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Introduction to 3D CAD

A Step-by-Step Tutorial For Beginners on How To Construct A 3D Vase

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Presentation Outline

- Aim of Exercise
- Preparation
- Try it out !
- Conclusions

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Aim of Exercise

- The aim of this simple exercise is to show users totally new to CAD on the concept of how a 3D model can be generated and manipulated. In this exercise, you will create a 3D Vase.
- No previous CAD experience is required;
- The overall aim is to motivate users on the benefits of CAD and to thus learn more;

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Preparation

- For this exercise, you will need to have an evaluation copy of AutoCAD 2005 or 2006 or 2007 installed on your PC. The interface differs slightly.
- Once the software is installed please load the application.

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Try It Out #1

- For this exercise, you have been a basic drawing *eucad_3d_teaser.dwg* which we will use for this exercise. Copy this file onto your *desktop*.
- But first, let us explain a bit the AutoCAD interface (in this example AutoCAD 2005);

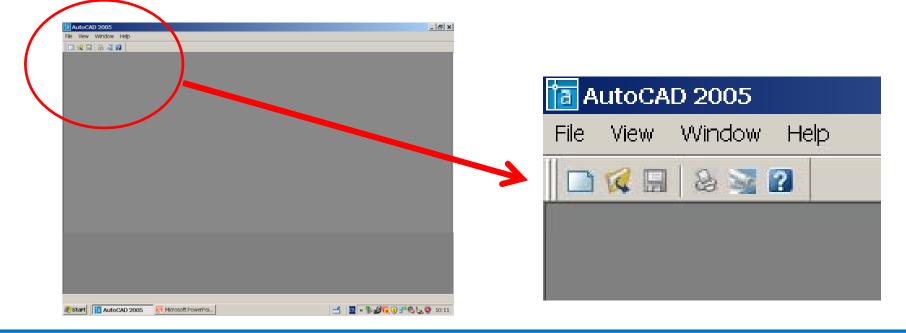
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Try It Out #2

Once AutoCAD 2005 is loaded you should get the following screen:



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Try It Out #3

- Use the File pop-down menu to select and load the drawing supplied called *eucad_3d_teaser.dwg* previously saved on your desktop.
- Press **OPEN** to confirm loading this drawing.

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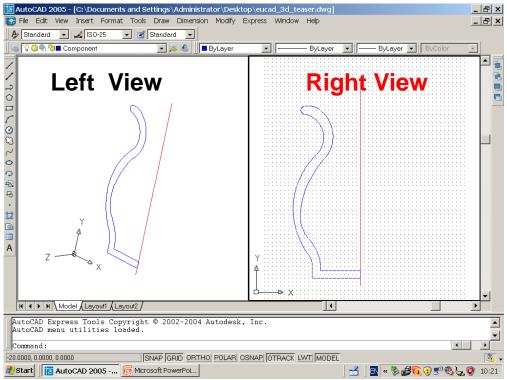
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Try It Out #4

- Once loaded, you should get this working environment. In this exercise, you will work with the Vertical View on the *Right*.
- The *Left View* will be used to show you the resulting 3D model.

