Introduction

Overview

Welcome to the SurfaceWorks tutorials. If you are coming to SurfaceWorks as a mechanical CAD user, you'll be entering a new world, because surface modeling and solid modeling have somewhat different approaches or styles (for details, see "Basic Concepts" in the User's Guide). Therefore, the focus of these tutorials is two-fold:

- To introduce you to specific SurfaceWorks functions and entities

- To help you become comfortable working in the surface modeling style

The first lesson introduces you to the new user interface and some of its features. In the second lesson, we will build a simple model to demonstrate some basic SurfaceWorks methods. Then we'll move on to acquainting you with the wealth of SurfaceWorks entities. In later lessons, we will concentrate on creating and modifying somewhat more complex models.

To make the most of your tutorial experience, we recommend you give yourself plenty of time, so you don't feel the need to rush. You can, of course, stop part way through any of them.

And don't worry about trying to understand every last detail at each step. As you work through the guided tour and get more of a feel for SurfaceWorks, you'll find that concepts and techniques will become familiar and clear.

We recommend that you read "Basic Concepts" (in the User's Guide or online help) before you launch into the tutorials.

Using the Online Tutorials

For those of you who would like to run the tutorials from online (rather than printed) instructions, you can open the online file in either of two ways:

- On the Windows task bar, choose Start>Programs>AeroHydro>SurfaceWorks for SolidWorks© Tutorials.

- In Windows Explorer, go to the \Integrated Tutorials folder and double-click on the file SDWIntegTuts.chm.

Size and arrange the tutorial windows to suit your needs.

To follow the tutorial sequence:

1   On the Contents tab, double-click a tutorial book to open it (it is intended that you should follow the tutorials in numerical sequence).

2   Double-click the first topic in the tutorial.

3   Follow this topic to its end. There will be a vertical scroll bar at the right of the window if the topic is longer than the window — use it to get to the end of the topic.

4   Click the [sailboat button] button to move on to the next topic in the tutorial sequence.

5   Repeat steps 3 and 4 to the end of each tutorial.

6   To move on to another tutorial, just click [sailboat button] again, or go back to the contents and choose the next tutorial from there.

Taking a Break

Some of the tutorials are quite long and you may not want to tackle them at a single sitting.

If you need to take a break:

1   Save your work:

When you first save the file from SurfaceWorks, use **File>Save**, then exit SurfaceWorks. In SolidWorks, use **File>Save As** and **be sure to specify a new name**. Saving the file directly will overwrite the tutorial. If you have already given your work file a name different from the distributed filename, just **File>Save**.

2   To resume, open your saved file, then check in the tutorial to see how the filters, nametags, and orthogonal dragging mode should be set for continuing.

File and folder locations

The default folder for loading your software is C:\Program Files\AeroHydro\ SurfaceWorks. In this folder are loaded all of the files needed to run SurfaceWorks. Under this folder are sub-folders for Tutorials, Examples and Utilities. Because you are free to load SurfaceWorks in another folder which you name, we will refer to the location of certain files as, for example, \Integrated Tutorials. This means they are found in the Tutorials sub-folder located wherever you have loaded SurfaceWorks.

If Your Screen Doesn't Match Our Instructions

If at any time during the process what you see on your screen looks very odd or doesn't seem to match what we write about it, don't dismay. You may have done

something as simple as clicking the **View>Left** button instead of the **View>Right**

 one. First, check back in the tutorial and be sure you are looking from the same viewpoint (including perspective/orthographic). If that's as should be, you'll need to check your model (against the tutorial sequences and/or against one of our distribution files).

For the longer tutorials, we have included some intermediate model files with your SurfaceWorks distribution for along-the-way assistance. Periodically during the tutorial, we note where they fit in, e.g. "This should match our distribution model TANGENT2.sldprt". These files are located in the \Integrated Tutorials folder.

There are 3 options for proceeding from an apparent tangle. You can:

- **Start over again at the beginning**.

- **Undo until things look right**, then proceed forward again from that point.

- **Use one of our distribution model files** to continue the tutorial:

    1   Look back in the tutorial and find the most recent mention of a distribution file.

    2   Use **File>Open** to open the distribution model, from \Integrated Tutorials.

    3   Immediately **File>Save As** and specify a different filename so you won't overwrite the distribution file by mistake.

    4   You may need to look back in the tutorial and reset some settings to what they would have been if you were proceeding with your own model:

    - Viewpoint (standard views; perspective; etc.)
    - The Selection Set
    - Filters (toolbar buttons or **Select>Class Filters**; **Select>Current Layer Filter**)
    - Orthogonal dragging mode (toolbar button or **Tools>Options>Dragging**)
    - Nametags (toolbar buttons or **View>Nametags**)

    5   Continue with the tutorial.

    6   Before you do any File>Saves, be sure your model's filename is one <u>you</u> have specified (Step 3 takes care of this; Step 6 is a just-in-case message to make sure you do not overwrite a distribution file with changes).

