refractive software®



Greek Vases by Florinmocanu

octanerender®

user manual

version 1.0 beta 2.57



OctaneRender® User Manual

Version 1.0 Beta 2.57 (January 2012)

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Chapter 1

Installation

By Enrico Cerica

1. Installation Requirements

1.1 Hardware Requirements

OctaneRender® requires an NVIDIA CUDA enabled video card. The official list of NVIDIA CUDA enabled products is located at:

http:/www.nvidia.com/object/cuda_learn_products.html



By Ironelix

Looking to buy a new GPU for OctaneRender®?

There are several things to consider when purchasing a new GPU. You'll want to purchase a video card with the largest amount of ram, with the most amount of CUDA Cores for your budget. Don't forget to make sure your Power Supply can handle the new card as well. If you're using a Mac, make sure that you purchase an Apple approved GPU.

1.2 Software Requirements

OctaneRender® is available for the following operating systems :

- Windows XP (32 and 64 bit)
- Windows Vista (32 and 64 bit)
- Windows 7 (32 and 64 bit)
- Linux (64 bit only)
- Macintosh OSX [32 bit only]

1.3 Drivers

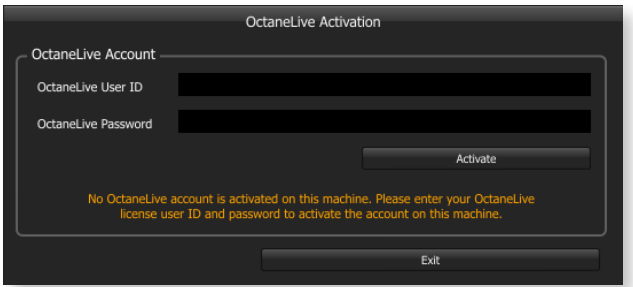
The software requires the installation of the drivers below. Failure to install these driver versions may result in stability problems. Refractive Software cannot provide support to users of different driver versions. The exact files needed for each operating system will be covered on page 10.

http://developer.nvidia.com/cuda-toolkit-40

1.4 Internet Access

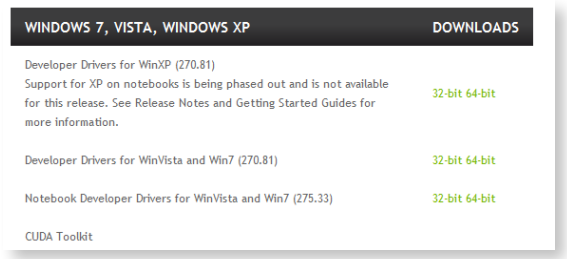
OctaneRender® requires internet access to launch the first time. Internet access is not required to use OctaneRender®. When no internet access is present, the Live Database will not be accessable.

Upon launching OctaneRender® for the first time, the user will need to log in to their Octane Live account which associated with their forum log-in information. This information can be found in the customer section of the Refractive Software website.



2. Windows Installation

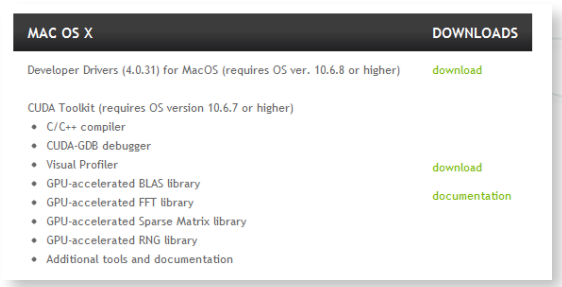
To install OctaneRender® on Windows, visit the link http://developer.nvidia.com/cuda-toolkit-40#windows and download the Developer Driver for the installed version of Windows. If that driver does not support the installed video card, then use the most recent drivers supporting that video card. Install the driver according to the instructions. The CUDA toolkit is not needed for Windows Installations.



3. Mac OSX Installation



To install OctaneRender® on Mac OSX 10.5 and OSX 10.6 (32 bit only) visit the link
http://developer.nvidia.com/cuda-toolkit-40#MacOS
Download the Developer Drivers and the CUDA Toolkit for Mac OS.



MAC OS X	DOWNLOADS
Developer Drivers (4.0.31) for MacOS (requires OS ver. 10.6.8 or higher)	download
CUDA Toolkit (requires OS version 10.6.7 or higher) • C/C++ compiler • CUDA-GDB debugger • Visual Profiler • GPU-accelerated BLAS library • GPU-accelerated FFT library • GPU-accelerated Sparse Matrix library • GPU-accelerated RNG library • Additional tools and documentation	download documentation

Install the Developer Driver first and then the CUDA Toolkit prior to launching Octane Render.

For users of Mac OSX 10.5 only, the installation of the XQuartz package available from:

http://xquartz.macosforge.org/trac/wiki/X112.6.3

Download the X11-2.5.3.dmg package and intall it prior to running OctaneRender® the first time.

This package is not needed for Mac OSX 10.6 users.



4. GNU Linux Installation

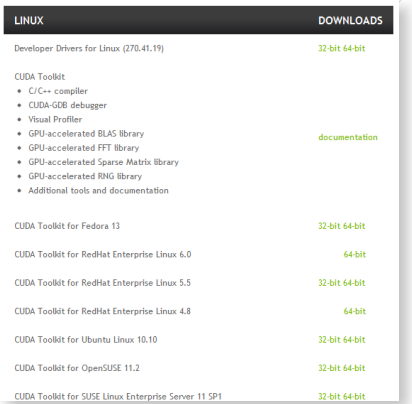


To install OctaneRender® on GNU Linux (64 bit only) visit the link
http://developer.nvidia.com/cuda-toolkit-40#Linux

Download the Developer Drivers and the CUDA Toolkit for the target distribution.

Detailed installation instructions can be found by downloading the Getting Started Guide for Linux and following the instructions on page 5 in the guide.

OctaneRender for Linux was built and tested on CentOS 5.6 using GCC 4.1.2. Due to that libstdc++ must be of version 4.1.2 or higher.



LINUX	DOWNLOADS
Developer Drivers for Linux (270.41.19)	32-bit 64-bit
CUDA Toolkit • C/C++ compiler • CUDA-GDB debugger • Visual Profiler • GPU-accelerated BLAS library • GPU-accelerated FFT library • GPU-accelerated Sparse Matrix library • GPU-accelerated RNG library • Additional tools and documentation	documentation
CUDA Toolkit for Fedora 13	32-bit 64-bit
CUDA Toolkit for RedHat Enterprise Linux 6.0	64-bit
CUDA Toolkit for RedHat Enterprise Linux 5.5	32-bit 64-bit
CUDA Toolkit for RedHat Enterprise Linux 4.8	64-bit
CUDA Toolkit for Ubuntu Linux 10.10	32-bit 64-bit
CUDA Toolkit for OpenSUSE 11.2	32-bit 64-bit
CUDA Toolkit for SUSE Linux Enterprise Server 11 SP1	32-bit 64-bit

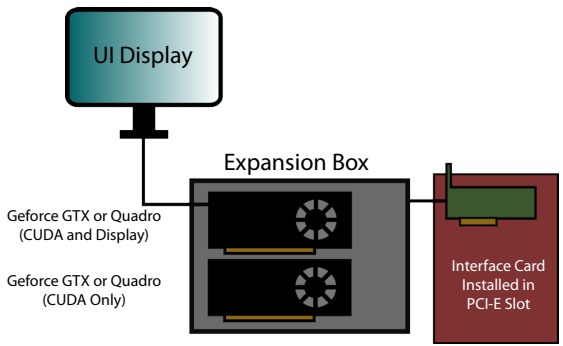
5. Hardware Options

The options for adding GPU muscle to a current computer depends on available PCI-E slots on the computer.

Single PCI-E Slot

If the computer has a single PCI-E slot, the upgrade options are fewer. One could simple add a more powerful GPU as long as the power supply can provide enough power for the new GPU. Multi-GPU, single slot card solutions like the GTX 295 may also be used in this situation, again assuming that the power supply is sufficient to power the video card.

A second option is to use an external expansion box. This allows the use of multiple GPU's with a computer that only has a single PCI-E slot. In this scenario, one video card could be a cheap, low powered card dedicated to the OS display, and the second can be dedicated to rendering. Or two GPU's can be used to render using multiple GPU's.



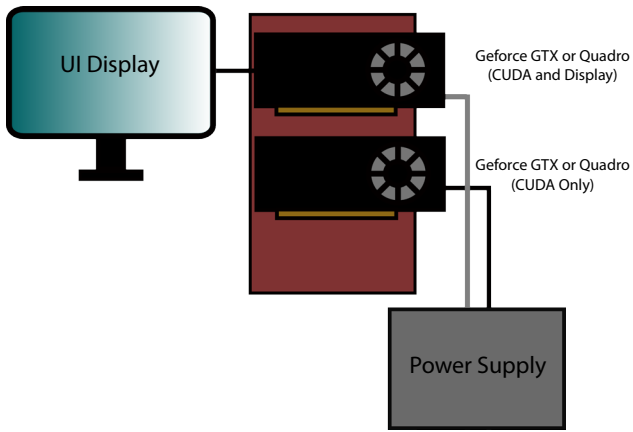
Special thanks to forum user pixelrush for the inspiration for these hardware diagrams.

Two PCI-E Slot Motherboard

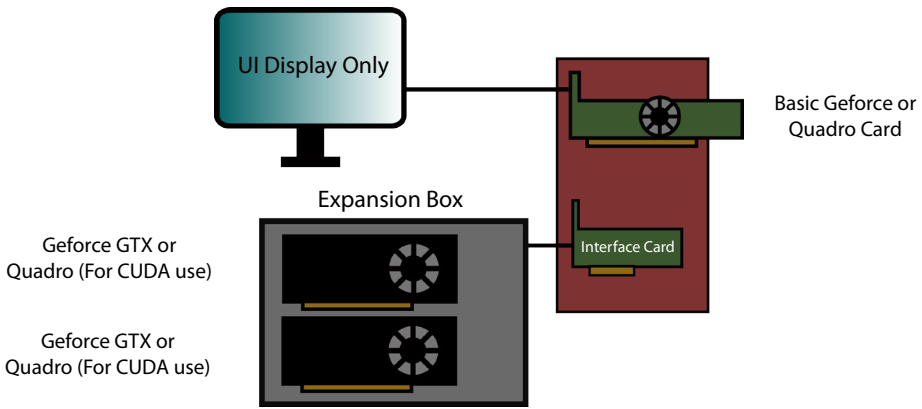
If the computer has two PCI-E slots the user is presented with many additional upgrade options.

One option is to install a second graphics card along with the currently installed GPU. If the existing GPU is slow, it can be used to power the display only and the second card can be dedicated to OctaneRender®. This will allow the OS to be smooth and the computer will still be responsive while the second GPU is tasked with rendering.

Another option would be to add an additional GPU to assist in rendering. In this situation, it is best to have the GPU's match in model and ram content. This allows multi-GPU rendering but the OS interface may still be slowed as all the GPU processing power is dedicated to the rendering process.

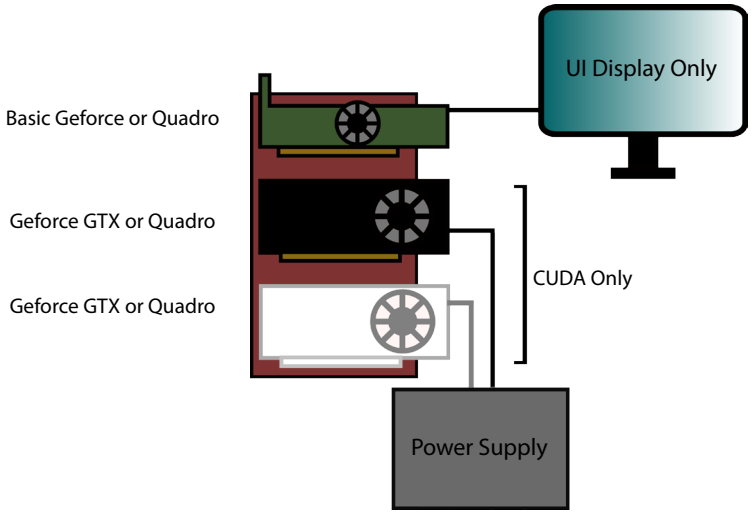


A third option is to use an external expansion box in the second slot. This allows the use of multiple GPU's while having a video card dedicated to the OS which allows for no degradation in OS performance while realizing incredible multi-GPU rendering speed at the same time. A variation of this setup would place a third rendering GPU in the motherboard in place of a basic GPU. This would allow three GPU's to be used for rendering.



Three PCI-E Slot Motherboard

If the computer has three PCI-E slots the user is presented with many additional upgrade options. If the power supply is sufficient, one GPU can be dedicated to the OS display while two GPU's can be used for rendering.



6. Troubleshooting

Most problems with OctaneRender® can be traced to the following situations. Please refer the page numbers listed to find common solutions.

Issue	Page
6.1 Cannot find driver for laptop or computer	19
6.2 OctaneRender® won't open due to "No Cuda Devices"	20
6.3 OctaneRender® won't open due to License Issues	21
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Special thanks to forum user pixelrush for the compilation of this troubleshooting information.

6.1 Cannot Find Drivers for Laptop or Computer

Problem: The available OEM drivers are not recent enough

Solution: As a work around, find a suitable official Nvidia driver, unzip the executable, and modify the device list to include your hardware. Then, manually install the driver. See forum or search internet for more detailed information.

Problem: Newly released card and waiting for updated Nvidia driver to support it

Solution: The new drivers should be released shortly. Octane and Cuda are in constant development and new hardware and Cuda revisions are being released regularly. There are a few occasions where this situation occurs and causes a delay in getting the most out of your hardware and OctaneRender®.

6.2 OctaneRender® Won't Open Due to "No Cuda Devices" Error Message

Problem: Incorrect Driver or Cuda Toolkit installed

Solution: Read the release notes to ensure that you have the correct driver version installed and correct Cuda Toolkit version for Linux or Mac OSX (Windows users do not need the Cuda toolkit.)

Attempt to remove the old driver versions and then install the proper version. It may be necessary to use a tool such as Driver Sweeper to get all driver components un-installed.

Problem: Video Card is not Cuda enabled

Solution: Check the list below to ensure that your card is in fact Cuda enabled.

http://developer.nvidia.com/cuda-gpu

It is recommended to use a card with at least 96 Cuda cores and preferably a Fermi generation card with 192 Cuda cores or above.

6.3 OctaneRender® won't open due to License Issues

Problem: OctaneRender® is not Licensed

Solution: Your customer details have been incorrectly entered by either you or Refractive Software into the licensing system. If you suspect a problem, contact them e-mail at license@refractivesoftware.com

Problem: OctaneRender® is not "Activated"

Solution: Either your license has not been processed or the current license is activated on another machine. Deactivate the copy of OctaneRender® on the previous machine and activate the new machine after waiting 30 minutes. This can also be accomplished via the customer login area at http://www.refractivesoftware.com

6.3 OctaneRender® won't open due to License Issues - Continued

Problem: OctaneRender® cannot connect to the Refractive Software servers

Solution: This could be due to two issues.

1) Configure your firewall or router to allow outbound connections to the URL named 'live1.refractivesoftware.com

2) Your customer details have been incorrectly entered by either you or Refractive Software into the licensing system. If you suspect a problem, contact them e-mail at license@refractivesoftware.com

6.4 OctaneRender® Crashes Loading a File

If OctaneRender® crashes upon loading a user created file, ensure that OctaneRender® and the drivers are installed correctly by downloading and loading the demo suite files located at:

http://www.refractivesoftware.com/downloads/OctaneRender_1024_beta246_DemoSuite.zip

Problem: Non-Latin characters or spaces used in file name (obj and mtl)

Solution: Export the scene using Latin characters only and avoid spaces (use underscores _ instead.)

Problem: Problems inside Obj file such as stray edges, vertices, etc.

Solution: Re-export the scene using different exporting options from the modeling program or export script

6.4 OctaneRender® Crashes Loading a File - Continued

Problem: Incompatibility of previous version macros and OCS file format.

Solution: Unfortunately, the only way to get around this is to recreate the macros or OCS file in the current version.

Problem: Insufficient system or video ram

Solution: For the best success with OctaneRender®, it is recommended to use a 64 bit operating system with more than 4 GB of system ram. Also, if possible use a video card with more than 1 GB of vram.

For example, 1 GB vram is sufficient for 3 million polygons with medium texture use and a medium render size. To render in larger resolutions or to utilize more high resolution textures, a video card with more than 1 GB vram might be necessary.

6.4 OctaneRender® Crashes Loading a File - Continued

Problem: Wrong driver / Toolkit combination installed (not for Windows users)

Solution: Ensure the correct Toolkit and Drivers are installed

Problem: Display Video Card is not active while CUDA enabled card is active

Solution: This may require swapping video card slots on the motherboard or changing bios settings so PCI-E slot with the display is "Initialized First". Review your motherboard documentation for the exact wording and location for this setting.