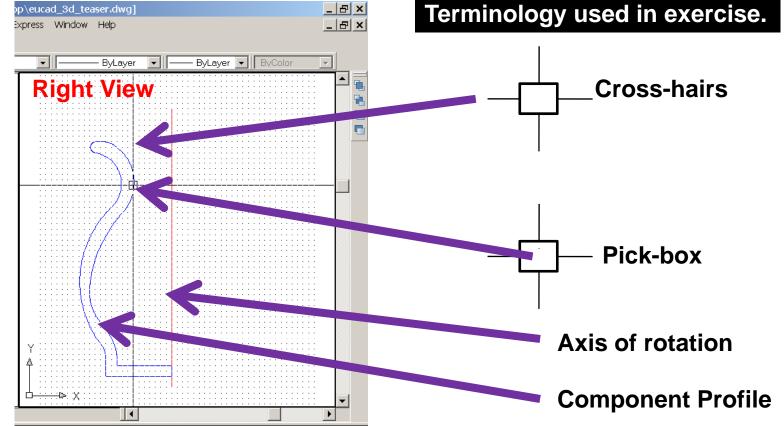


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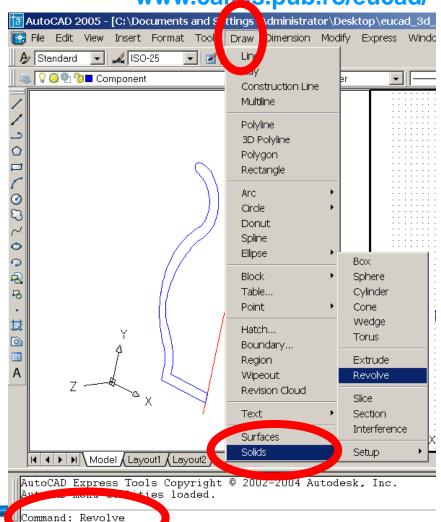




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Try It Out #6

- The concept on which this exercise is based is that we will be rotating a component profile (the blue part) around a pre-specified Axis of Rotation (the read line) using a 3D command called REVOLVE.
- Revolve is found in the *Draw* popdown menu under *Solids* or else, depending on which AutoCAD version you have, you can type it in the *Command* prompt area and press enter.



o-dimensional object about an axis: REVOLVE

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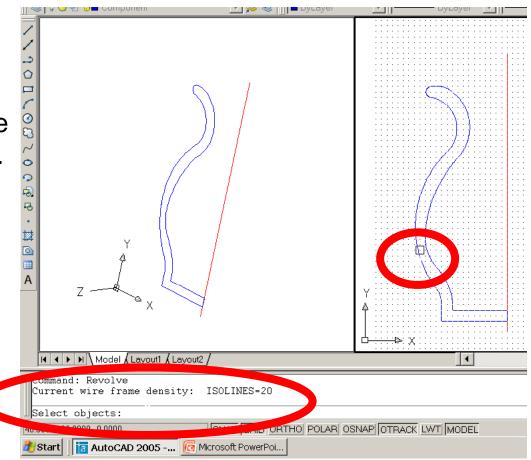
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Try It Out #7

- Once *REVOLVE* is activated, in the Command prompt area, you will see the message to *Select Objects*.
- Do so by moving the *pick-up box* in the right window, until it is over the *blue profile*, pressing the *left mouse button* to do so.
 When you do it will say 1 found and *Select Objects* again. At this stage, just press *Enter/Return*.



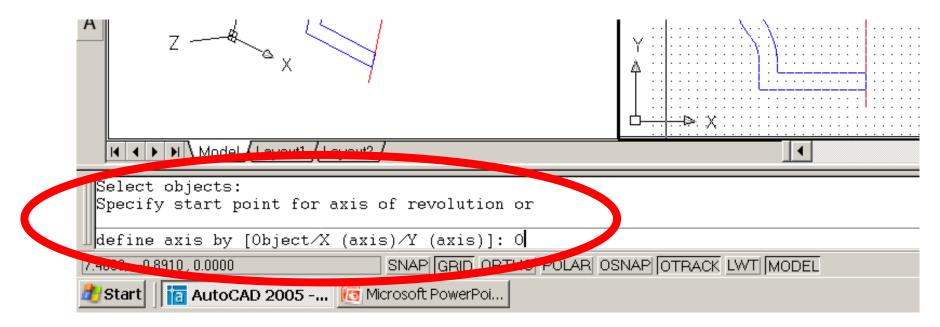
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Try It Out #8

 At this stage, you will be asked to select the axis of rotation by a number of options. In you case select Object by typing O and press Enter/Return.



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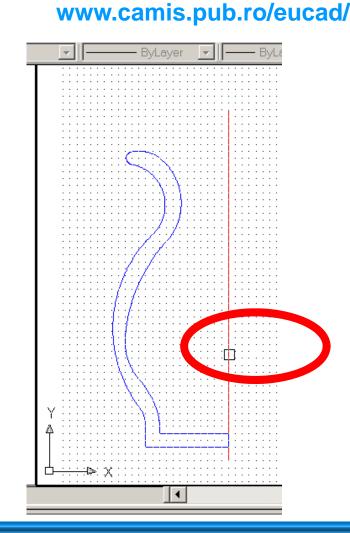
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Try It Out #9

- At this stage, you will be asked to select the object ie the line which will be used as axis of rotation. In your case, move the pick-box to anywhere on the red line and press the left mouse button.
- For angle of rotation, enter the value
 360 and press Enter/Return.
- Once you do so, you should get the result shown in the next slide.