Some Basic Terminology

Mousing

SurfaceWorks is operated by both mouse and keyboard. Here is a summary of some basic mouse terminology as we use it:

Term	Meaning
point	move the mouse *arrow cursor* on the screen until it points at a particular entity, option, or button
click (or click on)	point the cursor arrow at a particular entity or item, then press down and release the left mouse button
double-click	with the cursor arrow pointed at a particular entity or item, click the left mouse button twice in rapid succession
click and hold	click the left mouse button and hold it down
drag	point the cursor arrow at a point or screen location, press the left mouse button and hold it down while you move the mouse, then release the mouse button
choose	make a selection from the main menu bar
wheel zoom or wheel rotate	if your mouse has a center wheel, rotate it to zoom in and out, press down the wheel and move the mouse to rotate the view

Selecting, Choosing, Picking, Going to ...

We basically follow the Windows convention of using *select* to mean marking an entity or item on the screen (usually with a highlight or a wider line); and *choose* to mean telling the program to actually take an action (as in opening a window, or carrying out a menu or dialog box task). We also use *pick* and *go to* with the same meaning as choose.

Generally, a single click or pressing Tab (in a dialog box) will select an entity or item; a double-click or pressing Enter or clicking OK when an item is already selected, will choose the action (carry it out).

Typeface and Symbol Conventions

1 In the tutorials, we print what you are to do (menu options to choose, keys to press, entities to select, values or names to type in, etc.) in **bold typeface**. Instructional steps are numbered. There is occasional use of bold type for emphasis, but this will be clear from its context.

2 <**Q**> or 'press <**Q**>' means press the letter 'Q' on the keyboard. <**Shift+Q**> means hold down the Shift key and press the letter 'Q'. **<Apply>** means click on the 'Apply' button.

3   When we want you to choose a series of menu and dialog box options, we print the choices separated by a '>'. For example,

     >**Projected Snake** or **Insert>Snake>Projected Snake**

means click on the button and pick **Projected Snake** from the menu or click on **Insert** and choose **Snake** from the menu and then **Projected Snake** from the next menu.

4   We enclose entity names in single quotes, e.g. 'magnet2' or 'pt4'. *When you type in the entity name, don't include the quotes*.

The Figures

In order to be visually more clear, most figures illustrating SurfaceWorks steps in the tutorials do not show the graphic-display shading of surfaces.

Troubleshooting

Keyboard Doesn't Respond

If your keyboard seems hung up, you may have run into that unfortunate Windows problem of having pressed **Alt** unknowingly, thus jumping the cursor up to the menu bar where it doesn't show up very well.

Solution: press **Alt** again (to get back out of the menu bar).

Can't Select an Entity on the Screen

If you click on an entity to select it in the drawing and it won't select, **check your filter settings**:

- on the tool bar — filter buttons for the classes of entities and for Current Layer Only

- in the Select Menu — Class Filters, Visible/Hidden/Both, Current Layer Filter

Reset filter(s) if need be. Note that while **Select>Reset All Filters** immediately makes all entities selectable, it does reset *all* filters to their default settings. Whatever you do to your filter settings to get at the entity you want to select, you might want to check back through the tutorial and make sure that your settings match the instructions — to avoid further confusion as you continue following the tutorial.

Drawing Disappears

If you are changing the viewpoint (rotating; panning, zooming) and your model

disappears, do a **Zoom to Fit** (or **View>Modify>Zoom to Fit** or <**F**>).

Error Messages

If the SurfaceWorks Errors window opens and reports an error, you have these options (the entity in question will be displayed in the Surface Manager, with a ❶. If the entity appears in the Selection Set or Available Entities panes it will also display a ❶):

- <u>To fix</u> an entity that's in error, select it and then edit it — double-clicking the entity in the Error window or the Selection Set pane will get you the Edit dialog for the entity; or you can select the entity from the Surface Manager or the Available Entities pane and click 🔲 or choose **Edit>Definition**).

- <u>To get rid of</u> an entity that's in error that does not already have children, select it in the Surface Manager or the Available Entities pane, then **Edit>Delete** it or press the **Delete** key.

- You also can **Undo** an error if you have just created it. If the error occurred during entity creation, **Undo** will undo the entity creation (there will be no new entity in the model). If the error occurred during entity editing, **Undo** will undo the edit (the entity will remain in the model).