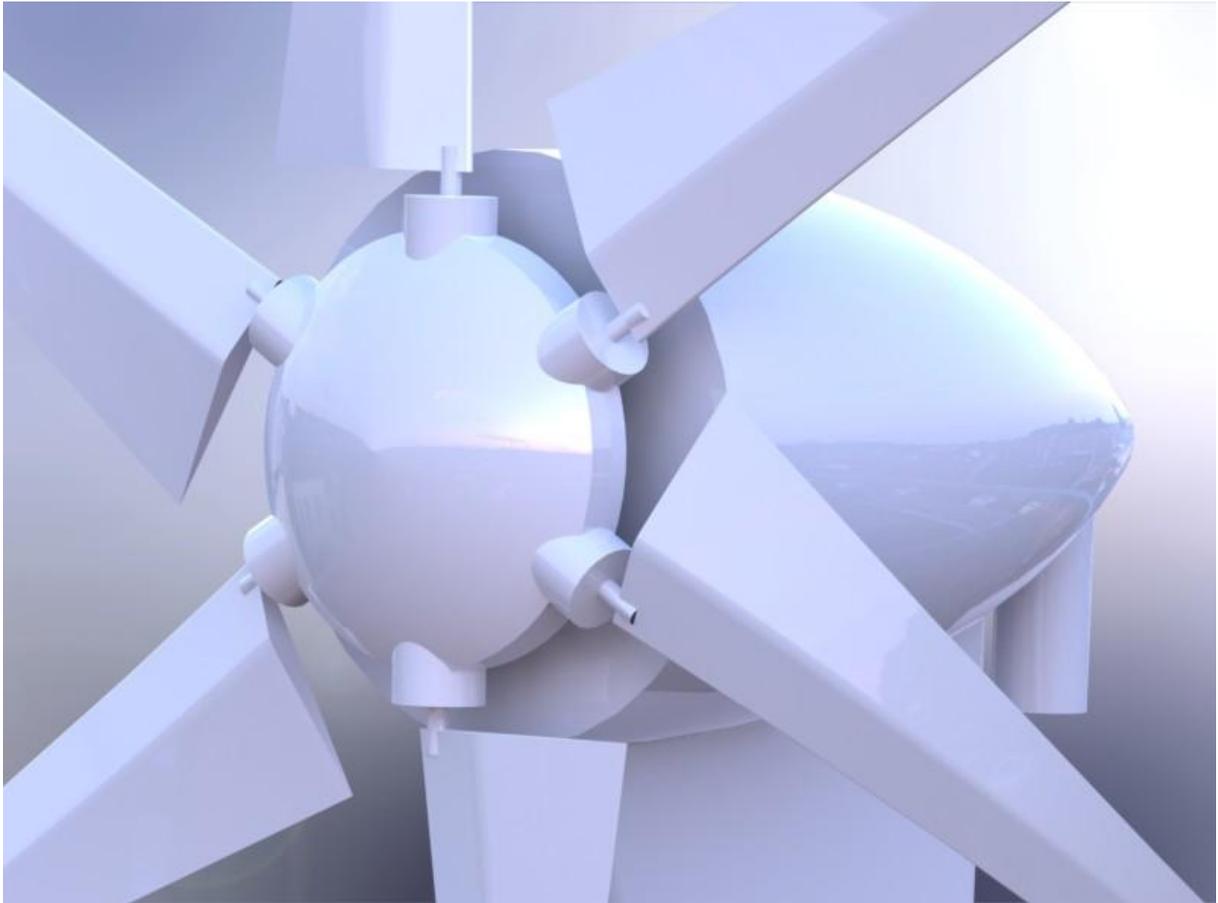
**Setting the scene:** Consider the scene as a photography task. Imagine the subject as a real object with your task to photograph it. What background would you choose? How would you arrange the lighting? Where would you position the camera? How would you frame the shot?

- Relying on a background image often fails to work. The subject can look as though it does not belong to it. Modelling the background ensures consistency in lighting, shadows, etc. This needn't be elaborate, it could be as simple as a floor and a wall.
- Pose the subject. Usually this means no more than placing the subject in the scene and turning it to show its best view. You can also place several instances of the subject in the scene to show it from different angles. The subject can also be shown in a partially or fully dismantled state.

**Lighting:** Don't have too many lights. The more lights you have the less the shadows will be. For dramatic effect, I like to use only one main light above and to the side of the subject with another more ambient light to illuminate the shadows.

