

ARCHLine.XP®

Windows

Rendering I.

Image size – Quality settings

Information in this document is subject to change without notice and does not represent a commitment on the part of CadLine. The software, which includes the information contained in any databases, described in this document is furnished under a license agreement or nondisclosure agreement. The software may be used or copied only in accordance with the terms of the agreement. It is against the law to copy the software on any medium except as specifically allowed in the license or nondisclosure agreement. The licensee (purchaser) may make one copy of the software for the purpose of creating a backup copy. No part of this manual may be reproduced, transmitted, transcribed, or translated into any language in any form or by any means, without the express written permission of CadLine.

First Edition

2010. CadLine. All rights reserved.

In no event shall CadLine be liable for special, indirect or consequential damages in connection with or arising from the use of this document or any programs contained herein.

Microsoft, MS, and MS-DOS are registered trademarks and *Windows* is a trademark of *Microsoft Corporation*.

ARCHLine.XP[®] is a trademark of CadLine.

This manual was produced using *Microsoft Word* and *ARCHLine.XP*[®]..

CONTENTS

Prologue	5
The Process of CG Visualization.....	8
Good to know.....	10
Using Lightworks Renderer	13
LightWoks renderer.....	14
Rendering.....	15
Image size.....	24
Quality settings.....	26

PROLOGUE

Rendering in nutshell

Rendering is a living and continuously evolving profession using even better techniques from time to time. Rendering or computer aided visualization is the specific part of the process when the designer creates a spectacular and even realistic picture, representing a non-existing space or its part.

A good visual reflects the personality of the creator such as the hand-drawn sketches or painted pictures of the same interior.

The possibilities are countless. Let's explore rendering.

Who can use this booklet?

From beginners to experienced ones, you will find this booklet very useful. Step by step you can dive deeper and deeper into the enchanting world of rendering and you will experience for yourself what a miracle it is to create a beautiful render of your design. From chapter to chapter you can learn the basic concept of creating digital visuals to be able to understand the complex tricks at the end. One chapter doesn't require the previous to be done, but each chapter might be based on and using the knowledge of earlier chapters.

IMPORTANT NOTE: Using this booklet requires a basic knowledge of ARCHLine.XP design software, at least on the level of the booklet: Learning Interior. To follow the instructions in this booklet you need to have an installed and working copy of ARCHLine.XP with Redering.

How to use the guide?

■ Welcome to our guide! We are going to take a look at the use of ARCHLine.XP Rendering. We are going to work according to the data of a local survey scan and will make the project of the interior decoration following the guidelines of the customer. Every chapter begins with the description of the task to perform (1). You can execute it yourself after trying the tips in the grey frames (2) or follow the detailed documentation under the “Step by step” section (3).

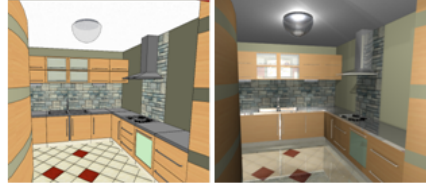
■ This guide introduces the most frequently used tools of ARCHLine.XP®

INTERIOR. We have generally followed the simplest way, trying other possibilities is recommended as well. You can find the detailed documentation of the commands in the Manual or in the Help (F1).

■ You can follow the steps of this guide by watching the tutorial videos at the website <http://www.archline.hu/interior/tutorials> as well. It is recommended to use this guide and the videos together.

LIGHT SOURCES

Light sources and lamps are not only important for making light but their placement is also important for the appearance of interior spaces. Place the lamps in the finished model.



(You need a registered Rendering module to produce the image on the right side)

How to place a lamp?

■ Activate the 3D window. Select the **Lamps** command in the **Furnishing group Toolbox** and a window appears containing the lamps of the program. Select one of the Ceiling lamps. You can define the material or any other property of the lamp. Press the OK button to accept the settings. Select a surface, move the lamp to the correct position and place it.

