

Adding Smoke Effects to FS2004 Scenery

an Illustrated Tutorial

by

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When flying "low and slow" exploring new scenery, seeing smoke rising from a house or factory chimney provides a sense of activity - an important aspect of good scenery design.



A Typical Default factory



With a smoke effect added

This tutorial will outline a few ways which smoke effects can be easily added to your project.

One way is to use an Object Placing program such as the payware EZ Scenery (from Abacus) or Instant Scenery (from Flight1). If you have either of these programs, smoke can be added by installing the “effects” library by **Ron Jeffers**. The filename is [ezeffects.zip](#). It can be found at [Avsim.com](#).

Ron has provided two smoke effects which are “objects”; Small Black Smoke and Small White Smoke.

If you do not have an Object Placing program or simply would rather use the more conventional XML – BGL method, this tutorial will walk you through that process.

?? XML – BGL ??

XML – This is a simple text file - in a very specific format – which contains data relating to the location of an object or effect to be displayed and the name or code of the object. FS cannot “read” and act upon an XML file – it must be compiled into a **BGL** file. The utility named BGLComp is used for that purpose.

Required files

bglcomp.exe and **bglcomp.xsd**. These are included with this package.

msxml.msi. This installs the Parser (MSXML4) and it is also included in this package.

Before proceeding, please check to see if you already have MSXML4 installed. (Several other programs use this so you may already have it installed)

The easiest way to do this is to go to the Start/Settings/Control Panel/Add-Remove Programs dialogue.

If you **don't** see MSXML 4.0 SP2 Parser listed then you will need to install the msxml.msi package. Just click on the .msi file and it will offer to install it for you.

If you **do** see it listed then do not attempt to install msxml.msi again.

Optional, But Highly Recommended

Crosshair Plus by Gary Mills, Robert Finnegan and Kevin Bryan.

<http://library.avsim.net/download.php?DLID=73331>

You will be downloading **chplus.zip**

and

Crosshairs Gauge by Jim Robinson.

<http://library.avsim.net/download.php?DLID=108863>

You will be downloading **ch_pnl.zip**

If you have not already done so, download and install these two items which compliment each other.

For this type of project I prefer the enhanced Crosshairs utility as it combines a placement tool along with a simple gauge which provides the data we need. Also it does not require an interface such as FSUIPC or FDSConnection to work properly.

This is a screenshot of the “gauge”. Note the elevation is shown in feet or in meters and is available as an AGL (above ground level) reading or MSL (above sea level) reading.

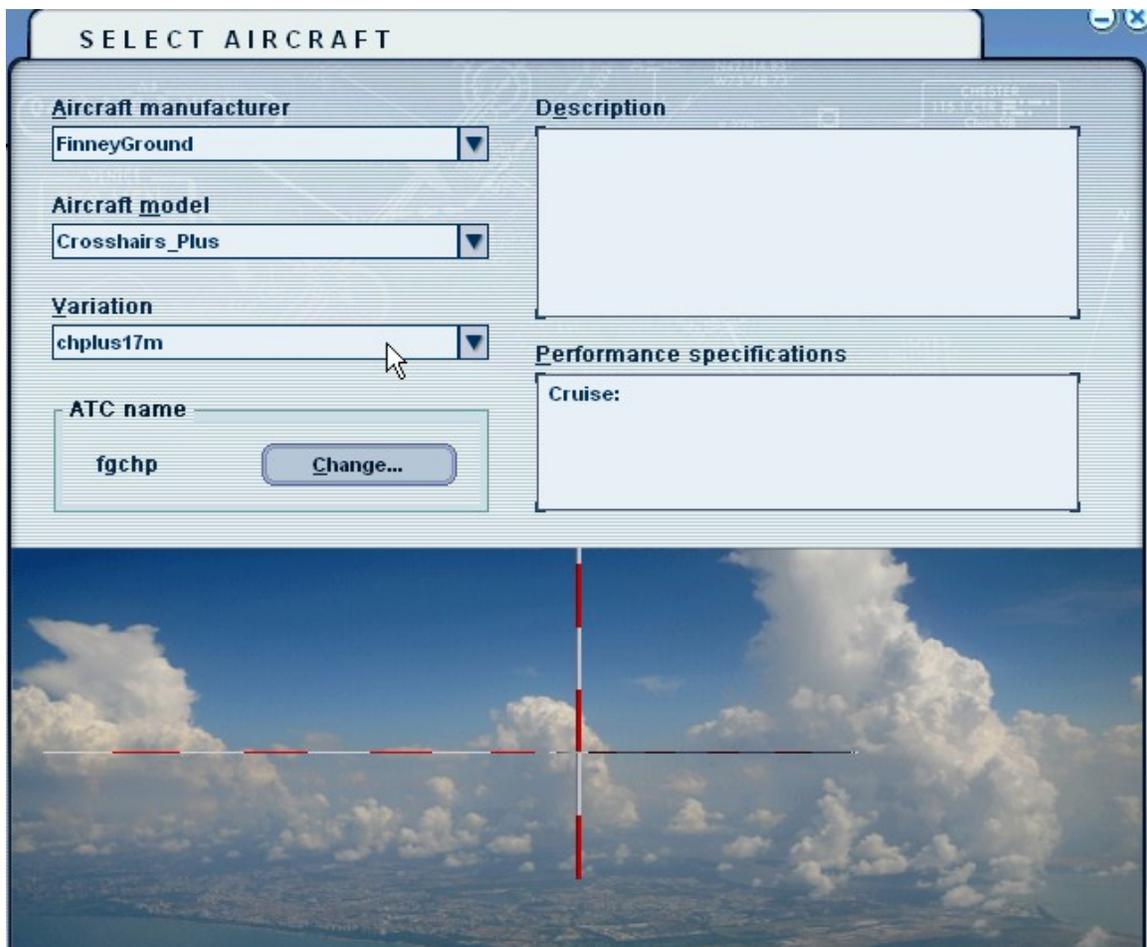
The “true” heading is also displayed which is a real bonus in situations where the true heading is necessary for proper alignment.