6.5 Render Looks Strange or Gives Unexpected Results

Problem: Concentric circles over the image or unusual effects including bump map not working

Solution: Check the scale of the imported scene. Typically this is due to the scale being incorrect by a factor of 100 or 1000X. Octane expects 1 unit in the scene to equal 1 meter. Adjust export settings in the modeling application or adjust the import settings in OctaneRender®.

Problem: Geometry or Normals issues

Solution: Ensure that the geometry and normals are correct in the modeling program. Re-export the scene if necessary. Make sure the Normal Smoothing boolean value is enable for each material in the Node Inspector.

6.5 Render Looks Strange or Gives Unexpected Results - Continued

Problem: Known Issue. Check release notes and user forum.

Solution: This may presently include a vertical line in the center of the screen on multi-gpu setups and scrambled views at some image resolutions.

Problem: Bump map does not show up

Solution: When a bump map and normal map are both loaded, the normal map will take priority and the bump map will not be used.

Problem Images do not look right on the model.

Solution: This may be due to the way the model was UV unwrapped. This may need to be redone more precisely and re-exported.

6.6 Navigation of Viewport is Slow / UI is Unresponsive

Problem: Known issue with display refresh time out on Windows

Solution: This can be attributed to a function that is included in some operating systems that shut down any program after the OS has lost communication with the GPU. Since higher resolutions and Path Tracing both can take long periods of time to render a single frame, the OS loses contact with the GPU and shuts down Octane

This can be resolved one of two ways.

1. Purchase a second GPU and dedicate one to OctaneRender® and one to the operating system

2. Adjust the time out values specific to the operating system.
As this typically involves adjusting critical OS files, it is not recommended and not supported by Refractive Software.

For Microsoft Windows systems, more information can be read here:
http://www.microsoft.com/whdc/device/display/wddm_timeout.mspx

6.6 Navigation of Viewport is Slow / UI is Unresponsive - Continued

Problem: Render card has insufficient performance

Solution: 96 Cuda cores are considered the minimum although OctaneRender® will technically work with fewer. It is suggested that a more powerful be purchased to get the most out of OctaneRender®.

Problem: Navigating is slow. Is there anything else I can do?

Solution: To increase the speed of navigating in OctaneRender®, use the Shift key while rotating, moving or translating the Render Viewport. Also, use the Sub-Sampling settings (2 x 2 or 4 x 4) to in crease the speed of navigating in the viewport.

6.7 OctaneRender® Works For A While Then Closes While Rendering

Problem: Insufficient Power Supply for Computer Demand

Solution: The current generation of Cuda enabled GPU's can be very demanding on a computers power supply. When going with multiple video cards it can be even more demanding. Purchase a new power supply if necessary to ensure that all components have sufficient energy to do their task.

Problem: Graphics Card or Computer Overheating

Solution: Make sure the computer case has good ventilation which may include purchasing additional cooling fans or a different case altogether. Ensure the case has a good amount of space around all air intakes and vents. Heat sinks and fans will also build up dust and lose their cooling capacity. Use canned air to clean out computer cases, heat sinks and fans regularly.

Utilities such as Speedfan, EVGA Precision and GPUZ can assist in determining temperatures of the GPU and will assist in setting fan speeds if necessary.

6.8 Can't Change Settings or Save Renders

Problem: Changed settings do not keep when closing and restarting Octane

Solution: This is currently not available for Demo Users.

Problem: I cannot save any renders or use the built-in animation tools

Solution: This is currently not available for Demo Users.

6.9 Windows and the Nvidia driver see all available GPU's, but OctaneRender® does not.

There are occasions when using more than 2 video cards that Windows and the Nvidia driver properly register all cards, but OctaneRender® does not see them. This can be addressed by updating the registry.

This involves adjusting critical OS files, it is not supported by Refractive Software.

1) Start the registry editor (Start button, type "regedit" and launch it.)

2) Navigate to the following key:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Class\{4D36E968-E325-11CE-BFC1-08002BE10318}

3) You will see keys for each video card starting with "0000" and then "0001", etc.

4) Under each of the keys identified in 3 for each video card, add two dword values

DisplayLessPolicy

LimitVideoPresentSources

Set each value to 1

5) Once these have been added to each of the video cards, shut down Regedit and then reboot.

6) OctaneRender® should now see all video cards

6.10 Additional Helpful Hints

1) PCI-E 16X / 8X / 4X / 2X slots are sufficient to run OctaneRender®. PCI-E 1X slots are not.

2) It is best to use two or more video cards of the same speed and ram configuration when using them with OctaneRender®



Chapter 2

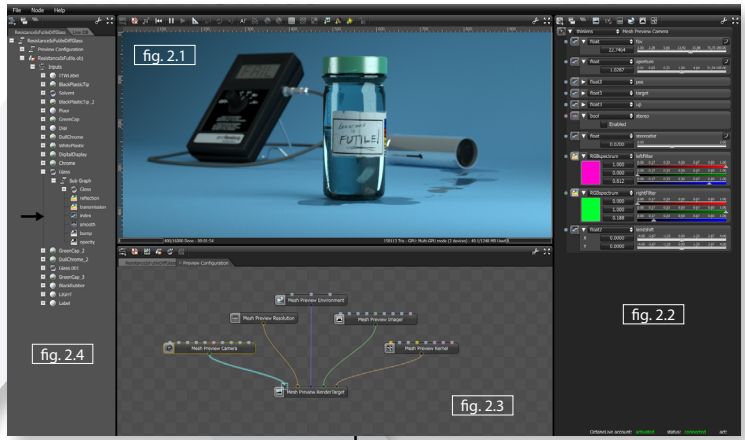
Program Overview

By Enrico Cerica

1. Interface Overview

Render Viewport (fig. 2.1) :

The render is constantly updated in the Render Viewport. The scene can be navigated in real-time while adjustments are made and viewed immediately.



Outliner (fig. 2.4) :

The Outliner allows the user to see an overview of all the elements in the scene and also allows them to use the local and online node databases.

Node Inspector (fig. 2.2) :

The Node Inspector allows the user to make changes to the various settings in the scene, lighting and material nodes.

Graph Editor (fig. 2.3) :

The scene and materials are represented by nodes in OctaneRender®. This allows for powerful material editing as well. Don't be scared…if you don't know how to use nodes because great renders can still be produced without needing to use them.

2. The Render Viewport

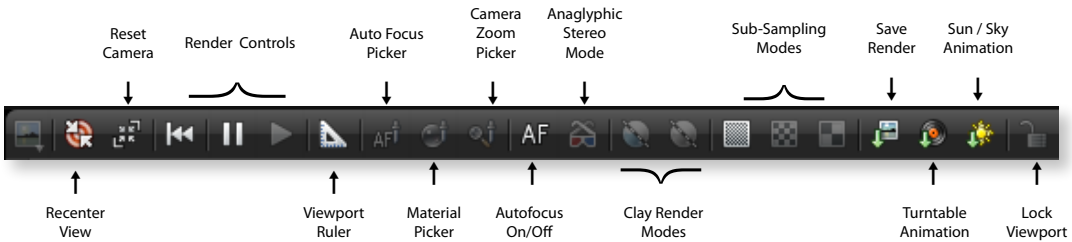
The Render Viewport (fig. 2.4) is used to manipulate the scene interactively. Unlike traditional renderers, OctaneRender® allows the user to adjust many aspects of the scene while maintaining a complete rendering environment.

The Render Viewport contains buttons (fig. 2.5) located at the top of the window that allow the user to control several aspects of the render process.



fig. 2.4

fig. 2.5



3. The Node Inspector

The Node Inspector (fig. 2.6) is used to make changes to nearly every aspect of the render / scene in OctaneRender®. Any nodes that are selected in the Graph Editor are displayed in the Node Inspector where their values can be adjusted or changed. When using the Material Picker, the currently selected material will also be displayed in the Node Inspector.

The Node Inspector also includes quick buttons (fig. 2.7) that allow the user to quickly jump to the most commonly used nodes (Environment, Render Target, etc.)

The bottom of the Node Inspector window also hosts the status for both the Octane Live and Online status. (fig. 2.8)



fig. 2.6

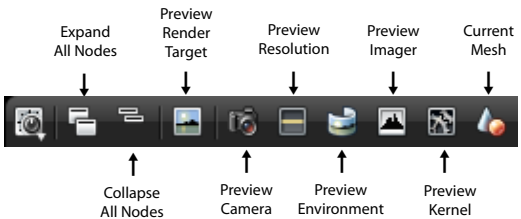


fig. 2.7

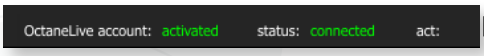


fig. 2.8

4. The Graph Editor

The Graph Editor (fig. 2.9) allows the user to view the nodes associated with the current scene. The Render Target includes all of the scene related nodes including the Environment, Imager, Kernel, Resolution and Camera Nodes. Selecting the nodes in the Graph Editor will bring that node's settings up in the Node Inspector.

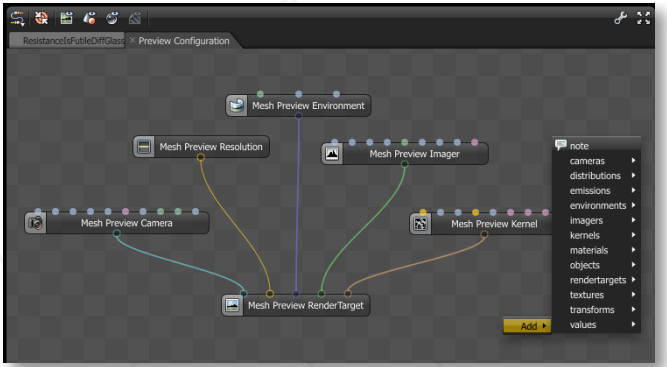


fig. 2.9

Right clicking on the Graph Editor allows the user to add various nodes to the current scene. This is also how a new scene is imported into OctaneRender® by using Add Objects.

The Graph Editor also has buttons (fig. 2.10) that allow the display of the internal material preview scene when a node is selected.

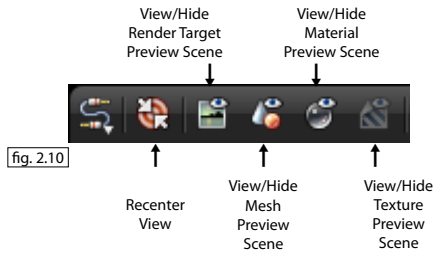
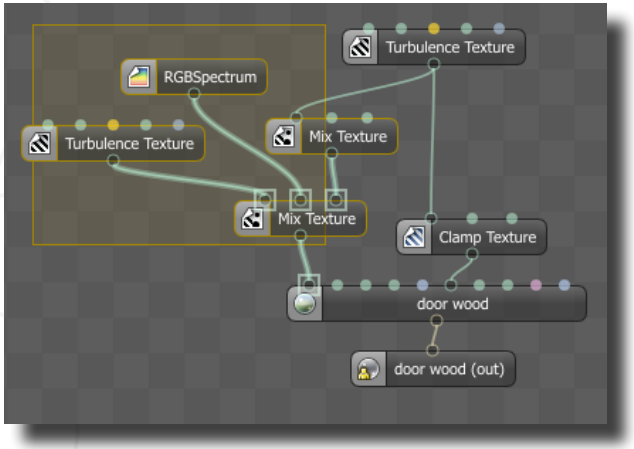


fig. 2.10

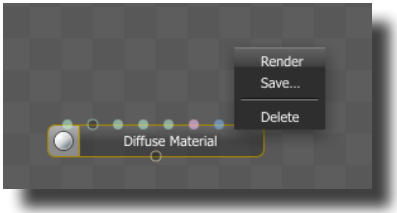
Node graph editor improvements

Start dragging in an empty area of the node graph editor to select multiple nodes with a box. Hold down Shift to add the selection to the current selection. Hold down Ctrl to deselect nodes. You can also add and remove nodes from the selection by holding Ctrl and clicking on a node.



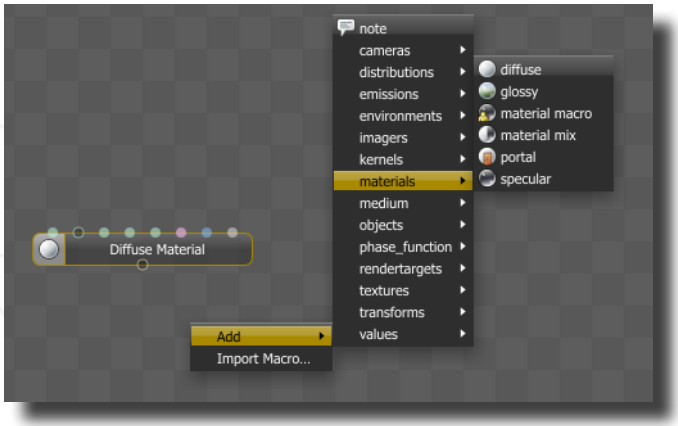
Right-click on a node for a context menu:

delete deletes all selected nodes, save saves the selected nodes as a macro file or in liveDB, and render (if available) will render the node under the cursor.



Right-click in the node graph editor:

As an improvement from the last version, there is a new menuitem to import nodes from a file on the cursor location.



5. The Outliner

The Outliner (fig. 2.11) allows the user to view the current project in an outliner format. This allows the user quick access to any of the parameters / nodes of the scene. Selecting a parameter in the Outliner brings that node to focus in the Node Inspector.

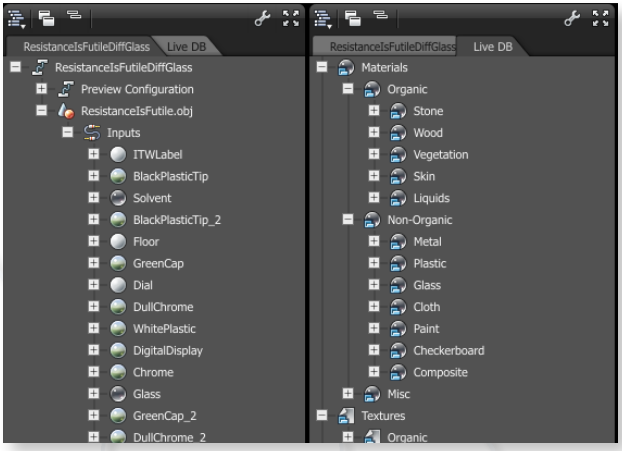


fig. 2.11

The tabs in the Outliner also allow the user to view the Local and Live Databases that can house any Macro that is created.

The Live Database (Live DB) allows instantaneous access to any macro that is uploaded from the entire Octane community. This allows the user to save a novel new material to the database where it will be accessible by every Octane user.

6. The OctaneLive Account Settings

The OctaneLive Account Settings dialog (fig. 2.12) allows for control over whether the account is logged into the current copy of OctaneRender®. If the user wants to use OctaneRender® on another machine, they can deactivate their current machine and reactivate OctaneRender® on another machines using the same license. Note that you must wait for 1 hour before logging into another machine. To Open the Dialog, click on File and then choose Account Preferences.

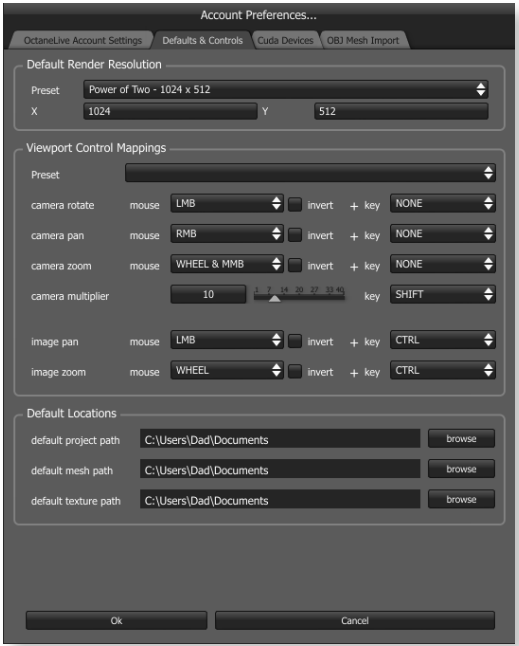
The Account Settings Dialog box is also used for entering:

- The Community / Forum Nickname
- The Users Full Name
- Credits (Used when publishing Macros to the Live DB)
- Copyright Information



fig. 2.12

7. The Defaults and Controls Settings



Settings related to default render resolution, viewport control mappings and default file locations are managed in the Defaults and Controls Settings dialog (fig. 2.13) . The settings saved here will be uploaded to the users OctaneLive account and will be available if they log into another copy of OctaneRender®.

The Viewport Control Mapping allows the user to adjust how the real-time viewport in Octane behaves.

