THE X-FILES LOGO *by Lee Croft*

In tech support we are always getting calls by people asking how to do certain things in EI, and by far one of the most common requests is "How do I do the X-Files logo?" In this tutorial we will cover how to set up the smoke parameters and glow parameters to get a variety of different looks.

The Completed Project

STEPS

1.   Open a new project. When asked to add a model select the file *X-Files Logo.fact*. Your model will come in at 0,0,0, and it will stay there throughout the project. The camera is going to remain aligned along the z-axis. Dolly in towards the logo (Control-Spacebar in the Camera window) until your camera window looks like the picture below. The camera in my project is situated at –204.9 on the z-axis, so if you want to match mine then numerically enter that value. For now, keep the camera reference at 0,0,0.
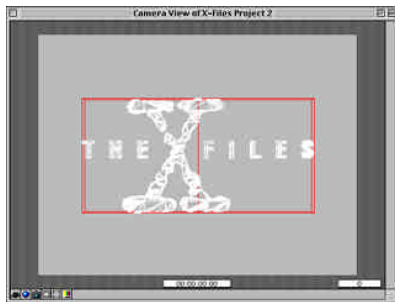
The Camera Window

2.   Next we'll set up the background spotlight. Open the Light Info window and set the light's position to 0,0,0. From the Light Type popup menu select Spot.

TIP   *All of the steps in this project were basically "eyeballed" by me – there's no real method for deciding what they are except for how you want your project to look. I'm going to give you my settings here, but I encourage you to play around with your project's to see how changes here will affect your project.*

The first thing I did was move my light back along the positive-z axis. I settled on a value of 100. Since this is a spotlight you will see the values for inner and outer cone. After experimenting I settled on an outer cone of 70 and an inner cone of 60, which gave me a spotlight slightly larger than the sides of the logo, and not a lot of falloff between the inner cone and outer cone.

Look in the Top View window and pay attention to the light cone. To make the effect of the cone a little more visible, I moved the light reference forward a little along the z-axis to –100. Now you can clearly see the way the light surrounds the logo. Because of this movement I moved the Camera Reference point backwards to –100, as you basically want the light reference and the camera reference in the same position. Changing the reference points really won't have any effect on the way the final render looks – it's more of an organizational step than anything else.

3.   Out next step is to alter the glow radius. One thing that confuses many people is how glow works. Simply turning glow on in the Light Info window does not produce glow. You must also designate how far you want the glow to extend using the Inner Glow and Outer Glow radius boxes. First check Show Glow Radius from the buttons on the left side of the window. Set your inner and outer glow to basically anything – try 10 and 100 respectively. Look at the top view of your scene. You will see two circles around your light, one solid and one dashed. The solid line is the outer radius and the dashed is the inner. The inner glow radius designates the boundary of the light at full value: the light will be at full luminance from the position of the light to the extents of this radius. From the inner radius to the outer radius the light falls off from full luminance to black. From the outer glow radius onwards the light is black. The outer radius designated how far the light reaches – it has no effect outside of its radius.

To achieve the effect we want, the glow cannot extend further than the camera. What we want is the camera looking at the edge of the glow, not immersed in the glow itself. Activate the Enable Ray checkbox, as this is what allows the letters to cut dark patches through the glow. Do a quick test render and see how your image looks.
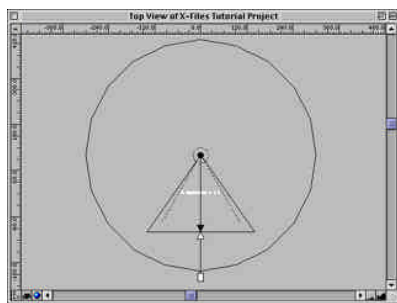
The Top Window View

The Snapshot Render

4.   Since the X-Files is usually done with a green/black color scheme, we'll use that as a basis for our glow color. Go to the Glow tab in the Light Info window. Set the outer color to be solid black, and the inner color to be a bright green. I used HSV settings of 122,100, and 100. Leave the light's color set to its default white. Render a snapshot and see how the glow looks.