Step by step

- Set your perspective to see the ceiling of the kitchen. Select the **Lamps** command in the **Furnishing group Toolbox** and a window appears containing the lamps of the program. Select one of the Ceiling lamps. Press the OK button to accept the settings. Click on the ceiling of the kitchen, move the lamp to the correct position and place it.
- Of course, if it is needed, you can modify this position. Activate the 2D window and select the lamp. Left click on the appearing Move marker, and from the Marker menu select the Move command. Now you can refine the position of the lamp.

If you have any question, do not hesitate to contact your ARCHLine.XP® INTERIOR partner.

THE PROCESS OF CG VISUALIZATION

Actually “rendering” is just the very end of creating CG (Computer Graphics) visuals. The whole process leading to it contains smaller steps. First of all, you should understand the basic steps and concept of computer aided visualization.

Let’s go through it in a nutshell.

Modelling

In CG visualization probably modelling is the first and the most time consuming process. In this phase of the work all the modelled space and detailed scenes will be built up.

Object modelling

Object modelling is a subprocess of modelling, when detailed objects (eg. chairs, tables) are modelled for a scene if necessary.

ARCHLine.XP contains many objects after installation and offers different options to use objects, created by other modellers. This means that we do not have to model objects necessarily.

You can extend the list of objects in the program by downloading them from homepages in the right format and after importing them. Also there is the possibility to connect directly to Google 3D Warehouse using the built-in mini browser of ARCHLine.XP, search and browse for object online.

Setting up the scene

A scene is the part of the whole model where we are looking at and which we focus on when we prepare the model before rendering it. In other words this is the visible part of the model from a certain camera view. When setting up the scene we define the camera position, view angle and direction and also we enlight it and make sure that everything that is not affecting the rendered result are filtered from the model. A great scene is not only spectacular, pretty or cool, but it will also help the renderer to be effective and finish the image quicker. The reason is simple: if something is not part of the model, then there will be no time needed to calculate with it. This will lead us to the following step.

Modell filtering

Besides the visual effects don’t forget about performance when setting up the scene and filtering. It is more important than we would think at first! It could be a waste of time to wait long for a render just because its model contains parts that are either not part of the scene or have no real effect to the scene. By filtering the model to the important parts we can spare a lot of calculation, thus a lot of time.

Lighting

Lighting has two main parts: sunlight and artificial lights. Sunlight is emitted from the Sun "object" in ARCHLine.XP and there are several ways to define its position. The rays of sunlight are parallel to each other and have a very powerful radiation. The sunlight power and colour is changing based on the Sun's actual position.

There are many types of artificial lightsources in ARCHLine.XP: omni, spot, linear, polyline and area. Let's see each in a few words.

Sphere lights are emitting the rays equally everywhere from the radiation point. Practically omni lights are very similar to light bulbs.

Spotlights have effects only on a certain part of the space which they are facing to. The direction and the light cone can be defined arbitrarily.

Linear and polyline lightsources are equal to fluorescent lamps. It is perfect for office lights and hidden lights.

Area lights have uniform distribution of rays from a particular surface which they are attached to. The colour and intensity can be defined also.

Texturing

Texturing is the phase when the modell gets the final textures, colours and material properties which we would like to see on the final rendered picture. This can be a whole different procedure from others. In modelling the designer can focus on the modell and its space only without the (sometimes misleading) effect of colours and textures on surfaces. Texturing is the final phase of making the scene surfaces.

Rendering

Rendering is the process of generating an image from a model, by means of computer programs. The rendering can take long time depending on the detail level of the modell, the amount and type of the lights, the materials used on the surfaces and of course the performance of the computer is very important too. The so called renderer is the software that creates the rendered images. In ARCHLine.XP the renderer can be found at the Navigation Pane, by clicking on the Rendering icon.

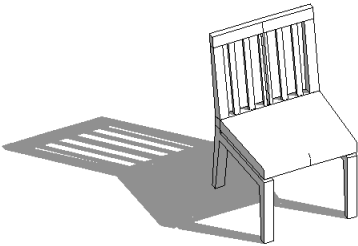
GOOD TO KNOW

To understand the difference between CAD drawings, pictures, photos, videos and rendered images the following chapter should be very useful.