The Preset drop down box allows the user to quickly set OctaneRender® navigation to behave like a number of common 3D modeling packages.

fig. 2.13

8. The Device Manager

Since OctaneRender® is a GPU based render engine, it is important to be able to keep track of the GPU(s) installed in the system. This can be accomplished using the Cuda Devices tab. [fig 2.14]

This allows the user to see the following:

1. Cuda Driver — This shows the current CUDA driver and runtime versions
2. Active/inactive device(s) — This allows the user to select the cards to use for rendering if more than one card is installed
3. Device information — This shows specifications of the current selected device
4. Device Memory Usage — This shows the user how the video card memory is allocated based on the current scenes geometry, textures, render target, etc.

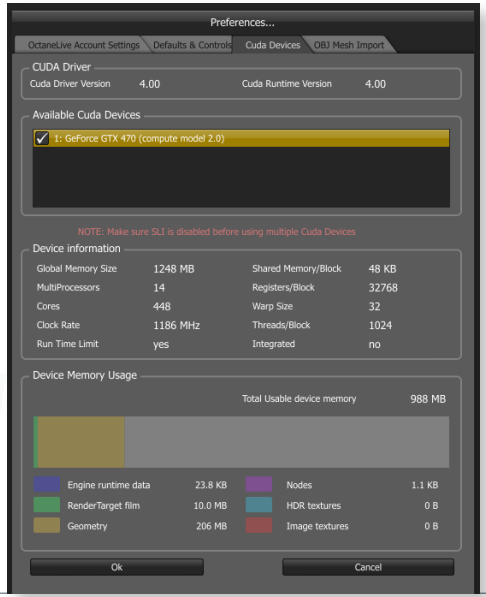


fig. 2.14

9. Customizing the Interface

The toolbars for each area of the OctaneRender® interface is customizable (Graph Editor, Render Viewport, Node Inspector and Outliner.) To customize the toolbar, click on the wrench icon. [fig 2.15]



fig. 2.15

This will open the Add/Remove Items from Toolbar dialog box. [fig 2.16]

The dialog allows the user to place the toolbar to any edge of the respective area. It also allows the buttons to be rearranged, added or removed.

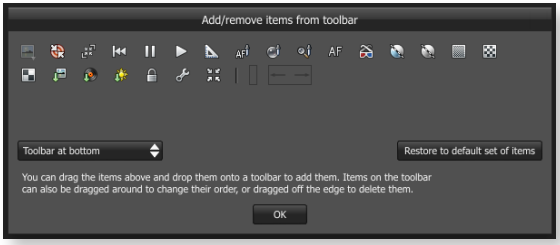


fig. 2.16



Chapter 3

Preparing and Exporting Scenes for Rendering

1. Export Scripts Overview

This section explains the workflow of rendering animations and stills from the host 3D application with OctaneRender® by exporting via a script. Currently there are scripts for:

- Autodesk 3Ds Max
- Autodesk Maya
- Autodesk Softimage XSI
- Maxon Cinema 4D
- Google Sketchup
- Blender
- Luxology Modo
- Lightwave 3D
- Other scripts will be available soon.

To render using the script:

1. Install the script in the host 3D application

2. Finalize the scene in the host application. This includes assigning materials, UV mapping, placing the camera and a sun lamp (if you want a sun/sky system in OctaneRender®.)

3. Launch the script and set the required parameters

4. Render the still or animation via the script. The script will then transfer the geometry to OctaneRender® and begin rendering.

IMPORTANT NOTE:

These scripts only apply to OctaneRender® version 1.0 beta 2.4X only and not for any previous version.

1.1 Project Configuration

Upon launching the script, the project configuration options must be set.

OctaneRender® Binary:

Use the browse button to set the location of the OctaneRender® program

Project Path:

Use the browse button to select a location where the script should place files related to the export.

Project Name:
If this is the first export, then enter a name in the text box that identifies the scene. If you'd like to use an existing OCS file (to retain the materials and other settings already configured in OctaneRender®) click on the Use Existing Project button to load the file. The Project Name will then be based on the selected OCS file.

Native Unit Size:(Not shown)
This setting is used to export the geometry at the proper scale. Select the units that best represent 1 unit in the host application. (The resulting object will then be in the proper units since OctaneRender® assumes 1 unit = 1 meter.)

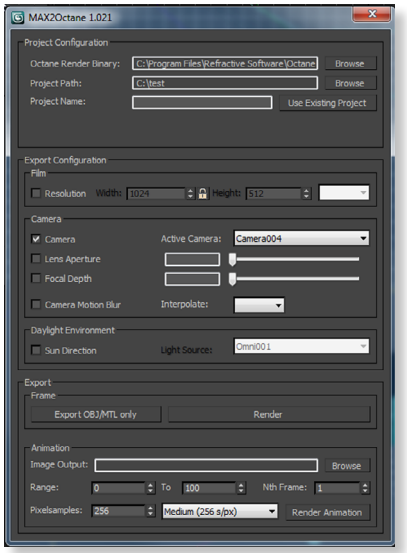


fig. 3.1 - The Export Script for 3ds Max

1.2 Export Configuration

Configuration of export options for film, camera and daylight environment

Film:

Resolution: Set the resolution of the final render

Camera:

Place a checkmark next to any camera / scene element to include in the export and set any required parameter.

Camera / Active Camera: If checked, the selected Active Camera will be used for the export.

Lens Aperture: If checked, the entered Lens Aperture will be used for the export

Focal Depth: If checked, the entered Focal Depth will be used for the export

Camera Motion Blur: If checked, motion blur will be used. The Interpolate setting allows whether to use the next frame or the previous frame to set the two positions to calculate the camera motion blur.

Daylight Environment:

Sun Direction: If checked, the position of the light specified in the Light Source box will be used as the position of the Sun in a Sun / Sky environment when exported.

1.3 Export

This section is used to actually start the export and begin rendering the scene in OctaneRender®.

Frame:

This area controls exporting only the current single frame and is useful for architecture, product shots, or any other static scene. There are two options:

Export OBJ/MTL Only: This exports the scene with all the currently selected options to an OBJ file and MTL file and does not start the render. The scene can then be manually imported into OctaneRender® at a later time.

Render: This button performs the export with all the current options and then sends the scene to OctaneRender®.

CAMERA TIP :

Feel free to move about the scene and continue to refine it once it is exported. The original exported camera position can be obtained by clicking on the Reset Camera button on the toolbar.

Animation:

This area controls exporting an animation.

Image Output: use the Browse button to select the path where the rendered images are to be saved.

Range: Use the text boxes to supply the Start and End Frame of the animation. Use the nth Frame text box to set how many frames to step through when exporting. For example, if you rendered an animation of 30 frames with a step of 1, you'd get frames 1,2,3,4,5 etc. If you rendered the same animation with a step of 3, you'd get frames, 1,3,6,9,12, etc.

Pixel Samples: Specify the number of samples per pixels to render each frame. Either specify the value in the text box or select one of the presets.

Render Animation: Clicking this button will start the process of exporting and rendering each frame of the animation in OctaneRender® and saving the images in the specified directory.

Example Animation Workflow

1. Export the scene as a single frame
2. Set up all the materials and scene settings in OctaneRender®
3. Save the scene as an OCS file and exit OctaneRender®
4. Set the script to point to the OCS file in 3)
5. Set all the motion blur, camera parameters, and animation frame range and render the animation

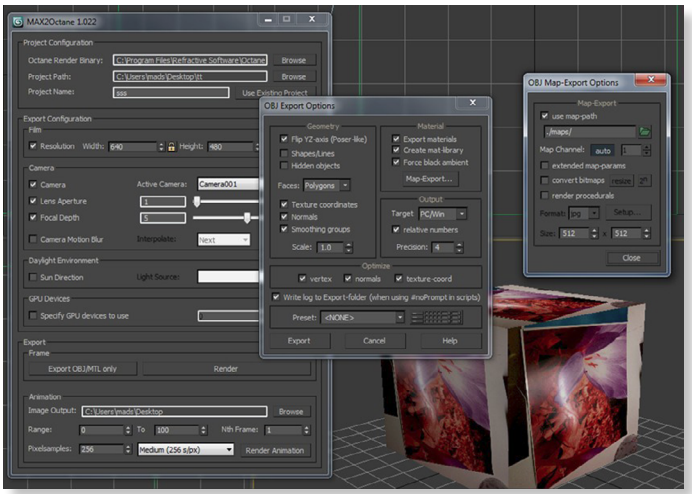


fig.3.2 - Placing Textures in 3ds Max

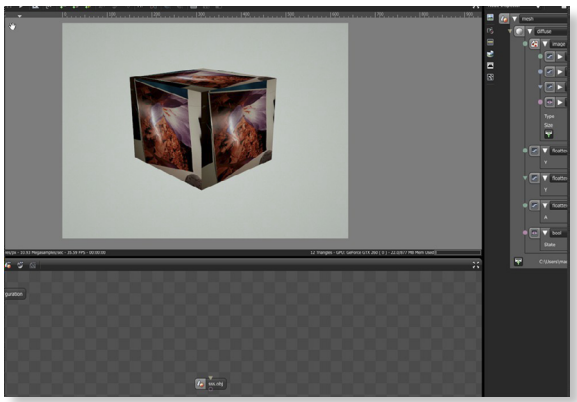
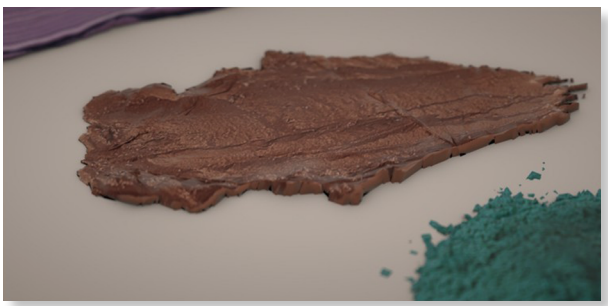


fig. 3.3 - The same model as in 2.1 as rendered in OctaneRender®

2. Manual Exporting

To export a scene for use in OctaneRender®, use your favorite 3D Modeling Software's Wavefront Object (obj) export function. The settings available are different for various software packages. The following are some general settings to export if available:

- Materials
- Normals
- Texture Coordinates
- Objects



By Pedrojafet

Other tips:

Do not export Edges as currently this can cause a crash in OctaneRender®. The meshes should also be triangulated if possible as OctaneRender® does not currently support n-Gons.

Screenshots of recommended exporter settings are included in the following pages for some common modeling programs.

2.1 Common Export Settings

Autodesk Maya

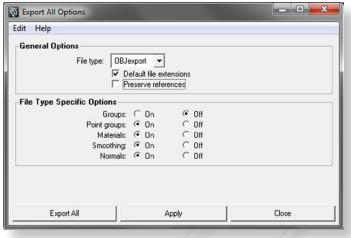


fig. 3.4 - Autodesk Maya Export Settings

Autodesk 3ds Max

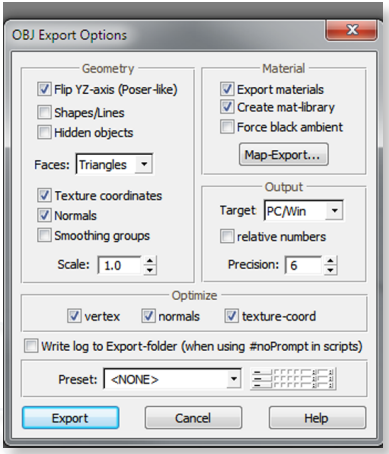


fig. 3.5 - Autodesk 3ds Max Export Settings

Blender 2.49

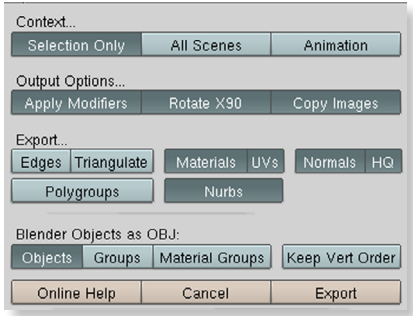


fig. 3.6 - Blender 2.49 Export Settings

Autodesk Softimage

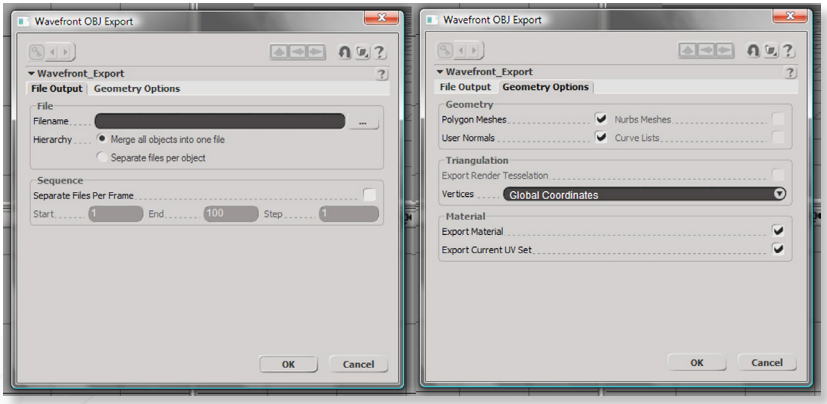


fig. 3.7 - Autodesk Softimage Export Settings

Daz Studio

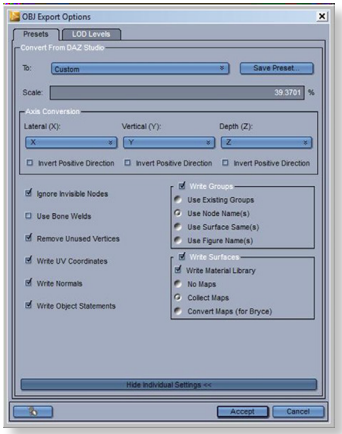


fig. 3.8 - Daz Studio Export Settings

Newtek Lightwave

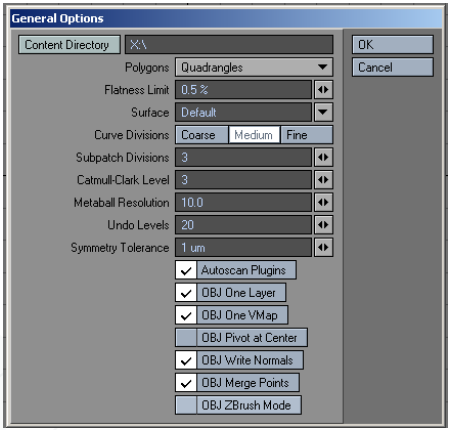


fig. 3.9 - Newtek Lightwave Export Settings

Daz Carrara

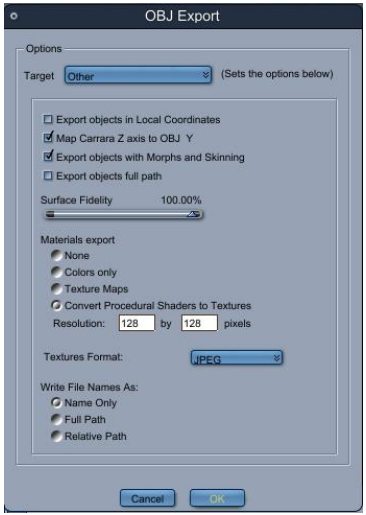
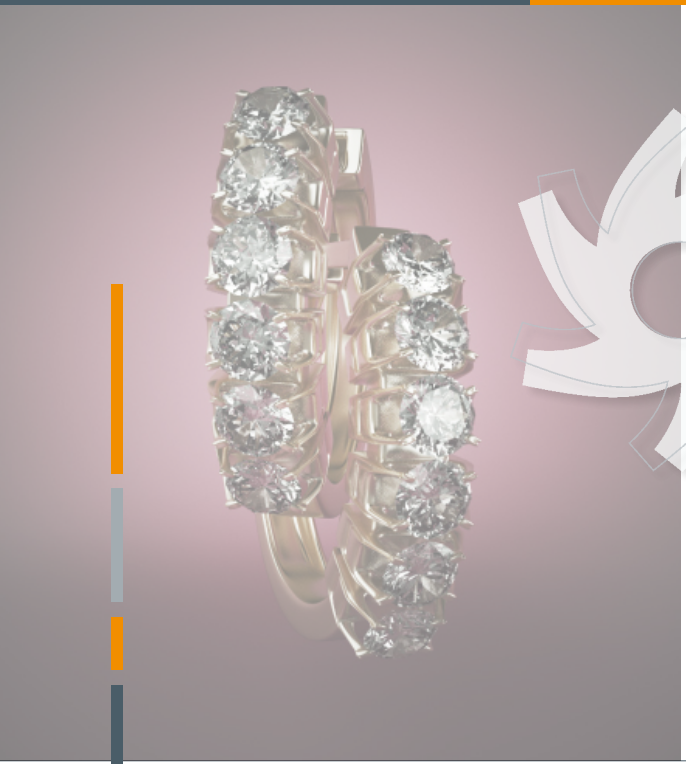


fig. 3.10 - Daz Carrara Export Settings



Chapter 4

Using OctaneRender®

1. Using the Preview Macro

To quickly prepare OctaneRender® for a full render setup, a Preview Configuration node (fig. 4.1) is provided in the Graph Editor (fig. 4.2).