The Glow with Color

TIP   *Now, I can already hear heads being scratched out there. "But, if our light is set to be white, how come it shows up green? Shouldn't our light be green as well?" Not at all. Let's say you have a scene with nothing but a standard shape plane in it and the default light. The plane will appear to be shades of gray, as it is a white object colored by a white light. Now, if you change the color of*

the light to be yellow, your plane will appear as shades of yellow. Light color is set to determine the color of the light being cast onto other objects. Now, look at the snapshot render you just did. Do we see light being cast onto other objects? Not very much. Only the white highlights from the sides of the letters appear white, as they are from a white object with white light cast on it. The green is coming from the glow entirely. We are simply looking down the cone of a light and looking at its glow. The color of the light is, in this project, completely immaterial to the end result. In the real world, obviously, the color of a light will determine its glow color. However, we are in the wonderful world of 3D animation, and it is possible to have such things as colored lights that cast a completely different color glow. Cool, huh?

5. Now we're going to color our object. Again, this is a place where your own artistry will determine the object's color. These are my settings, so feel free to change them to whatever you wish. First open the Material Info window for the logo. Since the X-Files logo is being backlit and thus will be darker on the front, I wanted to select a darker green than what we used for the glow color. My green's HSV settings are 121, 100, and 26.

Remember in the previous section where I pointed out the white highlights on the sides of the logo? Since we want this object to be green, we'll need to adjust the specularity values. Click on the Specular tab, and give the logo a nice bright green highlight. Use the same HSV values from the Inner Glow color by typing in the same numbers or dragging the color tile from one window to the other.

NOTE *Keep in mind that this same effect could be achieved by coloring the light green and leaving the specularity settings at default. It's a matter of personal preference, and this is the way I like to do it, as you get more direct control over the specularity settings. If you prefer the other way, go ahead and make the change.*

Additionally I slightly raised the Specular Falloff from 2 to 2.3. Do another snapshot render to see the new settings in effect. Notice the logo's highlights are now bright green.

The Logo with Color

6. The next step involves the Ray Factor settings. This took me many different preview renders to get the exact look for the rays that I desired, as I had no idea going in what they would be. I essentially entered a value, rendered it, changed the value, and tried again until I was happy with the look. The two images below show the difference between the default ray setting of 1.0 and a ray setting of 2.0. Notice the higher the ray value gets the darker and more pronounced the rays become.

Ray Factor 1.0

Ray Factor 2.0

NOTE *Changing the Ray Factor can SIGNIFICANTLY add to render times. The image on the left took around 30 seconds. The image on the right took around 8 minutes.*

I ended up settling on a Ray Factor of 1.8. Essentially this could be a completed image. However, I wanted to give the light a more smoky, mysterious look. To do this I added a smoke object. Let's take a look at those settings.


Ray Factor 1.8

7. Add a smoke object to your project by selecting **File>Add>Type>Smoke**. In the top view window, do a marquee drag that essentially encompasses the entire scene. The Smoker Info window will open. Click on the Properties tab once it does.

NOTE The smoke does not have to cover the whole light. When we enable it in our light settings it will fill the cone with smoke no matter where the Smoker's extents lie. It's easier to visualize the smoke effect, however, if you drag it out to the size you want it to be.