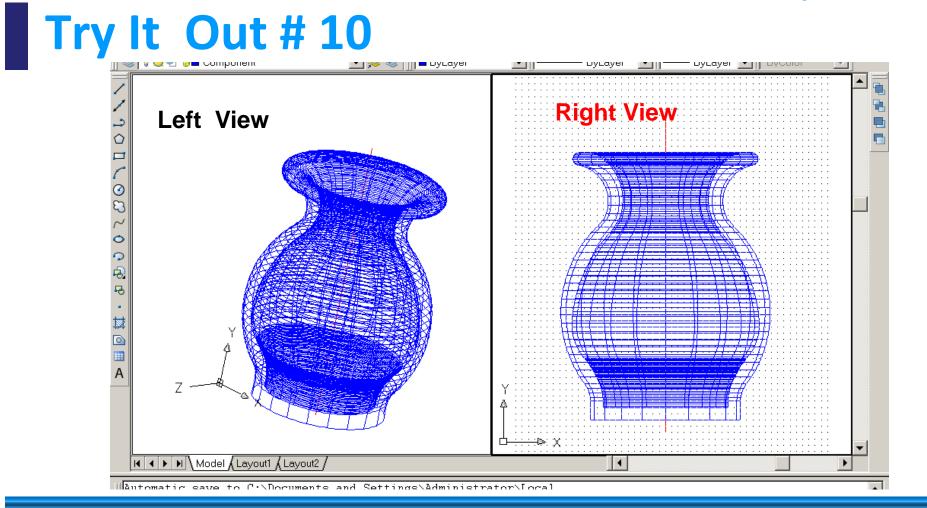


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made a 3D vase.

Try It Out #11

Congratulations! You have

You can now *manipulate*

LEFT VIEW and click

how you view your model.

From the **VIEW** pop-down

instance choose **HIDDEN**.

Uncover the secrets of designing better products, faster

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AutoCAD 2005 - [C:\Documents and Settings\Administrator\Desktop\eucad_3d_teaser.dv 🙀 File Edit | Vjew Insert Format Tools Draw Dimension Modify Express Window Help Redraw A Standard Standard -Regen S 🔘 🕐 🖉 🔻 🛸 🍕 📕 🗖 ByLayer -ByL Regen All Zoom Left View Pan Aerial View \bigcirc Clean Screen Ctrl+0 Viewports ی دع Named Views... Move the cross-hairs into the **3D Views** 3D Orbit O Hide. **଼** କ୍ରି କ Shade anywhere (press left-button). Render Display Toolbars... 霴 menu, select SHADE and for ٥ I I I I Model & Layout1 & Layout2

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Try also Gouraud.

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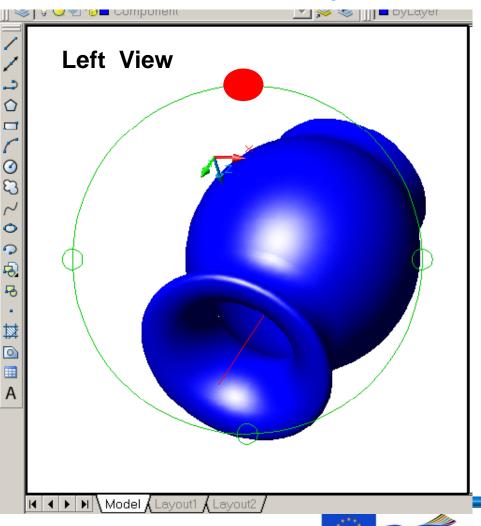




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Try It Out # 12

- You can also manipulate from where you view your model. Move the cross-hairs into the LEFT VIEW and click anywhere (press left-button).
- From the **VIEW** pop-down menu, select **3D-ORBIT.**
- Go on for instance the top small circle and keep on pressing the left mouse button whilst moving up, down, left or right.



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Conclusion

- In this exercise you have been given a profile.
- You can also generate any other profile to repeat the exercise.
- To generate a profile, use the PLINE command. See AutoCAD's help for PLINE details.

Take Home Message:

Do not be afraid to experiment with 3D CAD. For help contact the euCAD consortium.

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