This is a Macro Node that will create a predefined setup when double clicked. A new tab is also created on the left side of the Graph Editor labelled Preview Configuration.

It is not required to use the Preview configuration macro. Complex node setups can be created with multiple camera, environment and render target nodes.

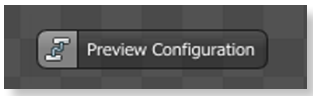


fig. 4.1

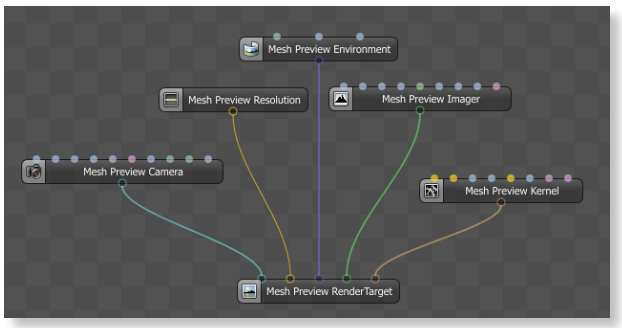


fig. 4.2

2. Importing

2.1 Setting Import Preferences

The OBJ Mesh Import Preferences (fig. 3.3) can be accessed from the file menu and provide greater control of the importing process and OctaneRender® handles materials and mesh geometry on import.



fig. 4.3

Override settings during individual import— Sets whether the scene or OctaneRender® settings should be used.

Import MTL file —Determines whether OctaneRender® imports any materials that were stored in the MTL file associated with the imported OBJ file.

Material Types—Allows the user to specify what material types are imported.

Import Image Textures—Uses the image textures as specified in the MTL file.

Texture Types—Allows the user to determine the data type of imported images.

Object Smoothing—Allows the user to set preferences related to material smoothing including using supplied vertex normals and smoothgroups.

Meta Objects—Allows the user to set a material in their modeling software to set the camera position in OctaneRender®. The object with the material specified in the Transform Material Name field will be used to position the camera.

2.2 Importing the Scene

To import a scene into OctaneRender®, move the mouse over Graph Editor and Right Click. This will bring up the Add toolbar. Select Object and then Mesh (fig. 4.4).

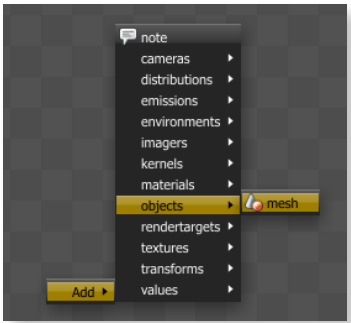


fig. 4.4

Locate the exported OBJ file using the file dialog box which will be different depending on the operating system used. The scene will then be loaded and voxelized.

When the scene is loaded, it will be represented by a new node in the Graph Editor. Clicking on this new node will start the scene rendering in the Render Viewport and will display all the materials associated with the scene in the Node Inspector.



fig. 4.5

Each circle at the top of the mesh node corresponds to a material in that object / scene. The identification of the node connection can be determined by hovering the mouse over the connection (fig. 4.5).

3. Navigating the Scene

OctaneRender® provides a refreshing and exciting rendering experience due to the ability to interact with the scene with final render settings. This interactivity allows for renders that might not be possible with traditional render engines. The user can continue to hunt for that perfect camera angle where all the reflections of the lights are just right or they can continue to adjust the DOF in real-time.

The Render Viewport can be manipulated like traditional 3D viewports with rotation, panning and zooming controls.

Navigating in the Render Viewport (While holding your mouse over the Render Viewport):

Rotate: Left Mouse Button
Zoom: Mouse Wheel / Middle Mouse Button
Pan: Right Mouse

If the scene navigation is too slow, hold the SHIFT key while navigating with the mouse.

Sub-sampling Settings

The sub-sampling settings affects how much detail is drawn when the scene is being navigated. In order to improve navigation at the cost of visual quality, 2x2 or 4x4 sub-sampling settings can be adjusted by using buttons above the Render Viewport. The reduced settings apply when the scene is being navigated and then returns to the render settings after navigation has stopped. Figures 4.7 and 4.8 show the difference between navigating with no sub-sampling versus navigating with 4x4 sub-sampling.

Sub-sampling buttons (fig. 4.6) above the Render Viewport

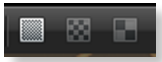


fig. 4.6



fig. 4.7 - No sub-sampling while navigating



fig. 4.8 - 4 x 4 sub-sampling while navigating

Camera Zoom Picking

The Camera Zoom Picker tool helps navigating a scene that is very complex or that has become difficult to navigate. To enter Camera Zoom Picking, click on the icon located above the Render Viewport. It is then used to click on any part of the scene. What is under the mouse pointer then becomes the center of rotation and zooming. While it might not be immediately apparent that anything has happened after the Camera Zoom Picker was used to click on the Render Viewport, a quick roll of the mouse wheel will cause the render to zoom into the newly selected point.


Camera Zoom Picker Icon in the Render Viewport

Camera Reset

The Camera Reset button allows the camera to be reset back to the original position. If the scene was just created from an imported object, then the Camera Reset button will reset the camera position to the default coordinates similar to when the object was just imported. If the scene was saved as an Octane Scene File, then the camera would be reset to the position of the Octane Scene File.


Camera Reset Icon in the Render Viewport

Recenter View

The Recenter view button centers the render in the render view port. This is useful if the render was moved and is no longer visible or centered.


Recenter View Icon in the Render Viewport

4. Render Settings

There are four major rendering kernels in OctaneRender®: Direct Lighting, Path Tracing, PMC and Deep Channel.

They are switchable by changing the type in the Node Inspector. To do this either click on the Mesh Preview Kernel node in the Graph Editor or click on the Preview Kernel Icon in the Node Inspector.

In the first dropdown menu in the node inspector, you can switch the node types. .

4.1 Direct Lighting

Direct Lighting is used for faster preview rendering. Direct Lighting is not unbiased and should not been used when you aim photo-realism but is useful when creating quick animations or renders.

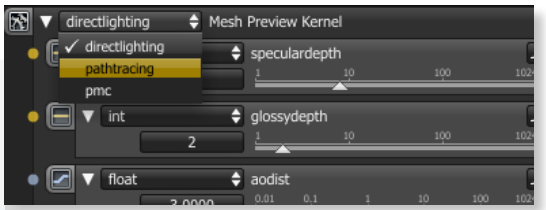
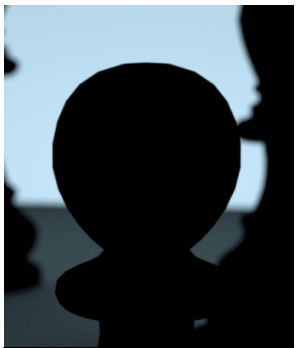


fig. 4.9 - Changing the rendering kernel

Specular Depth (speculardepth)

Specular depth controls the number of time a ray can be refracted before dying. Higher numbers mean higher render times but more color bleeding and more details in transparent materials. Low numbers can introduce artifacts, or turn some refractions into pure black.



Specular Depth 0
All the objects appear black



Specular Depth 2
Rays can enter transparent objects but cannot render the other chess pieces



Specular Depth 5
Rays can find the other chess pieces but not ones in their refraction



Specular Depth 8
All chess pieces are properly rendered

fig. 4.10 - Examples of various Specular Depth's using the Directlighting Kernel with GI Mode (0) None

Glossy Depth (glossydepth)

Glossy depth controls the number of times a ray can be reflected before dying. Higher numbers mean higher render time. Low numbers under "4" can introduce artifacts, or turn some reflections into pure black. You should setup this setting based on the complexity of the scene you are working on, and especially based on how many reflective parallel surfaces you have.

AO Distance (aodist)

The distance of the ambient occlusion in units. Always check if the amount is right related to your model scale. For example you don't need an amount of "3" units if your object is a small toy. But if your model is a house or something large, you can increase the value. The more you increase the value the darker your render will be.



fig. 4.10 - Setting the AO Distane to 1



fig. 4.11 - Setting the AO Distance to 32

Ray Epsilon (rayepsilon)

The ray epsilon is the distance to offset new rays so they don't intersect with the originating geometry. This value should be left as the default.

Maximum Samples (maxsamples)

This sets the maximum number of samples per pixel before the rendering process stops. The higher the number of samples per pixel, the cleaner the render. There is no rule as to how many samples per pixel are required for a good render.

Filter Size (filtersize)

This sets the pixel size for filter for the render. This can improve aliasing artifacts in the render. If the filter is set too high, the image can become blurry.

Alpha Channel (alphachannel)

This option removes the background and renders it as transparant (zero alpha). This can be useful if the user wants to composite the render over another image and does not want the background to be present.

Keep Environment (keep_environment)

This option is used in conjuction with the Alpha Channel setting. It allows the background to be rendered with zero alpha but is still visible in the final render. This allows even further flexiblity in compositing images.

Alpha Shadows

This setting allows any object with transparency (specular materials, materials with opacity settings and alpha channels) to cast a shadow accordingly instead of behaiving as a solid object.

GI Mode

There are five different Global Illumination modes in the Direct Lighting Kernel.

None(0)
Only direct lighting from area lights is included. the rest of the image areas receive no contri
bution and will be black.

Ambient(1)
Use a simple ambient colour from the environment above.

Sample Environment (2)
Use a simple ambient colour from the environment/horizon.

Together with ambient and none, these modes are all very fast, as no montecarlo (sampling) is required.
These give a very unrealistic, classic z-buffer/whitted raytracing style look, but are very fast, and very handy for interactive tuning of complex scenes or on slow hardware.

Ambient Occlusion (4)
Standard ambient occlusion.

Diffuse (5)
Indirect diffuse, with a configuration to set the number of indirect diffuse bounces to include.
This gives a GI quality that is in between direct/AO and pathtracing, without caustics and a decent realistic quality (much better than AO), but much faster than pathtracing/PMC.

It is very good for quick finals and animations. It is similar in some ways to 'bruteforce' indirect GI in other engines.

Diffuse Depth

This sets the pixel size for filter for the render. This can improve aliasing artifacts in the render. If the filter is set too high, the image can become blurry.

Russian Roulette Probability (rrprob)

In path tracing, maxdepth is the maximum amount of bounces a ray can make, but, after 3 bounces, there is a 50 % chance that the ray is killed, if you set the rrprob parameter to 0.5. So in practive it will rarely exceed more than 16-20 bounces once every million pixel samples (generating a firefly usually).

If the rrprob is set to 0, it uses a automatic setting. If it is set to anything else, the user directly controls the probability the ray is ended at random after 3 bounces and so forth.

4.2 Path Tracing

Path Tracing is best used for realistic results. The render times are higher than Direct Lighting but the results can be photorealistic. It can have some difficulties with small light sources and proper caustics.

Maximum Depth (maxdepth)

The maximum number of time a ray can bounce/reflect/refract in a surface. Higher amounts mean also higher render time but more realistic results. For outdoor renders a good setting is around 4 maxdepth. For lighting interior with natural light (the sun and the sky) you will need higher settings such as 8 or higher. While high values are possible, in reality rays will not usually go beyond 16 ray depth.

Russian Roulette Probability (rrprob)

The RRprob is the probability of terminating the path randomly during raytracing. This value should be left as the default. A value of zero allows OctaneRender® to determine the value.

Ray Epsilon (rayepsilon)

The ray epsilon is the distance to offset new rays so they don't intersect with the originating geometry. This value should be left as the default.

Maximum Samples (maxsamples)
This sets the maximum number of samples per pixel before the rendering process stops. The higher the number of samples per pixel, the cleaner the render. There is no rule as to how many samples per pixel are required for a good render.

Filter Size (filtersize)

This sets the pixel size for filter for the render. This can improve aliasing artifacts in the render. If the filter is set too high, the image can become blurry.

Alpha Channel (alphachannel)

This option removes the background and renders it as transparant (zero alpha). This can be useful if the user wants to composite the render over another image and does not want the background to be present.

Keep Environment (keep_environment)

This option is used in conjuction with the Alpha Channel setting. It allows the background to be rendered with zero alpha but is still visible in the final render. This allows even further flexiblity in compositing images.

Alpha Shadows (alphashadows)

If alpha maps are used in the scene, this setting controls whether the shadows will calculated from the mesh geometry or from the alpha map.

4.3 PMC

PMC is a custom mutating unbiased kernel written for GPUs. It allows for complex caustics and lighting to be resolved

Maximum Depth (maxdepth)

The maximum number of time a ray can bounce/reflect/refract in a surface. Higher amounts mean also higher render time but more realistic results. For outdoor renders a good setting is around 4 maxdepth. For lighting interior with natural light (the sun and the sky) you will need higher settings such as 8 or higher. While high values are possible, in reality rays will not usually go beyond 16 ray depth.

Russian Roulette Probability (rrprob)

The RRprob is the probability of terminating the path randomly during raytracing. This value should be left as the default. A value of zero allows OctaneRender® to determine the value.

Ray Epsilon (rayepsilon)

The ray epsilon is the distance to offset new rays so they don't intersect with the originating geometry. This value should be left as the default.

Maximum Samples (maxsamples)
This sets the maximum number of samples per pixel before the rendering process stops. The higher the number of samples per pixel, the cleaner the render. There is no rule as to how many samples per pixel are required for a good render.

Filter Size (filtersize)

This sets the pixel size for filter for the render. This can improve aliasing artifacts in the render. If the filter is set too high, the image can become blurry.

Alpha Channel (alphachannel)

This option removes the background and renders it as transparant (zero alpha). This can be useful if the user wants to composite the render over another image and does not want the background to be present.

Keep Environment (keep_environment)

This option is used in conjuction with the Alpha Channel setting. It allows the background to be rendered with zero alpha but is still visible in the final render. This allows even further flexiblity in compositing images.

Alpha Shadows (alphashadows)

If alpha maps are used in the scene, this setting controls whether the shadows will calculated from the mesh geometry or from the alpha map.

Exploration Strength (exporation_strength)

This specifies how long the kernel investigates good paths before it tries to find a new path. Low values can create a noisy image while larger values can create a splotchy image.

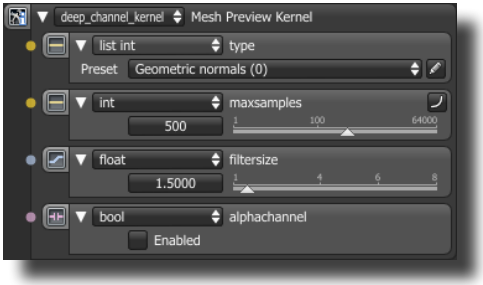
Direct Light Importance (direct_light_importance)

The direct light importance makes the kernel focus more on paths with indirect light. For example, imagine sunlight through a window creates a bright spot on the floor. If the direct light importance is 1, the kernel would sample this area a lot, although it becomes clean very quickly. If the direct light importance is reduced, the kernel reduces its efforts to sample that area and focuses more on more tricky areas that are harded to render.

Max Rejects (maxrejects)

This can control the "bias" of the render. By reducing the value, the result will be more biased, but the render time will be shorter.

4.4 Deep Channel Kernel



The deep_channel_kernel creates false-color images of the scene, containing various types of information about the scene. In scenes where the environment is visible you should enable the alpha channel.

The following settings are available:

- Geometric normals: the vectors perpendicular to the triangle faces of the mesh.
- Shading normals: the interpolated normals used for shading. This does not take into account the bump map of the object. For objects without smoothing this is identical to the geometric normals.
- Position: The position of the first intersection point.
- Z-depth: The distance between the intersection point and the camera, measured parallel to the view vector.
- Material ID: Every material pin is represented as a separate color.

For display these values are scaled to get values approximately between 0 and 1. All tone mapping settings except for min_display_samples and gamma are ignored. Exposure is enabled for Z-depth, and will indicate the value which gets mapped to white. To save these channels you should use untonemapped EXR.

5. Adjusting Materials

Materials can be edited by either selecting the material in the Outliner (fig. 4.12), selecting the mesh node and then finding the material in the Node Inspector (fig. 4.13), or by using the Material Picker and selecting the material in the Render Viewport (fig. 4.14).