From the folder in the Tutorial package, Copy the 8 effects files and Paste them into your FS2004 Effects folder. You may have some or all of them installed already. These are a variety of smoke displays which can be used, depending upon the visual effect you desire.

The Process

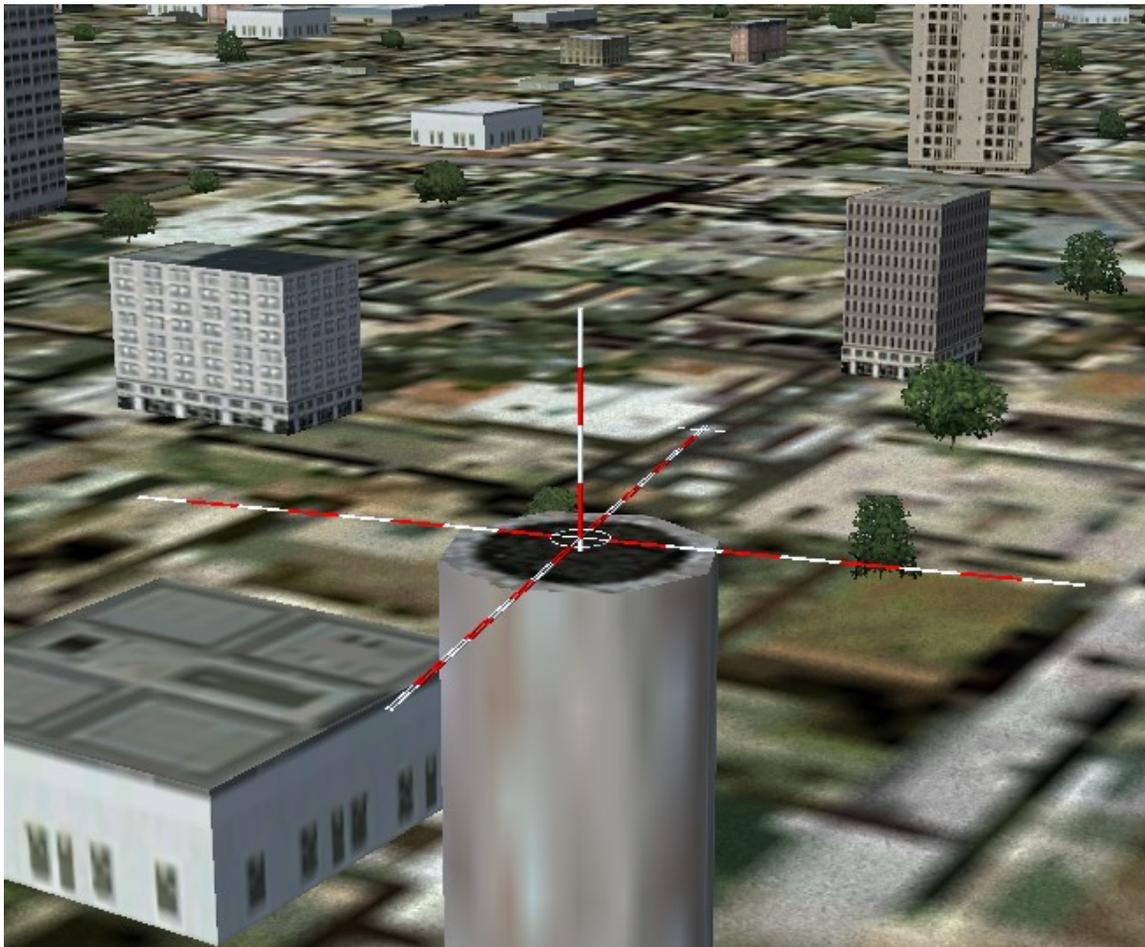
1. Start FS2004 and select the Crosshairs_Plus as your aircraft.