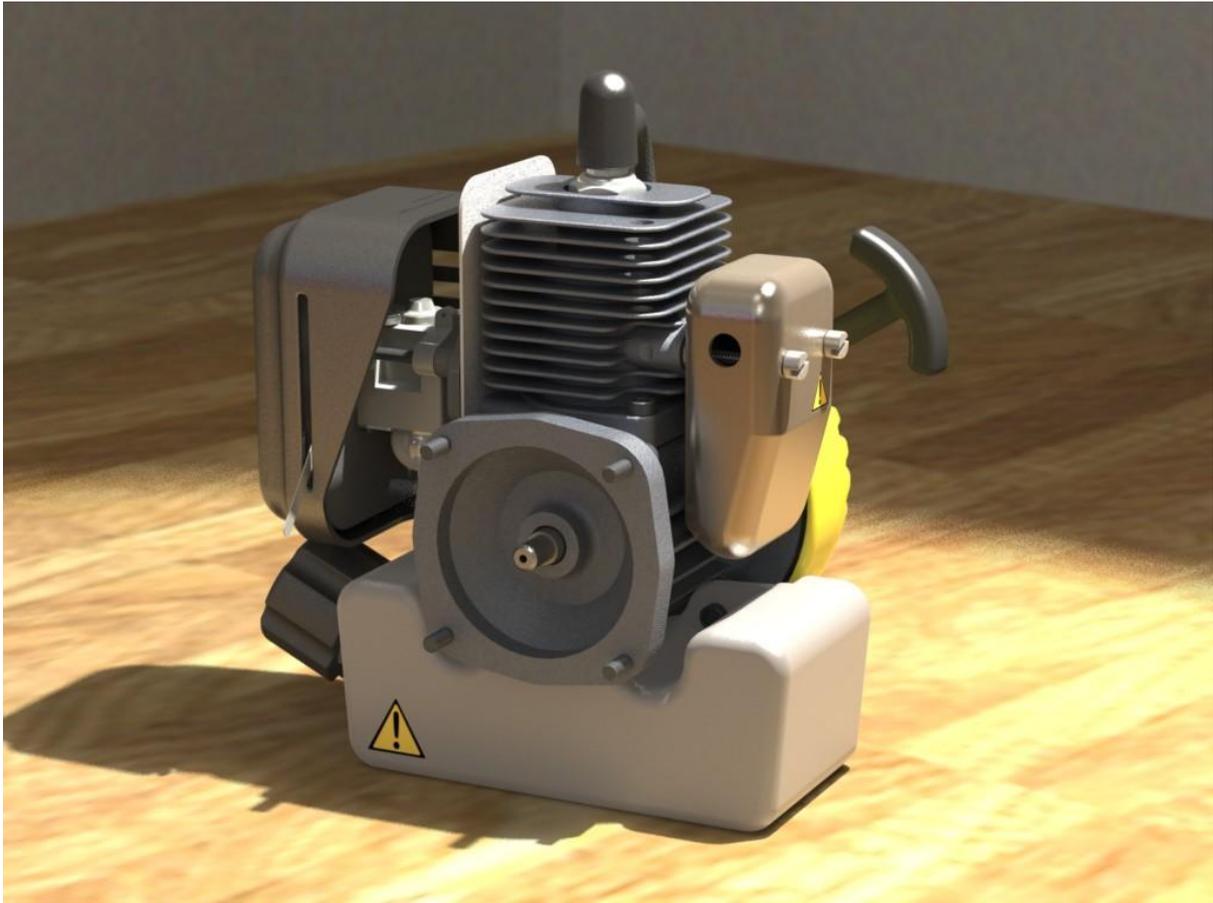
- I like to use a virtual lamp for renders. This is made up of a shade around a point light. The effect is to put the subject in a 'pool' of light with the surrounding background in shadow.





**Camera:** Use the camera option to position the point of view and set the view angle.

- Avoid exaggerated perspective (this only works when the subject is as large as a building with the viewpoint close to it).
- Use the depth of field option to give a limited range of focus on the subject. Putting the background out of focus will draw attention to the subject and contribute to the impression of depth.
- Frame the shot: The usual practice is to show the entire object with a little space around it. For creative effect, you do not have to do this. The subject can be 'cropped', excluding some of its extremities, or the render can show only a portion of the subject.



**Render:**

- Set the quality to maximum for the final render.
- Unless you intend to print out the final image, you do not need to specify a high resolution, for viewing on a screen, 800x600 is usually sufficient.
- Use the Preview window to perform a quick render to check everything. Consider the results, then go back and change the part appearances and the scene lighting. Do another preview render. Repeat this until you are satisfied with the result.
- Do the full render. This will be more accurate and detailed than the preview so it may reveal flaws that were previously unnoticed. As before, make changes and then do additional renders until you are satisfied.