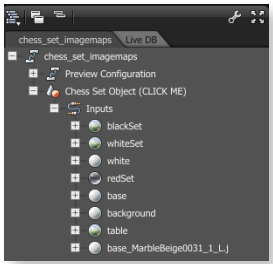


fig. 4.12



fig. 4.13



fig. 4.14

There are four types of materials in OctaneRender® currently.



fig. 4.15

1 Diffuse—Used for dull materials or mesh emitters
2 Glossy—Used for shiny materials such as plastics or metals
3 Specular—Used for transparent materials such as glass and water
4 Mix - Used to mix any two material types
5 Portal - Used to designate openings in scenes to allow the render kernel to better sample light from those areas

Materials can be switched to different types by using the drop down box associated with the material (fig. 4.15).

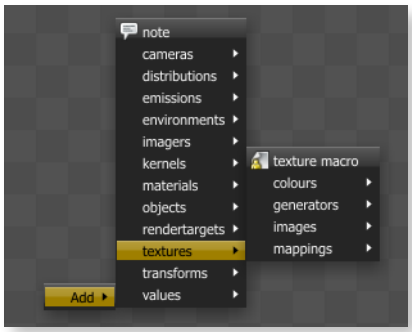
5.1 Working with Material Data

All of the materials can be adjusted by using sub parameters. These parameters can be set to various data types / nodes to provide for flexible rendering. They can be broken into two main classes: Textures and Values.

Textures are used to create and manipulate the colour and appearance of the actual material. There are four different Texture types: Colours, Generators, Images and Mappings.

Values are used anywhere only numeric input is required.

Any parameter that requires a Value can not use a Texture type as it's source and a Texture can not accept a Value as it's source.



5.2 Values

The Values available are:

Bool—A value that can be either true or false

Float—A single value slider adjusts the value

Float2—Two value sliders adjusts the value (X,Y). The range of the values are dictated by the parameter it is controlling.

Float3—Three value sliders adjusts the value (X,Y,Z). The range of the values are dictated by the parameter it is controlling.

Float3DaylightSystem—Used for setting all the properties of the Sun / Sky Environment.

Int—A single value slider that adjusts the value in whole integer steps

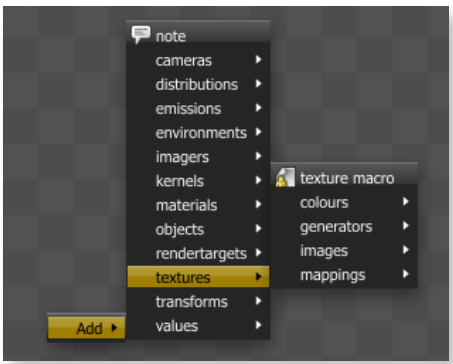
Int2—Two value sliders adjust the value of (X,Y) in whole integer steps

Int2resolution—Two parameters adjust the resolution of the render

int2XY - Two value sliders adjust the value of (X,Y) in whole integers steps

5.3 Texture Types

The Texture types allow for creating very flexible materials. There are four main types of Texture Node Types:



Colours: Colour textures provide methods of applying a colour to a material.

Generators: Generator textures are used to actually create or modulate other textures. They are grey scale.

Images: Image textures use image files to create the texture.

Mappings: Mappings are Nodes that allow mixing and manipulation of other texture nodes.

5.3.1 Colour Textures

RGBspectrum—The texture is based on the RGB colour that is selected

GaussianSpectrum— The texture is based on a Gaussian distribution spectrum. The wavelength is used to set the center of the spectrum and the width is used to set how wide the curve is. The narrower the width, the more pure and saturated the colour.

5.3.2 Image Textures

In order to properly utilize Image Textures, the mesh must be UV mapped prior to export from the Modelling software.

FloatImage—The image is interpreted as gray scale even if it is a full colour image, thus saving GPU ram. The Invert checkbox can be used to invert the image (useful for bump and opacity maps.)

Image—An image texture is used for the parameter (mesh must be UV mapped prior to export to properly use the Image type). The image is interpreted as being full colour even if it is a grey scale image, and therefore taking up more GPU memory.

AlphaImage - An alpha image utilizes the images native Alpha Channel to provide transparency. This type will only accept PNG and TIF image types.

When to use Floatimage versus Image Data Type?

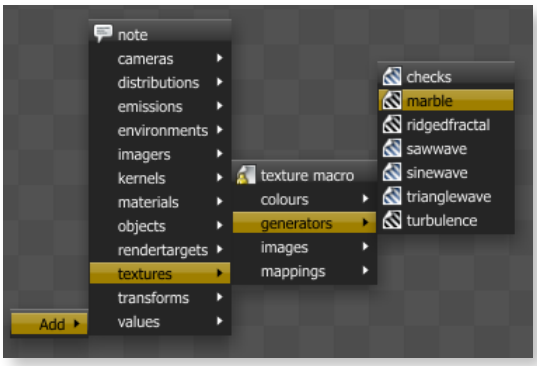
There are some parameters where full colour data is not used (or useful). If a full colour image is loaded, it can take much more memory in the GPU than a grey scale image, even though the user only really wants the grey scale data. Since memory management is very critical for GPU rendering, the Floatimage type allows a user to load a full colour texture but it will be interpreted as a grey scale image and therefore use less video ram. If the full colour data is needed then use the Image data type (normal maps, diffuse maps)

5.3.3 Texture Generators

Texture Generators are used to create patterns that can be used alone or in combination with the Mapping and Colour textures to create memory efficient, procedural textures. Procedural Textures can be used to create textures, bump maps and other advanced materials with minimal impact to GPU memory. It is therefore advantageous to explore creating materials using these textures before resorting to image based textures.

The current types of generators include:

Checks
Marble
Ridged Fractal
Saw Wave
Sine Wave
Triangle Wave
Turbulence



Generator Texture Examples

Procedural Textures can be used to create textures, bump maps and other advanced materials with minimal impact to GPU memory. It is therefore advantageous to explore creating materials using these textures before resorting to image based textures.

Check (Checksmix)

The Check procedural texture is useful for making stripes, checker board and grid patterns. It is controlled by a float3 value. It is most useful when mixed with other textures.

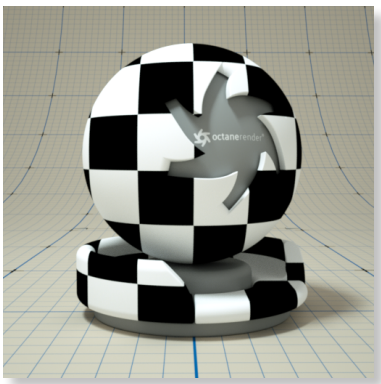


fig. 4.16 - Checks Example with X,Y,Z scaled

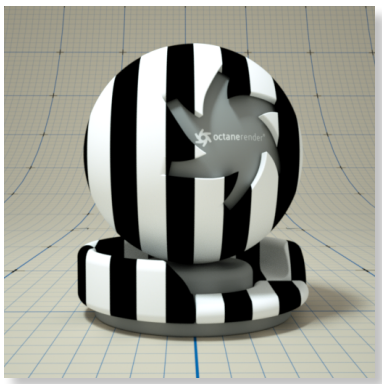


fig. 4.17 - Checks Example

Sine Wave, Saw Wave and Triangle Wave

These textures can be used to create various banding effects.

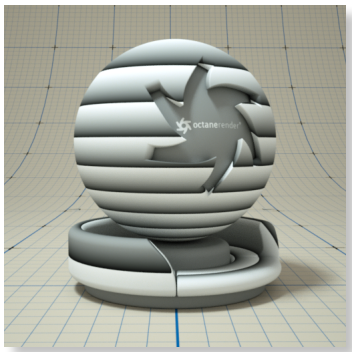


fig. 4.18 - Saw Wave

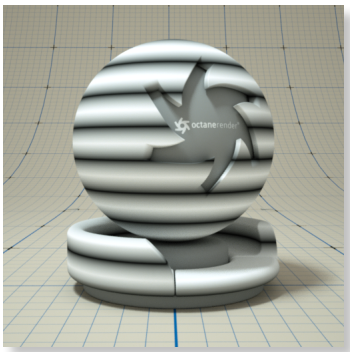


fig. 4.19 - Triangle Wave

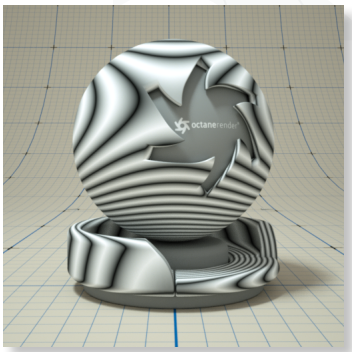


fig. 4.20 - Triangle Wave

Turbulence

The Turbulence texture can be used to create many different effects based on banded noise. This flexible texture can be used to create wood, marble, flesh, and many other useful textures.

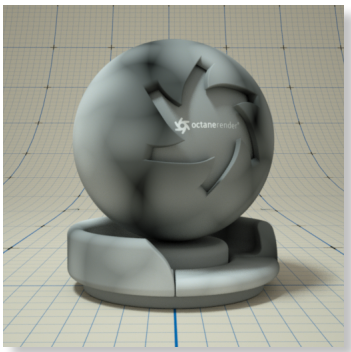


fig. 4.21 - Turbulence Example 1

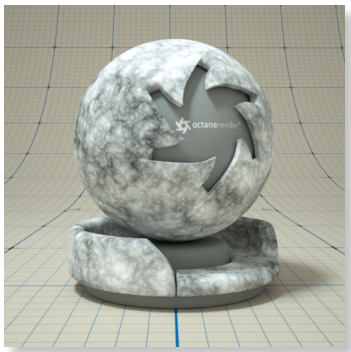


fig. 4.22 -Turbulence Example 2

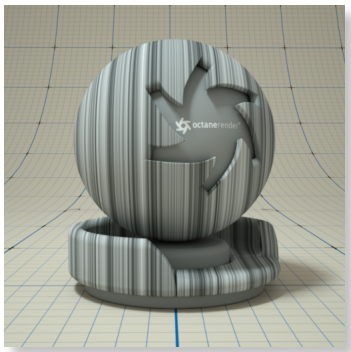


fig. 4.23 - Turbulence Example 3

Mapping Texture Examples

Clamp

The Clamp Texture requires a texture input and then allows for the texture to be “clamped” with the minimum and maximum slider.

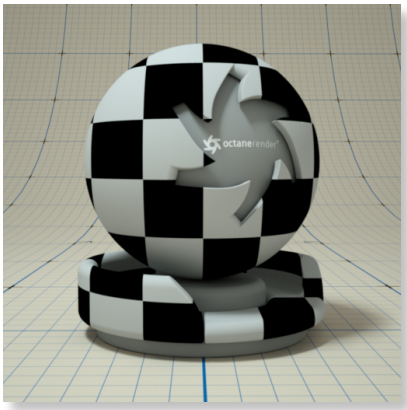


fig. 4.24 - Minimum 0 / Maximum 0.5

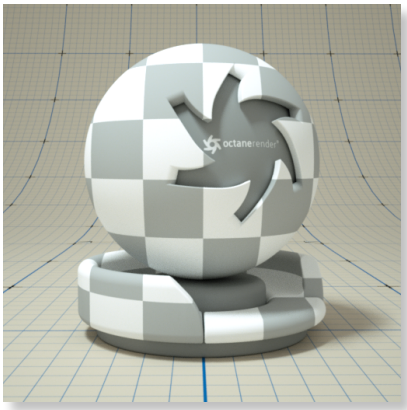


fig. 4.25 - Minimum 0.5 / Maximum 1.0

Mix / Cosine Mix

The Mix textures are used for mixing two textures together (either linearly or according to a cosine wave.) In the example below, a Checks Mix was combined with a GaussianSpectrum using a Cosine Mix Texture and connected to the Diffuse channel of a Diffuse material.

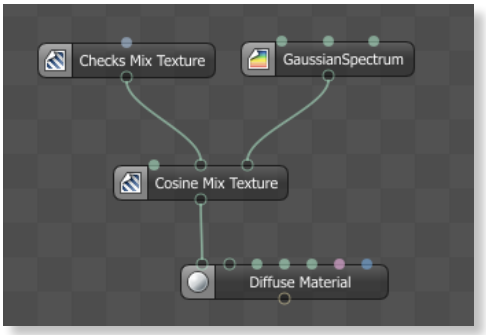


fig. 4.26 - Combining a Checks Texture with a Gaussian Spectrum by using a Cosine Mix Texture which is set to a Diffuse Channel of a Diffuse Material

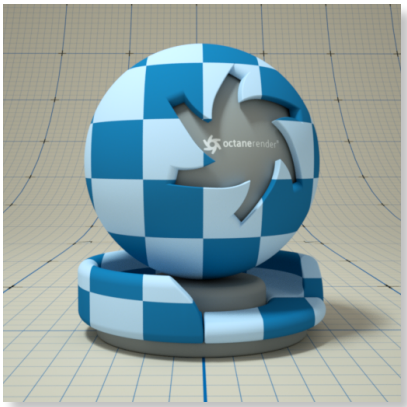


fig. 4.27 - The resulting material from Figure 4.23

Wood Example

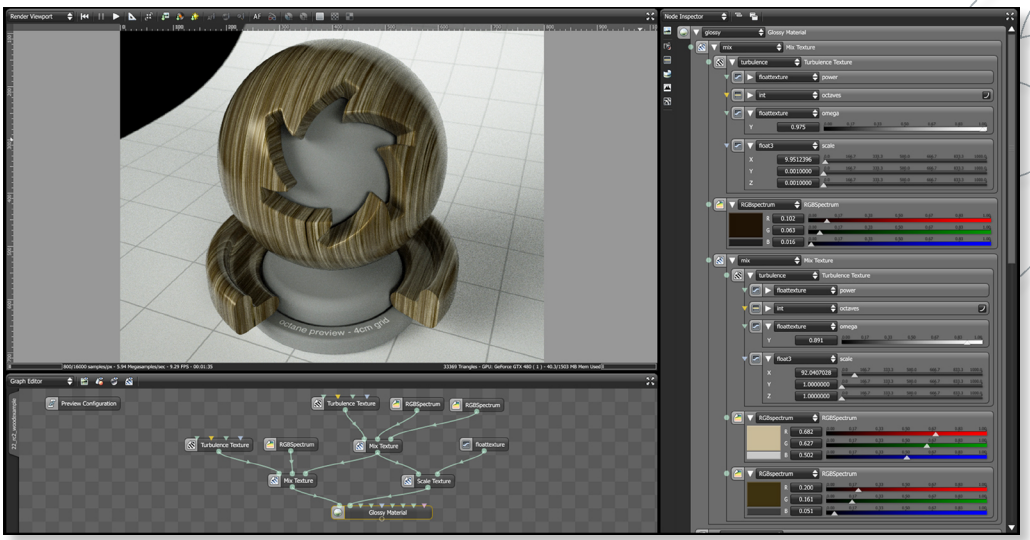


fig. 4.28 - Using Turbulence, Mix, and RGB Spectrums to create a wood material

5.4 Diffuse Materials

Diffuse materials have the following parameters to adjust:



fig. 4.29 - Viewing a Diffuse Material in the Node Inspector

Diffuse

The Diffuse value gives the material it's color.

Bump / Normal

Both the Bump and Normal channels can load images to control the amount of bump mapping and normal mapping. The Bump channel should be set to floatimage to load a bump map. The Normal channel should be set to the image data type to load a full color normal map.

Opacity

Opacity sets the transparency of the material. Set the data type to alphaimage(if the image has an alpha channel) or floatimage(for black/white images) to load an image to set the transparency (use the Invert checkbox if necessary to adjust whether black or white regions are considered transparent.

Normal Smoothing

Normal Smoothing is a Boolean value that sets whether to smooth the normals of all meshes sharing that material. When off, the materials can be faceted and polygonal.

Emission

The Emission setting controls whether the material acts as a light source.

For applying absorption, SubSurface Scattering and emission on Diffuse Material, refer to Chapter 5 Section 5.9.

5.5 Glossy Materials

Glossy materials have four parameters to adjust:

Diffuse (diffuse)

The value gives the material it's color.

Specularity (specular)

The value determines the amount of specularity on the mesh.

Film Width (filmwidth)

This controls the thickness of a optical, thin film on the material. This is useful in creating rainbow or oil slick effects.

Film Index (filmindex)

This controls the Index of Refraction of the thin film.

Roughness

The roughness determines the amount of reflection that will be present. A low roughness value will create blurry reflections and a high value will produce a mirror like reflection.

Bump / Normal

Both the Bump and Normal channels can load images to control the amount of bump mapping and normal mapping (respectively.) The Bump channel should be set to floatimage to load a bump map. The Normal channel should be set to the image data type to load a full color normal map.

Opacity

Opacity sets the transparency of the material. Set the data type to alphaimage(if the image has an alpha channel) or floatimage(for black/white images) to load an image to set the transparency (use the Invert checkbox if necessary to adjust whether black or white regions are considered transparent.

Normal Smoothing

Normal Smoothing is a Boolean value that sets whether to smooth the normals of all meshes sharing that material. When off, the materials can be faceted and polygonal.