2. Select the Airport (area) where you wish to place the smoke effect.
3. Select "Fly Now" and Slew to the chimney or smoke stack in question.

Tip: Slow the sim down by using the R and – (minus) key at the top of your keyboard. That will make minor adjustments while slewing much easier.

Place the Crosshair object near the top of the chimney or smokestack as shown in the following screenshot.



Write down the coordinates, and the elevation in meters above sea level (MSL). The heading is not important in this instance.

Note: You can also use any aircraft as your “placement” aircraft and use the coordinates shown in the top left portion of your screen when hitting Shifted Z. Keep in mind that the elevation displayed is **not** the elevation where the wheels touch the tarmac. That elevation is calculated at the point where the radio is installed in the cockpit and thus is several feet (a minimum of three) above the tarmac.

Using the Crosshairs allows you to obtain the correct elevation without needing to subtract a figure as you would if you use the Shifted Z method.

4. From the folder named Sample XML file, Copy and Paste the XML file named [Chimney_Smoke_1.xml](#) into the folder named Work Folder. We are using this XML as an example for this exercise.

5. Open this XML file – **use Notepad only** – It will look something like this:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>  
  
<FSDData version="9.0"  
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
xsi:noNamespaceSchemaLocation="bglcomp.xsd">  
  
<SceneryObject lat="N32 47.3129" lon="W96 48.5833" alt="244.640"  
pitch="0" bank="0" heading="0" altitudelsAgl="FALSE"  
imageComplexity="NORMAL">  
<Effect effectName="fx_ChimneySmoke.fx" />  
</SceneryObject>  
</FSDData>
```

The only items which should be edited are highlighted in **Red**. When editing these items it is very important not to disturb anything else, especially the various punctuation marks.

Change the latitude (lat), longitude (lon) and altitude (alt) according to the numbers you wrote down from the Crosshairs gauge.

Note: The altitude is in **meters** – if you enter feet the smoke will be displayed at the wrong elevation.

The **imageComplexity** entry determines at what setting in the FS2004 Settings/Display dialogue the smoke will be displayed. Valid entries are VERY SPARCE, SPARCE, NORMAL, DENSE, VERY DENSE and EXTREMELY DENSE.

The **effectName** entry is the effect which is to be displayed. In this case it is **fx_ChimneySmoke.fx**.

Note: The entry may be written with **or** without the fx extension – either way will be accepted by the BGLComp utility.

Examples: fx_ChimneySmoke.fx - OR - fx_ChimneySmoke
Nova_smoke_one.fx - OR - Nova_smoke_one

The above are all valid entries.

6. After double checking to see that your edits are correct, Save your work.

Rename the XML file so it reflects the location and item.

Example: Dallas_factory_smoke.xml

(Of course you can rename the XML file prior to editing)

Then Left click on the XML file and while holding down the mouse key, drag it over the BGLComp.exe and release it there.

If there are no errors, a new file will be created, named the same as your XML file, but with a BGL extension.

Example: Dallas_factory_smoke.bgl

7. Place a copy of this new BGL file into your Addon scenery / scenery subfolder.

Start up FS2004 and go to the area and view your new smoke effect in action.

Note: All of the smoke effects I have tested react to wind so set up some wind and note how the smoke affect changes.

RECAP

1. Select the location and obtain the coordinates and elevation in meters above sea level.
2. Open a sample XML file in your work folder and edit the coordinates, elevation and effect name as necessary. Save your work and rename it to suit.
3. Compile the XML file into a BGL file. Place the new BGL file in your Addon scenery/scenery subfolder or any “active” scenery subfolder.
- 4, Start FS2004 and enjoy your creation!

Adding Time Constraints

There may be occasions when it would be desirable to have the smoke effect only display at certain times of the year and/or certain times of the day.

That is done by adding a few lines to the XML file. For further information regarding the proper syntax to use for time constraints, please consult the Microsoft FS2004 Special Effects SDK which is available to download from this link:

http://download.microsoft.com/download/0/8/8/0886f451-15da-43ea-b948-a36d9796c045/fs2004_sdk_special_effects_setup.exe

Where Should I Use Smoke Effects?

Actually the uses for smoke effects are limited only by your imagination.

Here are just a few ideas: factory smoke stacks, chimneys of houses, campfires, and smoke stacks of static ships.

The latter can be quite effective if you add an animated wake to the static ship as well as smoke from the stacks. The illusion of movement works very well.

If you are interested in adding an animated wake to any static ship, please refer to this Tutorial:

<http://library.avsim.net/eseach.php?CatID=fs2004sd&DLID=104826>



I hope you find this Smoke Tutorial useful and have fun adding this effect to your scenery projects.

Don't be afraid to experiment using different smoke effects such as the eight which are included in this package.

The procedures described in this Tutorial have only been tested in FS2004.

Questions and/or Constructive Comments may be addressed to:

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