I'll now briefly explain my Smoker settings. I could write a whole document on Smokers alone, so I won't go into great detail here. For an explanation of smoke settings, please refer to the ElectricImage documentation. The effect I wanted was a thick, active smoke, almost like the bubbling smoke you would imagine rolling of a witch's cauldron. I entered in a few basic settings and did a lot of test renders before I settled on a look that I liked. My settings are as follows:

Mist:	0.5	**Samples:**	7.0
Contrast:	2.0	**Limit:**	200
Density:	0.5	**Bicubic:**	2.0
Contrast:	0.6	**Linear:**	7.0

Octave:	2.0
Drift:	0.0
Turbulence:	1.0 checkbox *enabled*
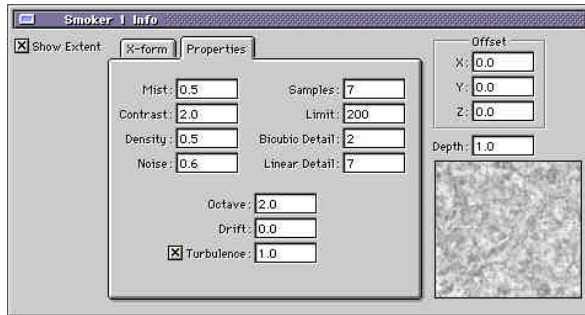
The Smoker Settings

Now that our Smoker is set up correctly, we need to enable it in the Light Info Window. Double-click on Light 1 and click on the Glow tab. From the Smoke popup menu select *Smoker 1*. Now do a snapshot render and look at your image.

The Completed Image

Congratulations! Your image is now done and ready to be turned in to your client. However, unless your client is in the printing business, a still image usually isn't acceptable. I decided to add a little animation to my scene to give it some life.

8. In the Project Window, drag your end time in to 5 seconds. I almost always render at 24 fps, as it can cut down substantially on rendering times. If you like, set your animation to 24fps. The first thing I wanted to do was animate the smoke to give it the living, bubbling motion that I described earlier. Animating smoke is a very simple thing to do. Your first instinct might be to rotate the smoke on its y-axis to give it a look of blowing past the camera. This would definitely work to get that particular look. However, if you animate the Drift value of the Smoker you can get a lot of natural smoke movement while leaving the position and rotation values at 0,0,0.

    Make sure that the Smoker's animation checkbox is enabled in the project window. Drag your time slider to 5 seconds, and change the Drift value to 2. You'll see a keyframe set in the Project Window.

TIP *One little thing that most people don't know about Smokers in ElectricImage is that they will loop when animated. To see this in effect, arrange your screen so you can see both the Smoker Info window and the Project Window at the same time. Set your time slider to 0 seconds and note the appearance of the smoke in the smoke window. Drag your time out a second or so and watch it change. Do this again a couple of times and note the change. Now move your time to 5 seconds and note the final position of the smoke. Now, without taking your eyes off the smoke window, move your time slider back to time 0. The smoke window didn't change, did it? This is because the first and last frames are identical, making you able to seamlessly loop animations. Keep in mind that you cannot animate the position or rotation of the smoke unless you make the first and last keyframes the same as well.*

If you like, render out your animation. Depending on the speed of your machine and the amount of RAM you have this may take anywhere from a few minutes to an hour or so. I loved the way the smoke looked, but the animation was still missing something. After thinking for a moment I realized that animating the position of the light might look cool. I decided to animate my light horizontally, but please feel free to animate it any way you choose.

NOTE *If you like, duplicate your light. Rename them Still Spot and Moving Spot. This way you can easily switch between the animated and still spotlights at your leisure.*

9. Make sure your time slider is at 0 and that the animation checkbox for the Moving Spot group is enabled. Look at the top view window. To make sure that the Moving Spot stayed perfectly horizontal, I began entering negative position values until the light was in a position I liked, which was with an x-position value of –135. The light cone was just touching the edge of my logo, which meant that the object would be cast with light over the course of the animation. I then moved the time slider to 5 seconds and entered the inverse of the x-position value, which is 135. If you like, render out the animation now. If not, I have provided examples of the first and last frames below.
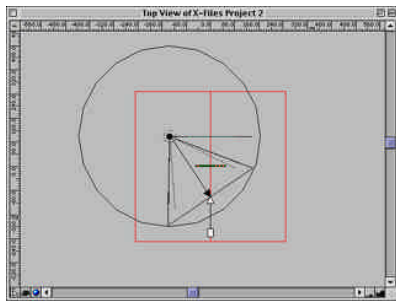
The First Keyframe
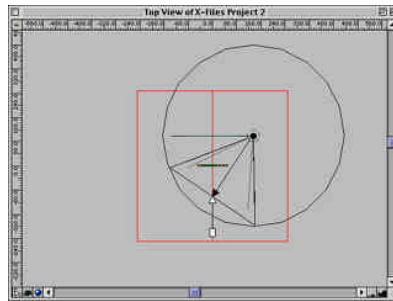
The Final Keyframe