5.6 Specular (Glass) materials

Specular materials have four parameters to adjust:

Reflection

The Reflection value determines the glossiness of the mesh.

Transmission

The Transmission value gives the base color to the mesh.

Index

The Index represents the Index of Refraction of the material. Standard values of Index of Refraction (IOR) can be readily found via searching the internet. Glass typically has a value of 1.53 and water 1.33.

Film Width (filmwidth)

This controls the thickness of a optical, thin film on the material. This is useful in creating rainbow or oil slick effects.

Film Index (filmindex)

This controls the Index of Refraction of the thin film.

Bump / Normal

Both the Bump and Normal channels can load images to control the amount of bump mapping and normal mapping (respectively.) The Bump channel should be set to floatimage to load a bump map. The Normal channel should be set to the image data type to load a full color normal map.

Opacity

Opacity sets the transparency of the material. Set the data type to alphaimage(if the image has an alpha channel) or floatimage(for black/white images) to load an image to set the transparency (use the Invert checkbox if necessary to adjust whether black or white regions are considered transparent.

Normal Smoothing

Normal Smoothing is a Boolean value that sets whether to smooth the normals of all meshes sharing that material. When off, the materials can be faceted and polygonal.

Dispersion Coefficient (dispersion_coefficient_B)

The dispersion in OctaneRender® is based on Cauchy's equation which has two terms: A which is the index of refraction and B which is the dispersion coefficient. Increasing the value increases the amount of coloration and dispersion in the object and in caustics.

Absorption

Absorption means that the material slightly absorbs light while passing through. The color resulting from this absorption is dependent on the distance light travels through the material. With increased distance it will get darker, and if the absorption is colored it will get more saturated.

Absorption Color (absorption_color)

The absorption color gives the spectrum remaining from white light after traveling through the material for a certain distance. Only constant colors are supported correctly.

Depth of Absorption (depth_of_absorption)

The Depth of Absorption specifies the aforementioned distance (in meters). The smaller

this distance, the stronger the absorption will be.

For applying absorption, SubSurface Scattering and emission on Glossy Material, refer to Chapter 5 Section 5.9.

5.7 Material Mix

The Material Mix option is used to combine two different materials. It accepts any two material nodes and a texture to control the mix. In the example below, a white glossy material is mixed with a red specular material. A checks texture node is used to control the mixing of the two materials.

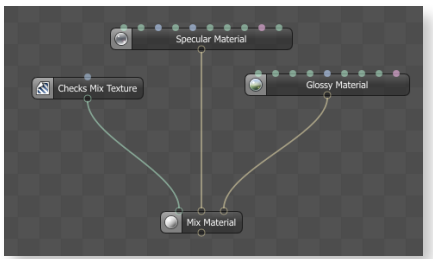


fig. 4.30 - A simple Material Mix Set up

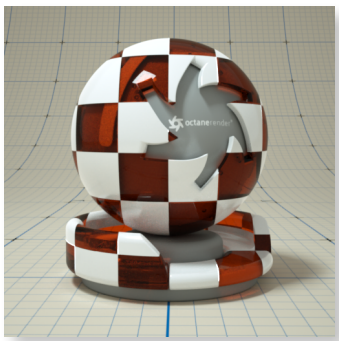
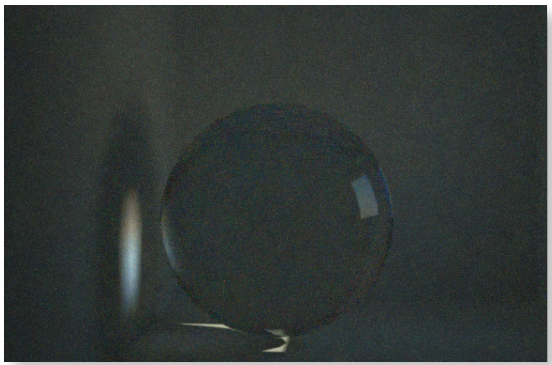


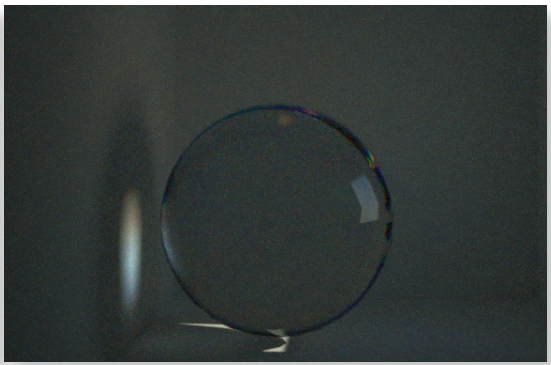
fig. 4.31 - The resulting material

5.8 Portal Materials

A portal is a special material applied to a plane to allow the render kernel to efficiently find openings / windows in interior renders. The use of portals will be covered in the next section covering lighting options.



A scene with no portal over a small window lighting a room with glass sphere. The scene was rendered for 500 samples and is overall noisy.



The same scene with a plane over the window with a Portal material applied. Rendered at 500 samples, the image is cleaner.

5.9 Using medium nodes

OctaneRender® supports participating media inside objects (absorption, SubSurface Scattering and emission). These settings are stored in medium nodes, which are attached to the corresponding input pin of diffuse or specular material nodes.

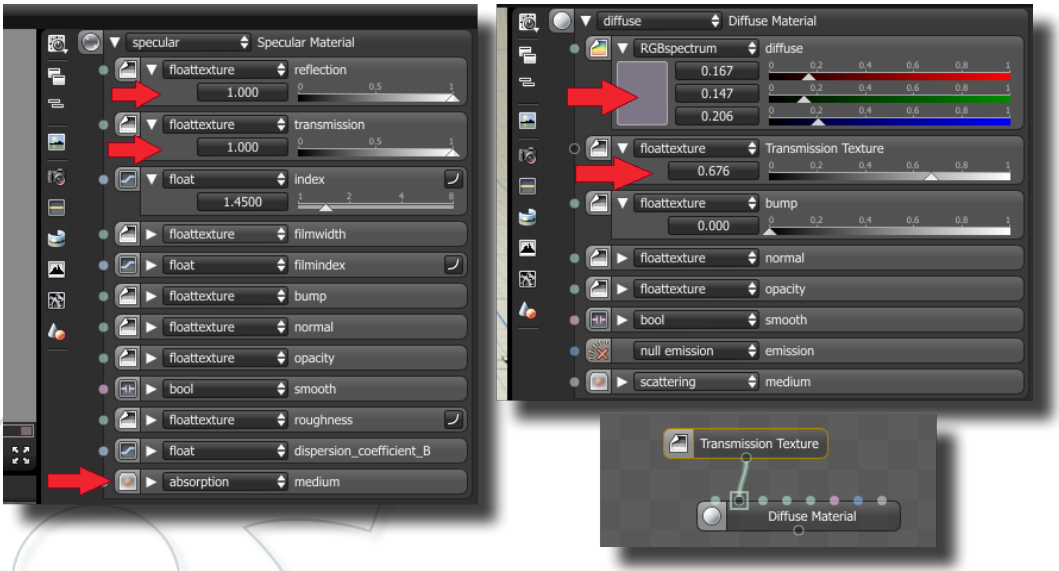
There are two types of medium nodes, absorption and scattering. Scattering has parameters for absorption and scattering of light passing through the medium, and emission inside the medium. Absorption is a simple version with only absorption.

Rendering a medium requires the path tracing or PMC kernel, with a sufficiently large maxdepth setting. For media inside diffuse transmitting materials the direct light kernel with Diffuse (4) GI mode can be used as well.

Meshes

Participating media should only be added to meshes that define a closed volume, rather than planes. Using planes to model leaves of a plant with SSS will for instance not work. Using a single plane as ground plane should be OK (it will be treated as an infinively deep material). The mesh can have opaque objects nested inside, but nested participating media are not supported.

How to make a medium node work:



A specular material is the easiest: by default it is set up properly. Transmission must be nonzero; for the best effect reflection and transmission should be set to 1.0.

On diffuse materials subsurface scattering only works after they are set up with diffuse transmission.

To do so, connect a node to the transmission input pin.

The reflection value needs to be set to a sufficiently low value, as only the part of the spectrum that is not reflected can enter the inside of the object. If the reflection is set to 1.0, all light gets reflected regardless of the transmission value. If set to 0.0, all light gets transmitted, but this gives an unnatural appearance. Values of 0.1–0.2 are a good starting point.

Also, if the reflection is coloured, the transmitted light will have the complementary color (e.g. if the reflection is set to yellow, the transmitted light is blueish).

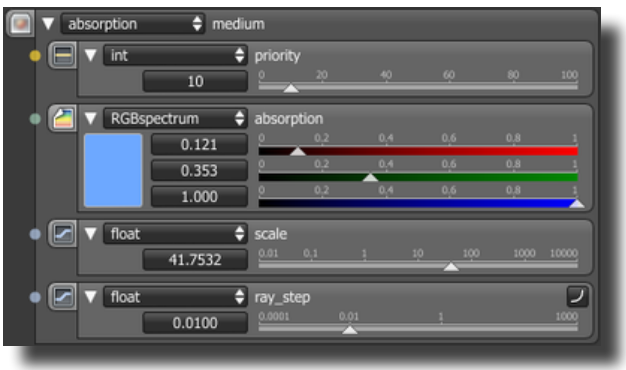
The transmission value works the same as in the previous releases, and is multiplied with the complement of the reflection spectrum. This should be set to a high value.

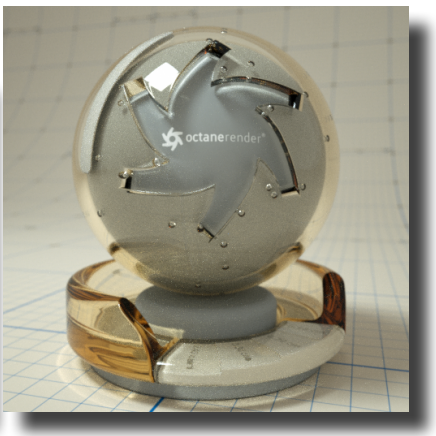
If possible, use a diffuse transmitting material

Medium node parameters

Absorption is controlled with the absorption texture, which defines how fast light is absorbed while passing through a medium. A setting of 0.0 means no absorption. The higher the value the faster light is absorbed by the medium. This setting is wavelength-dependent, in the following setup for example it is set to absorb blue light faster than other colors, giving the object a yellow appearance.

The absorption texture is multiplied with the scale parameter.
This allows setting a wide range of values more easily.



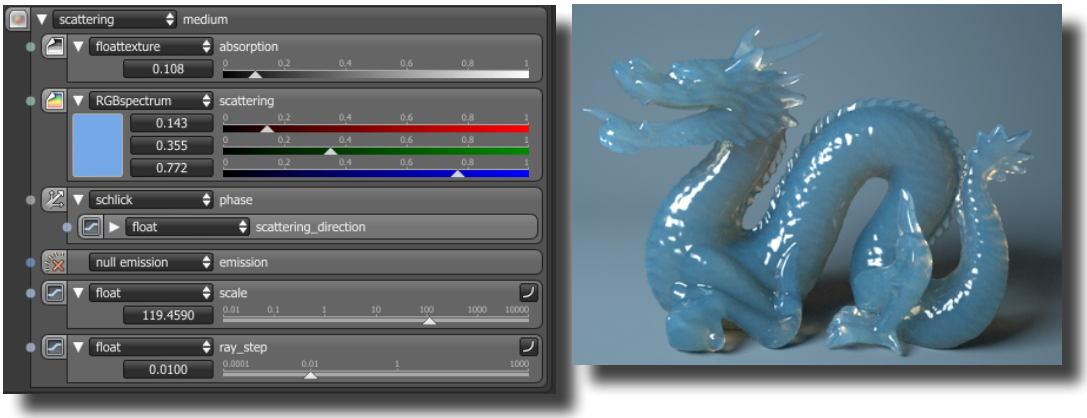


Subsurface scattering is controlled by the scatter texture (multiplied by the scale value), and the phase function. The scattering texture defines how fast light gets scattered when traveling through the medium, in a similar way to how absorption is defined. A very high value means light gets scattered very fast, a value of 0.0 means no scattering.

The phase function controls in what direction light gets scattered. There is currently one kind of phase function defined, with one parameter, scattering_direction. If set to 0.0, it means light gets scattered the same amount in any direction. A setting larger than 0.0 means forward scattering, the larger the value, the more light is scattered in a similar direction as it was traveling. 1.0 means it doesn't change direction. A negative value means backscattering, so more light is scattered back to where it came from.

Please see figures in the next page.

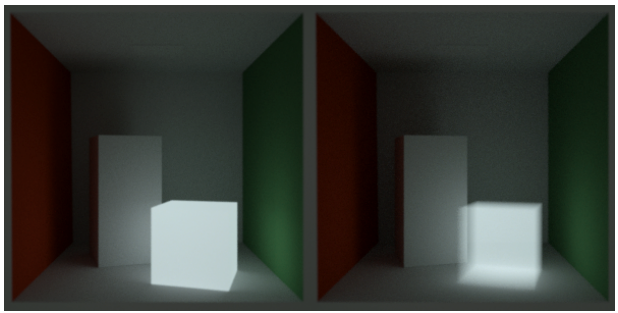
The following setup uses a wavelength dependent scattering. Blue light is scattered more, so it has more tendency to scatter back out of the material before it gets absorbed. Yellow-red light is scattered less, so more of it goes straight through the material, giving shadowed areas the yellow color.



Scattering inside a specular material will introduce a lot of noise. It will work best with smooth illumination.

Finally emission is defined by attaching an emission node to the emission input pin. When connecting an emission node to a medium node, it defines emission inside the volume instead of at the surface of the object. The power parameter gets a different meaning: it controls how fast the radiance along a ray increases while traveling through the volume, and not the total power. It is not multiplied with the scale parameter.

This effect works best with large and not too bright objects, very small bright objects will create a lot of noise.



The following image shows a normal mesh emitter (left) and a volume emission (right). The emitter in the right side has specular material with an index of refraction of 1.0 (making it invisible without the emission).

The stepsize parameter allows lowering the average distance between points where Octane samples the absorption, scattering and emission textures. If these textures are not constant, lowering this parameter may improve the appearance of the material, but if set too low the ray tracing may terminate before the ray is traced back out of the material.

The priority input is currently not used.

6. Adjusting Lighting

OctaneRender® currently supports Environment Maps / HDRI files, Sun / Sky environments and mesh emitters as lighting options.

To apply / change the Environment Type either select the Mesh Preview Environment Node in the Outliner (fig. 4.32), select the Mesh Preview Environment Node in the in the Graph Editor (fig. 4.33) or select the Preview Environment (fig. 4.34) icon in the Node Inspector.

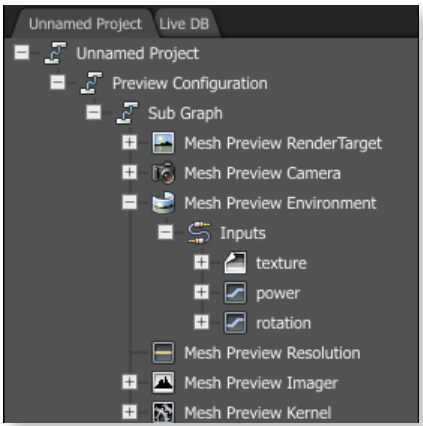


fig. 4.32



fig. 4.33


fig. 4.34

6.1 Environment Maps / HDRI Environments

Texture

The Texture affects the color of the environment (fig. 4.35). If it is left as a float, it can be scaled from white to black as a uniform color. If it is set as an RGBspectrum, the environment can be set to any RGB color. To use an HDRI file as the environment, the Texture must be changed to Image data type. The user will then be prompted to load the image file.

Image Power Controls the power of the HDRI image lighting

Image Gamma Controls the Gamma of the HDRI file

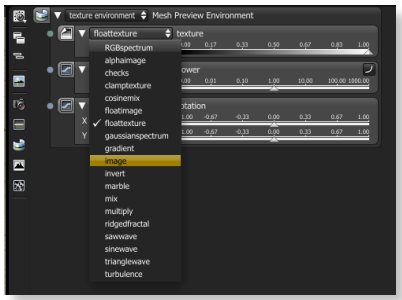


fig. 4.35 - Setting the Texture to "Image" to load an HDRI file

Image Scale Allows the user to adjust the scale of the HDRI file (this is mostly useful for image textures and not HDRI files)

Image Invert Inverts the HDRI Image (this is mostly useful for floatimage textures for bump or opacity maps)

Power The power of the entire environment can be adjusted using the Power parameter

Rotation If the environment is not in the correct rotation, it can be adjusted in real-time by using the Rotation parameter.