Raster images

A raster image stores the pixels of a picture in a grid next to each other. Raster images can be found everywhere around us. From mobile screens to monitor screens they are all using the same raster technology.

If you see the small pixels organised into the grid from far enough then because of the human visual perception they will virtually fuse into a picture. As you might already notice, this is also the disadvantage of storing images with raster technology... As you zoom into a raster image, the picture will start to dissolve.



Raster image in original size

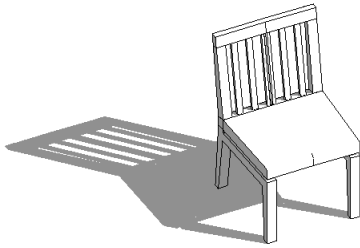


Raster image enlarged

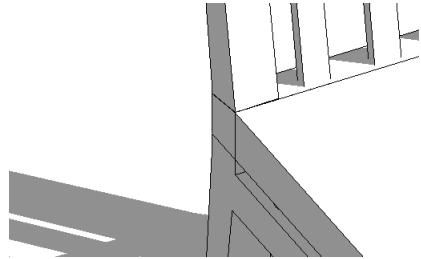
Knowing this feature of raster images will be very useful when we will decide the resolution of a rendered image as it is also a raster image.

Vector images

The advantage of vector images is that they store the information by mathematical expressions and geometrical shapes. This means that they can be zoomed nearly unlimited, because the viewer software can calculate their actual shape accurate to any zoom level. This is the main reason amongst others why CAD softwares are storing data in vector format. If a CAD software would use the raster technology to store data, the drawings would dissolve into pixels and we couldn't zoom in and out as free as we can do with vector images.



Vector image



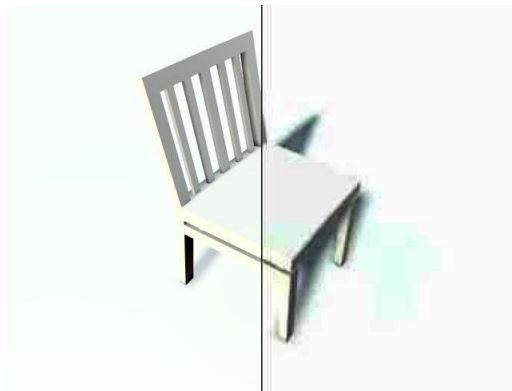
Vector image enlarged

Image files



Image files stored on computers are mostly containing raster images. The main difference between several file formats is the way they store the information. For example, BMP (Bitmap) files store each pixel without compression, thus the file size can be quite large, but the compression is lossless. On the other hand, JPG or Jpeg files store data compressed, balancing between quality and file size. This will lead into data loss, because not every pixel is stored individually in the image file to

achieve smaller file size. The so called pixel noise can be a disadvantage of Jpeg files, but the JPG output of ARCHLine.XP is set to avoid this unwanted feature.



Lossless, sharp picture
(Best quality – Large file size)

Strong compression with pixel noise
(Less good quality – Smaller file size)

Video files

“Films are made up of a series of individual images called frames. When these images are shown rapidly in succession, a viewer has the illusion that motion is occurring. The viewer cannot see the flickering between frames due to an effect known as persistence of vision, whereby the eye retains a visual image for a fraction of a second after the source has been removed. Viewers perceive motion due to a psychological effect called beta movement.” (Wikipedia)



Video files store the series of images by using different codecs and quality settings. When creating an animation video the quality and file size are important features. The law described previously is usually true in case of video files also: the better the quality is, the larger the file size will be.

There are so many different file formats and codecs at the moment of this guide is written that we cannot give a good hint on choosing them. When you decide to use a new one, always create short test footage first, to make sure all the settings are right, before starting to render long animation sequences.