The First Frame

The Final Frame

The animation was starting to look really good, but it still seemed to be missing something. I realized that I didn't like how dark the letters looked when the Moving Spot was off to one of the sides. As only half the screen was being illuminated at the start and end of the animation, the dark lettering seemed to blend in to the background too much. To fix this, I added a simple spotlight to illuminate the logo's front face.

NOTE *If you look carefully, you can see that the smoke in both these frames is exactly the same. This is the example of the looping smoke I referred to earlier.*

10. Add a light to your scene. In the Project Window, name the light *Front Spot*. Place the spot close to the logo. It can really be anywhere, but this is what worked for me. My settings are as follows:

LIGHT		**REFERENCE**	
X:	60	**X:**	-6.0
Y:	-36	**Y:**	0.0
Z:	-104.0	**Z:**	26.0

LIGHT COLOR
H:	68
S:	95
V:	100

Everything else is left at its default value. I chose this color because I thought the sickly yellow would interact well with the green of the logo. Below are the first and last frames with the yellow light added.

The First Yellow Frame

The Last Yellow Frame

Now the logo shows as a bright, readable green when the image is half dark. However, if you render out the animation in full, you'll see that when the animation is at its midpoint, you can hardly even see the logo because of the bright light.

The Middle Yellow Frame

11. To fix this, we simply need to animate the color of the light. Since we want our first and last keyframes to be identical, from the Project Window hold down the Option key and drag the Front Spot keyframe out to 5 seconds. You have now duplicated the keyframe! (Cool trick, huh?) Next move your time slider out to 2.5 seconds, the midpoint of the animation. Ensure that the animation checkbox is on for Front Spot and open its info window. Rather than set the light to black I made it a dark purple, which will look almost pure black when shining on the dark green surface of the logo. I used HSV values of 316,100, and 94. The middle frame now looks as follows:

The Corrected Middle Frame

Congratulations! Our animation is complete! You now have a project preset to quickly render stills or animations, with either an animated light and bubbling smoke, or with a stationary light with bubbling, *looping* smoke. As I have pointed out during this tutorial, there are many, many ways to modify this technique to make your own specific look emulating this style. This tutorial should simply be a place to introduce you to the fundamentals, and will hopefully give you the ability to develop your own individual animations. Render out your animation and compare it to the 320 x 240 Quicktime movie I included with the project.

TIP   *I have one final tip for this project. It's on looping animations and it can be used in any EI project with identical keyframes on the first and last frames. Let's say you have a 5 second, 30 fps animation. How many frames is that? You may guess 150, and you'd be completely wrong. It is actually 151 frames. Why? Because the first frame of any animation is frame 0. 0 to 150 is 151. It is frame 151 that is identical to frame 0. So, if you render all 151 frames you will have two identical frames, one right after the other, when your animation loops, possibly causing a noticeable pause.*

In the case of the animation we just completed we have 5 seconds of 24 fps footage, resulting in a total of 121 frames. To fix this, simply open the Render Control Window and click on the Timing tab. On the left of the window you will see a box named Total Frames. This will display the total number of frames to be rendered, which in this case is 121. Simply change this to one number lower, or 120. You're now set to render a drop frame.

Please feel free to contact me with any questions or comments at *lee.croft@electricimg.com*.