6.2 Sun / Sky Environment

To use the Sun / Sky Environment, change the Mesh Preview Environment to the Daylight setting.



fig. 4.36 - Changing the environment to the Daylight System

That will display the float3daylightsystem.



fig. 4.37 - The Daylight System parameters

Longitude / Latitude

These parameters can be set to get realistic sun settings for the specified geographic location.

Month / Day / GMT Offset / Hour

These parameters can be used to accurately place the sun in the sky according to the date / time for the sun at the current longitude / latitude

Interactive Map

The map(fig. 4.38) can be used to interactively set the geographic location of the scene. This can allow the user to adjust the position of the sun by simply dragging the cross hairs around on the map.

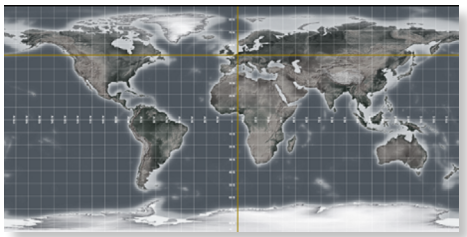


fig. 4.38 - The Interactive Map can be used to set the location of the scene for accurate lighting

Turbidity

The Turbidity can be used to adjust the sharpness of the sun lights shadows. A low value creates sharp shadows (like on a sunny day) and a higher value diffuses the shadows similarly to a cloudy day.

North Offset

The North offset slider can be used to adjust the actual North direction of the scene. This is useful for Architecture Visualization to ensure the direction of the sun is accurate to the scene

6.3 Mesh Emitters

Mesh Emitters allow an object to be used as a light source. This can be used with both Texture and Sun / Sky lighting systems.

In order to use a mesh as a light source, it needs to be changed to a Diffuse material type. The Emission parameter has three different options:

Null Emission - This sets the diffuse material as a standard diffuse material with no light emission.

Blackbody - The Blackbody Emission type uses Colour Temperature (in Kelvin) and Power to control the colour and intensity of the light.

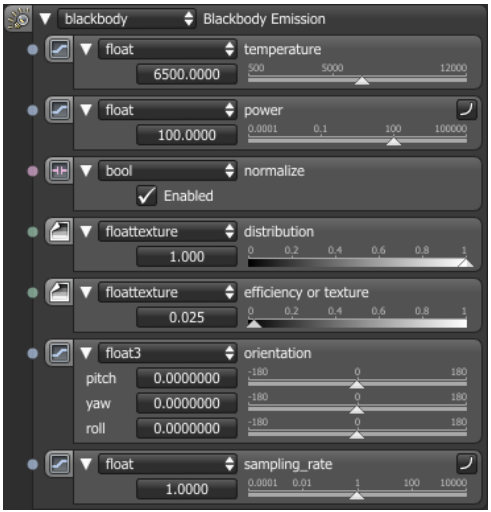
Texture Emission - This allows any valid texture type to set the light intensity. This can be used to create neat effects such as TV screens by using an Image Texture as the source.

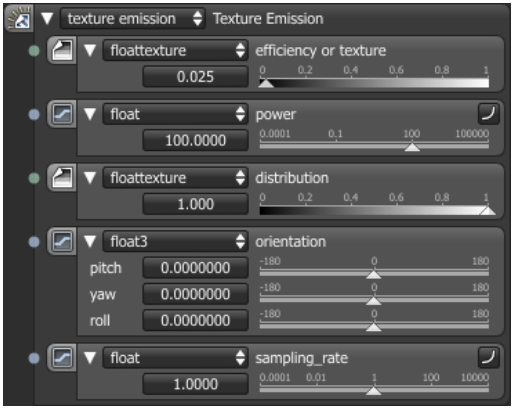


Light source sampling rates - OctaneRender® normally samples light sources according to area. In some scenes this will lead to a poor balance between light sources. In a room with a big TV (which emits some light) and a couple of small bright spotlights, the TV will be sampled most of the time, leading to a lot of noise in the light from the spotlights.

Emission nodes have a new parameter, sampling_rate, to control how much weight is given to the emitter when picking an emitter to sample. This allows you to choose which light sources will receive more samples. In the above example you can increase the rate for the spotlights, so they get sampled adequately.

Here are screenshots of the emission settings with the new control:





The following settings are listed for the Blackbody emission settings, but many of the settings are shared with the Texture emission settings. The main difference is whether the colour comes from the Blackbody temperature or from the texture settings of the diffuse material.

Temperature - The temperature (in K) of the light emission.

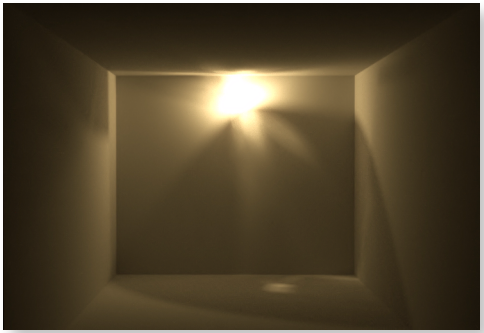
Power - This is the wattage of the light source. Each light in the scene should be set to its real world wattage. For example, a desk lamp could be set to 25 watts, a ceiling lamp to 100 watts, and an LED light to 0.25 watts. This setting should not be used to balance the lighting power of the scene.

Efficiency or Texture - This setting is used to set the efficiency of the light source. No light is 100% efficient at delivering the power at the specified wattage (a 100 watt light bulb does not actually deliver 100 watts of light.) The efficiency setting can be used to enter the real-world values.

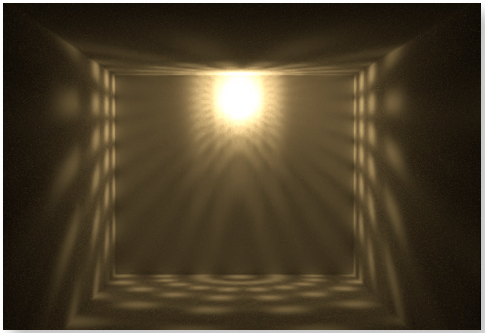
These values can be used to create very realistic light settings. For example, a standard 100 watt incandescent bulb would only be approximately 2.0% efficient where as a 25 watt compact fluorescent light will be 10% efficient. These will both produce around the same quantity of light in real life.

Orientation - This setting is used to adjust the direction the light is pointed in the scene. This setting only affects lights using a non-uniform distributions (textures or IES files).

Distribution - The distribution controls the pattern of the light. This can be set to an floattexture and an image or IES file can be loaded.



A diffuse sphere with an image texture (a jpg of an Audi R8) used for the distribution of a blackbody emission spectrum



A diffuse sphere with an IES file used for the distribution of a black-body emission spectrum

3Dconnexion Space navigator support

OctaneRender® supports camera movement with a 3D mouse on all platforms. The movement is camera-centric: movements you make will be translated to camera movements.

Setup

Make sure the correct drivers for your 3D mouse are installed. On Windows and Mac OS X your 3D mouse should work after you plug in the 3D mouse. On Linux you should make sure the driver is running before you start OctaneRender®. If you start the driver later, lock and unlock the viewport to detect the 3D mouse.

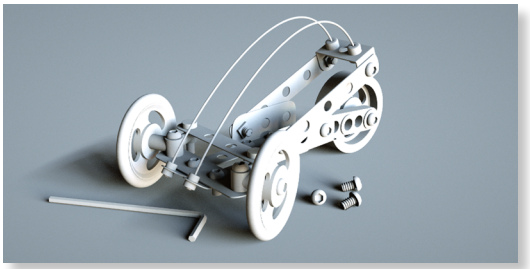
On Windows, the settings from the 3Dconnexion control panel have no effect. You can change the speed of the movements in our settings panel

6.4 Clay Rendering Modes

There are also two different clay rendering modes that allow the scene to be viewed in a preview environment. The Clay Rendering modes assist in tuning the lights of the environments.

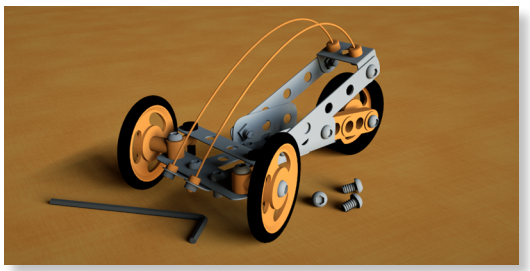
Clay Rendering Mode

Renders the scene with only ambient occlusion with only one material for all objects.



Colored Clay Rendering Mode

Renders the scene with the diffuse colors of the materials only for all objects.

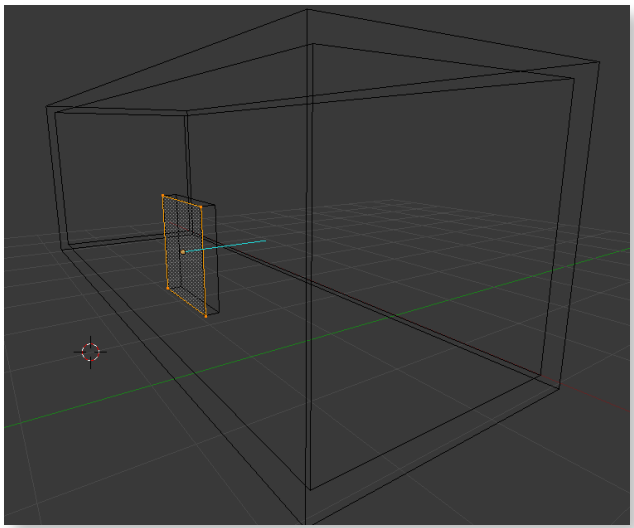


6.5 Using Portals

Portals are a technique to help the render kernel find important light sources. In interior renderings with windows, it is difficult for the kernel to find the outside environment and optimally render the scene. Portals are planes that are added to the scene in the host modeling program that are used by OctaneRender® to more efficiently render the scene.

In the image to the right, a room is being prepared with a small, single window. This would be a difficult scene to light with a sun sky or HDRI file with no lighting on the interior of the room.

A single plane was placed over the window (orange) with the normal for the plane facing into the room (blue line).



Portal Usage Notes:

When using Portals, all opening must be covered with a portal. It will not work if only one window has a portal over it when all other windows do not have a portal over them.

The normals on the Portal object MUST be pointed into the scene or the render kernel will not use it properly.

Currently, portals cannot be placed in openings which are not open, eg a window with a portal cannot contain glass at this time.

In some complex scenes and situations, portals might slow down the render, so a bit of experimentation with/without should be done.

Portals only apply to pathtracing type kernels, eg pathtracing and PMC. (not directlighting/ambient occlusion)

It is best to try to use the least amount of geometry for portals, eg only a few simple rectangular planes are best, the more geometry your portals contain, the slower the engine might become.

Sometimes it is better to place one large portal over many small windows due to the above.
It's ok to make a portal larger than the opening, just make sure it closes/covers all opening(s).
A portal which is unnecessarily large will end up slowing down the efficiency, as some of the rays through the covered parts of the portal will not go outside the space.

Portals, when defined with the portal material, will not show up in your render, eg this will be invisible geometry.

7. Adjusting the Camera

To adjust the Camera select the Mesh Preview Camera Node in the Graph Editor or select the Preview Camera icon in the Node Inspector.

Field of View (fov)

This sets the field of view for the camera in the scene. When choosing a large value, more of the scene can be viewed from the camera. A smaller value will reduce the amount visible through the camera.

Aperture

The aperture of the camera in the scene. Choosing a low value will have a wide depth of field where everything is in focus. Choosing a high value will create a shallow depth of field (DOF) where objects in the foreground and background will be out of focus.

Position (pos)

The position of the camera in the scene.

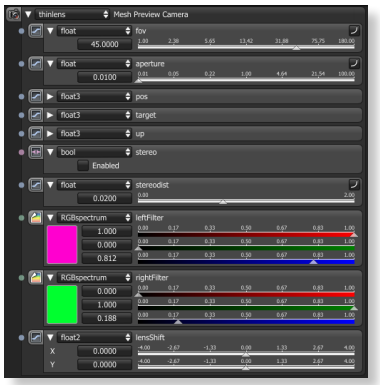


fig. 4.40 - Adjusting Camera Parameters

Target

This is the target position where the camera is pointed in the scene.

Up

This is the up direction of the camera in the scene.

Stereo

This enables whether anaglyphic stereo rendering is active. When active, the render will be able to be viewed with Red / Blue 3D glasses

LeftFilter / RightFilter

The left and right filter colors are used to adjust the colors used to create the anaglyphic stereo affect in the render.

8. Adjusting the Camera Imager

To adjust the Imager select the Mesh Preview Imager Node in the Graph Editor or select the Preview Imager icon in the Node Inspector.

Exposure

Controls the exposure of the scene. Smaller values will create a dark scene while higher values will brighten the scene.

f-Stop (fstop)

This controls the f-Stop just as in a real camera. Lower values allow more light into the camera and therefore brighter scenes. Higher values allow less light in, so the scene will be darker.

ISO

This controls the ISO setting as in real photography. The higher the ISO setting, the noisier the final picture.

Gamma

This adjusts the gamma of the render.

Response

The use of measure camera data can be selected. Please see Appendix 2 for examples of all the settings.

Vignetting

Adjusting this parameter increases the amount of darkening in the corners of the render. Used sparingly, it can greatly increase the realism of the render.

Saturation

Adjusts the amount of color saturation of the render



fig. 4.41 - The Camera Imager Parameters

Hot Pixel Removal

The Hot Pixel Removal slider is used to remove the number of bright pixels that result from the rendering process. While many of the pixels can dissappear if the render is allowed to progress, the Hot Pixel Removal feature allows the bright pixels to be removed at a much lower Sample per Pixel.

Pre-multiplied Alpha

Checking the Pre-multiplied Alpha button multiplies any transparency value of the output pixel by the pixels color.

9. Creating Macro Nodes

OctaneRender® allows the user to create Macro Nodes to store their most used materials, textures, and emission nodes for later use. The materials can be stored locally or to the Octane Live Database for all users to access.

Material Macro Example:

1) Add a material Macro Node

Right click on the Graph Editor and select Material -> Material Macro (fig. 4.42)

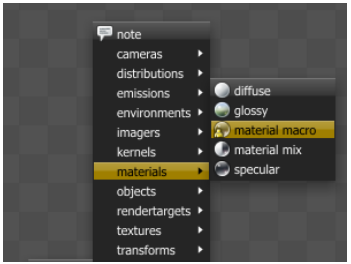


fig. 4.46 - Adding a Material Node

2) Build the Material

Double click the Material Macro Node to open up the new tab labeled "Material Macro" (fig. 4.43). Click on the new Tab to see "inside" the macro. This is where the actual material is created.



fig. 4.43 - The Macro Node and New Tab

Add a Material (in this example a Glossy material). Connect the output of the Glossy Material to the Material Macro (Out) node. Add any other textures to the material until it is complete.

(fig. 4.44)

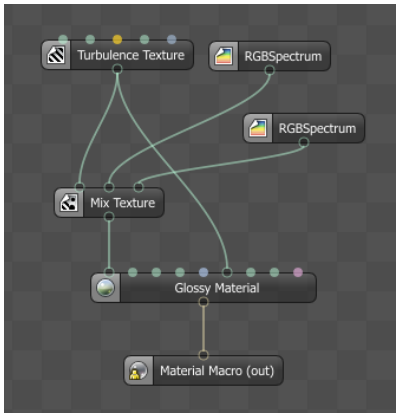


fig. 4.44 - Creating the Material "Inside" the Macro

Input Nodes can also be added to the macro. In (fig. 4.45), the RGB Spectrum Texture has been replaced with an Texture Input Pin. This will allow a user to attach the texture of their choice to the Material Macro and it will be processed however the Macro is defined. The macro in essence then acts as a "Black Box."

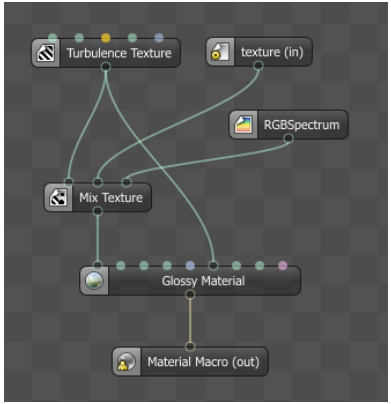


fig. 4.45 - Creating a custom "Input" texture node



fig. 4.46 - The Material Macro with Texture Input

3) Save the Node

When the macro is completed, it can be saved for later use. Right click on the Macro Node and choose Save Node. The Store Node dialog box appears (fig. 4.47).

Enter all the information related to the material.

The location drop down allows the user to either store the macro locally or the to the Octane Live Database.

Click OK to store the macro for later use.

IMPORTANT:
Only Macros can be stored or saved. You cannot save a standard material, texture, or emission.

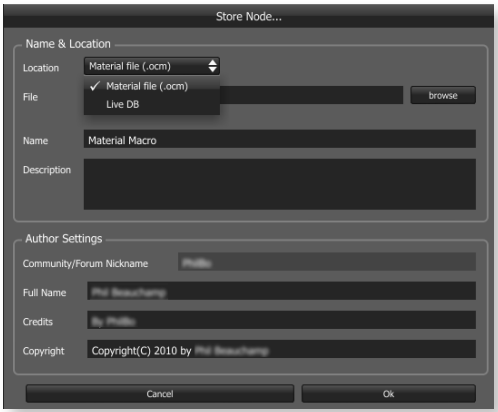


fig. 4.47 - Saving a custom Material Macro Node

10 The Live Material Database

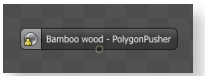


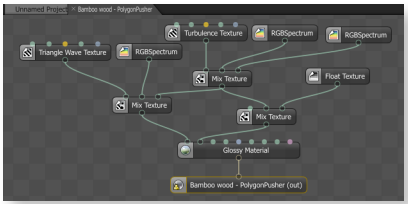
OctaneRender® includes a material database that includes both materials submitted by users and those from Refractive software. It can be located in the Outliner and selecting the LiveDB tab.

The materials are sorted by categories and include a preview to better assist in locating a material to add to your scene.

Clicking on the preview loads the current material preview ball but does not add the material to the current scene. To Add the material to the currend scene, drag the preview picture to the Graph Editor.

The material will be placed in the Graph Editor as a Material Macro which can then be double clicked to enter into the material for fine tuning.







Chapter 5

Saving and Loading Scenes in OctaneRender®

1. Saving / Loading Scenes

After you are done setting up your scenes, you can save them to an OCS file. This will allow the scene to be reopened and worked on at a later date.

NOTE: OCS files from OctaneRender® 1.00 Beta 2 and previous are not compatible with Beta 2.3

To save your scene, click on Save As… from the File menu (fig. 5.1)

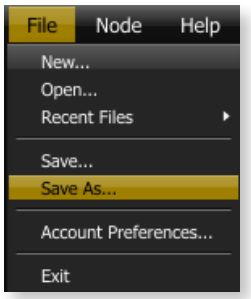


fig. 5.1 - Saving scenes from the file menu

To reload a scene, click on Open and select the file to open.

2. Reloading Textures / Images / Objects

During the process of working on scene that the images / textures or objects need to be reloaded. Add some more detail to that great model? No problem. Adjust your specular map and need to reload? No problem.

At the top of any Object Node or Image Node the active path to that image or object is displayed. Click on the little icon to the left of the path to choose a different file while keeping the rest of the scene intact. Click on the arrow icon to reload the object / image.

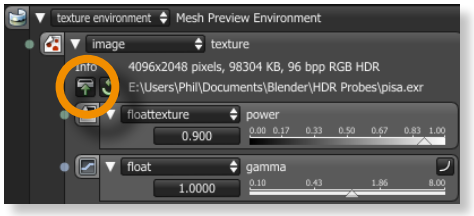
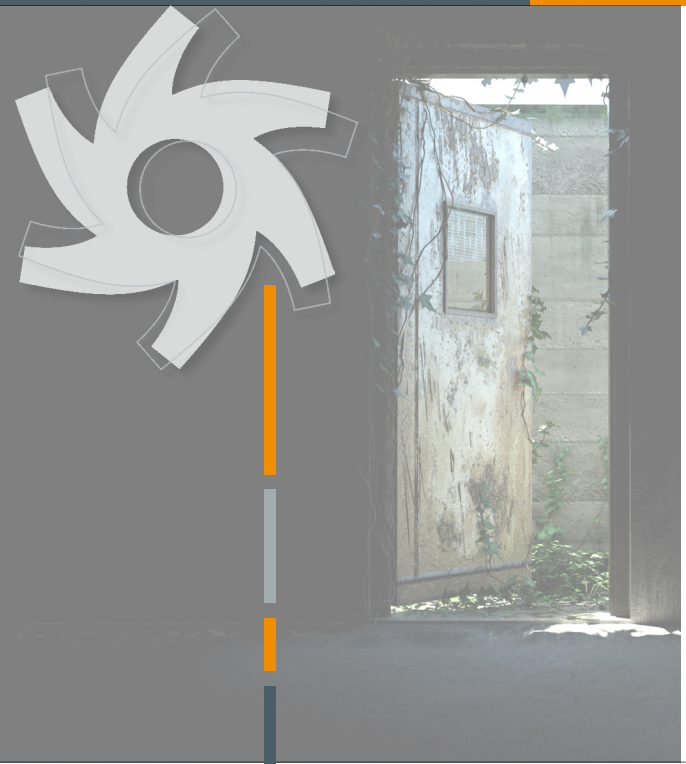


fig. 5.2 - Reloading images can be done by clicking the small icon shown here



Appendix I

Advanced Topics

1. Launching Octane from the Command Line

OctaneRender® supports passing command line parameters to utilize scripting or other automated tasks.

The following is a an example of the workflow for working with OctaneRender® from the Command Line.

To utilize the command line options, you must do the following:

1. Save the scene to an OCS file. You must know the full path to this scene.
   Example: C:\Temp\OctaneTest.ocs

2. Remember the name of the mesh node that you want to render. This typically is the node for the imported OBJ. Example "OctaneTest.obj"

3. If the scene geometry has changed and needs to be reloaded, note the full path
   Example: C:\Temp\NewGeom.obj

4. Octane can then be launched from the command line using the following syntax



USAGE :

octane [-m <string>] [-r <filename>] [-l<filename>] [-n <filename>] [--imager-exposure <float>]

[--daylight-sundir-z <float>] [--daylight-sundir-y <float>] [--daylight-sundir-x <float>]

[--cam-aperture <float>] [--cam-focaldepth <float>]

[--cam-fov <float>] [--cam-motion-up-z <float>]

--cam-motion-up-y <float>] [--cam-motion-up-x <float>] [--cam-motion-target-z <float>]

[--cam-motion-target-y <float>]

[--cam-motion-target-x <float>] [--cam-motion-pos-z <float>] [--cam-motion-pos-y <float>]

[--cam-motion-pos-x <float>] [--cam-up-z <float>]

[--cam-up-y <float>] [--cam-up-x <float>]

[--cam-target-z <float>] [--cam-target-y <float>]

[--cam-target-x <float>] [--cam-pos-z <float>]

[--cam-pos-y <float>] [--cam-pos-x <float>] [-q] [-g <int>] ... [-s <int>] [-o <filename>]

[--film-height <int>] [--film-width <int>] [-e] [--]

[--version] [-h] <filename>

WHERE :

-m <string>, --mesh-node <string>
Name of meshnode to render

-r <filename>, --relink-meshnode <filename>
Name of OBJ mesh file to relink rendered mesh-noded with

-l <filename>, --link-meshnode <filename>
Name of OBJ mesh file to link after startup

-n <filename>, --new <filename>
Create a new OCS project file from given com-mand line arguments

--imager-exposure <float>
Imager Exposure Amount

--daylight-sundir-z <float>
Daylight Sun Direction Vector Z Component

--daylight-sundir-y <float>
Daylight Sun Direction Vector Y Component

--daylight-sundir-x <float>
Daylight Sun Direction Vector X Component

--cam-aperture <float>
Camera Aperture Radius

--cam-focaldepth <float>
Camera Focal Depth

--cam-fov <float>
Camera FOV (degrees)

--cam-motion-up-z <float>
Camera Up Motion 2nd Vector Z Component

--cam-motion-up-y <float>
Camera Up Motion 2nd Vector Y Component

--cam-motion-up-x <float>
Camera Up Motion 2nd Vector X Component

--cam-motion-target-z <float>
Camera Target Motion 2nd Position Z Component

--cam-motion-target-y <float>
Camera Target Motion 2nd Position Y Component

--cam-motion-target-x <float>
Camera Target Motion 2nd Position X Component

--cam-motion-pos-z <float>
Camera Motion 2nd Position Z Component

--cam-motion-pos-y <float>
Camera Motion 2nd Position Y Component

--cam-motion-pos-x <float>
Camera Motion 2nd Position X Component

--cam-up-z <float>
camera Up Vector Z Component

--cam-up-y <float>
camera Up Vector Y Component

--cam-up-x <float>
Camera Up Vector X Component

--cam-target-z <float>
Camera Target Position Z Component

--cam-target-y <float>
Camera Target Position Y Component

--cam-target-x <float>
Camera Target Position X Component

--cam-pos-z <float>
Camera Position Z Component

--cam-pos-y <float>
Camera Position Y Component

--cam-pos-x <float>
Camera Position X Component

-q, --quiet
Start Application without splash and minimized window

-g <int>, --gpu <int> (accepted multiple times)
add GPU device to use for rendering (0 = first)

-s <int>, --samples <int>
Maximum number of samples per pixel (maxsamples)

-o <filename>, --output-png <filename>
Output PNG imagefile when maxsamples is reached

--film-height <int>
Film height

--film-width <int>
Film width

-e, --exit
Close the application when rendering is done

--, --ignore_rest
Ignores the rest of the labeled arguments following this flag.

--version
Displays version information and exits.

-h, --help
Displays usage information and exits.

<filename>
.OCS Project scene file

For example, to open a file (C:\Temp\OctaneTest.ocs), relink the geometry (C:\Temp\NewGeometry.obj), select the meshnode (OctaneTest.obj) and render the frame for 1000 samples per pixel, save the render and exit:

octane –e –r C:\Temp\NewGeometry.obj –m OctaneTest.obj –s 1000 –o C:\temp\test.png C:\Temp\OctaneTest.ocs

Notes regarding Spaces in Names

Any names of scenes, objects or paths that have spaces in them must be surrounded by quotes. If using command line options on GNU Linux or Mac OS X, then the quotes must be preceded by a back slash (\) to be interpreted properly.

For Example:

$ octane \"OctaneBenchmark/octane_benchmark for 1022 beta 2.2rc.ocs\"

Why are there two sets of Camera Parameters?

The second camera control (-- cam-motion) is used to specify the camera position in the next frame. OctaneRender® will then use the current position and the next frame position to calculate motion blur between the two camera positions.

2. One-Click Turn-Table Animations

OctaneRender® supports the ability to perform turntable animations with a single click of a button. This doesn't require any knowledge of programming camera paths or any other advanced knowledge.

1. Position the camera so that the object or scene is centered properly in the viewport

2. Set the center of rotation by using the Focus Picker and clicking on the center of the object (or by setting the center of rotation by setting the Camera Target X,Y, and Z values manually)

3. Open the Turn Table Animation Setting Window by clicking on the icon 

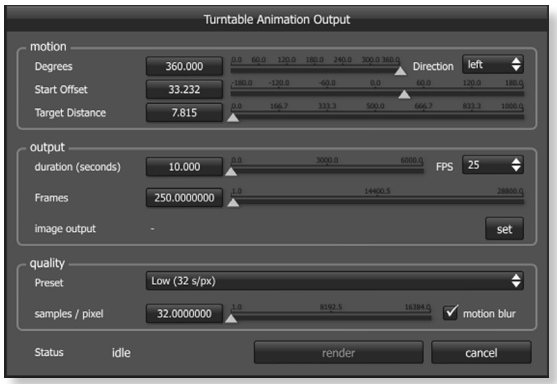


fig. I.1 - The Turntable Animation Settings Dialog

4. Adjust the settings as required to get the desired, motion, length and quality.

5. Set the Image Output by clicking on the Set button. Select a folder where the resulting images will be stored and type a file prefix. All the images in the animation will then be stored in that directory with a number sequence after the entered file prefix.

6. Click the Render Button to create the image sequence.

How do I create an animation from the Image sequence?

To convert the images into an animation requires the use of a second program.
Both Virtualdub and Blender can be used to complete this task.

3. One-Click Sun / Sky Animations

OctaneRender® supports the ability to perform sun/sky animations with a single click of a button. This doesn't require any knowledge of programming light paths or any other advanced knowledge. This creates an easy way to make impressive architectural visualization animations.

1. Adjust the scene and position the camera
2. Set the Preview Environment type to Daylight
3. Set the sun position (via the map or longitude / latitude)
4. Preview the motion of the sun by sliding the Hour slider. Continue to tweak the position of the sun and the North Offset until adjusting the Hour slider produces the desired sun path.

5) Click on the Daylight Simulation Animation icon. 

6) Adjust the Daylight, output and quality settings.

7) Set the Image Output by clicking on the Set button. Select a folder where the resulting images will be stored and type a file prefix. All the images in the animation will then be stored in that directory with a number sequence after the entered file prefix.

8) Click on the Render button to generate the image sequence.

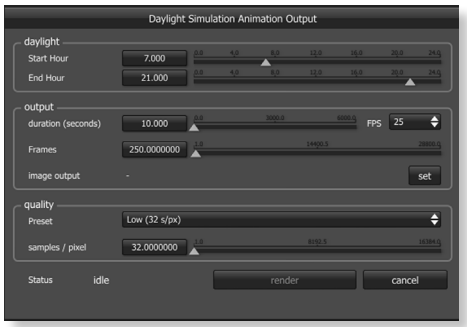


fig. I.2 - The Daylight Simulation Settings Dialog

4. Normal Maps and Bump Maps

Normal Maps and Bump Maps both serve the same purpose. By using an image (Bump or Normal), the geometry of the surface can have the appearance of more detail. This should not be confused with displacement mapping where the image used actually affects the geometry.

Bump Maps are typically grey scale images and OctaneRender® uses the values to determine how much to affect the geometry at that location of the pixel.

Normal Maps work slightly different. They are color images that use RGB values to add directionality to the raised or lowered areas.

Note: If both Normal Maps and Bump maps are used on the same material, the Normal Map will take a higher priority and be used and the Bump Map will be ignored.

OctaneRender® expects the Red to be mapped to the Positive X axis (X–Right) and the Green to be mapped to the Positive Y axis (Y-UP). Blue values are mapped to the Z axis.

My Normal Maps from Z-Brush don' t export properly. What can I do?

To get Z-Brush normal maps to work in OctaneRender®, you must enable the "Flip G" button under the Normal Map settings and the "Flip V" on the File Export



fig. I.3 - Z-Brush Normal Map Settings



fig. I.4 - Click on the "Flip V" button prior to export



Appendix II

Camera Response Curve Examples

Credits :

Scene modeled and rendered by Dave Girard



fig. II.1 - Advantix 100CD



fig. II.2 - Advantix 200CD



fig. II.3 - Advantix 400CD



fig. II.4 - Agfachrome CT Precisa 100CD



fig. II.5 - Agfachrome CT Precisa 200CD



fig. II.6 - Agfachrome RSX2 050CD



fig. II.7 - Agfachrome RSX2 100CD



fig. II.8 - Agfachrome RSX2 200CD



fig. II.9 - Agfaccolor Futura II 100



fig. II.10 - Agfacolor Futura II 200



fig. II.11 - Agfacolor Futura II 400



fig. II.12 - Agfacolor Futura 100



fig. II.13 - Agfacolor Futura 200



fig. II.14 - Agfacolor Futura 400



fig. II.15 - Agfacolor HDC 100



fig. II.16 - Agfacolor HDC 200



fig. II.17 - Agfacolor HDC 400



fig. II.18 - Agfacolor Optima II 100



fig. II.19 - Agfacolor Optima II 200



fig. II.20 - Agfacolor Ultra 050



fig. II.21 - Agfacolor Vista 100



fig. II.22 - Agfacolor Vista 200



fig. II.23 - Agfacolor Vista 400



fig. II.24 - Agfacolor Vista 800



fig. II.25 - DSCS 315 1



fig. II.26 - DSCS 315 2



fig. II.27 - DSCS 315 3



fig. II.28 - DSCS 315 4



fig. II.29 - DSCS 315 5



fig. II.30 - DSCS 315 6



fig. II.31 - Ektachrome 64CD



fig. II.32 - Ektachrome 64TCD



fig. II.33 - Ektachrome 100 Plus CD



fig. II.34 - Ektachrome 100 CD



fig. II.35 - Ektachrome 320 TCD



fig. II.36 - Ektachrome 400 XCD



fig. II.37 - Ektachrome E100 SCD



fig. II.38 - F 125 CD



fig. II.39 - F 250 CD



fig. II.40 - F 400 CD



fig. II.41 - FCICD



fig. II.42 - FP290Z



fig. II.43 - Gold 100 CD



fig. II.44 - Gold 200 CD



fig. II.45 - Kodachrome 25



fig. II.46 - Kodachrome 64CD



fig. II.47 - Kodachrome 200CD



fig. II.48 - Max Zoom 800CD



fig. II.49 - Porta 100TCD



fig. II.50 - Porta 160NCCD



fig. II.51 - Porta 160VCCD



fig. II.52 - Porta 400NCCD



fig. II.53 - Porta 400VCCD



fig. II.54 - Porta 800CD

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