USING LIGHTWORKS RENDERER

LIGHTWOKS RENDERER

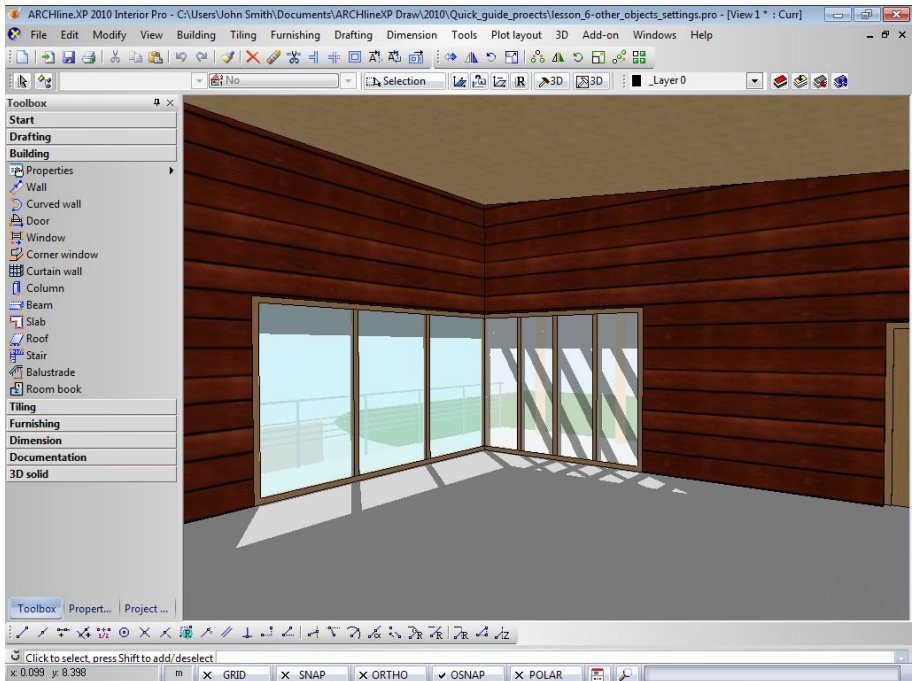
The interface of the LightWorks renderer in ARCHLine.XP has easy to understand controls which will help you to create photorealistic images with just a few settings. The advantage of using the built-in renderer is that the modell doesn't have to be exported, imported and processed again in third party software.

The modell and the materials and lights used in the scene will turn into rendered images in one single step.

It is particularly advantageous that certain changes can be controlled and monitored before rendering, in the interactive 3D content windows of ARCHLine.XP, thus the users can study the scene and make changes before waiting long for the final rendered images.

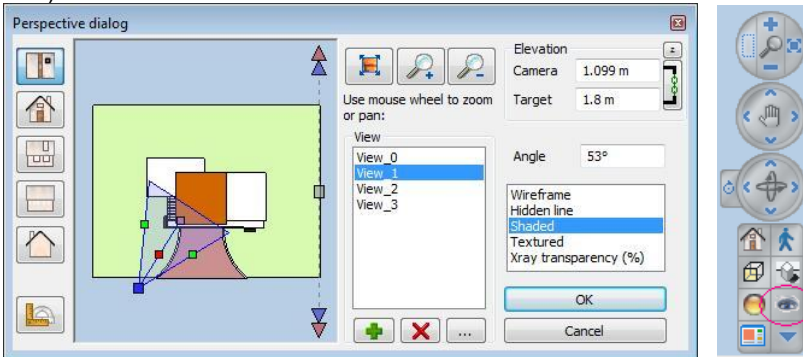
RENDERING

To follow the steps of the guide please load the project file named: lesson_6-other_objects_settings.pro. The file can be found in Documents\ARCHLineXP Draw\2010\Quick_guide_projects folder. Please set the perspective view using the Perspective tool. Please position the camera into the living room facing to the large glass surfaces in the corner of it, so you will see the exterior through the terrace doors as seen on the picture above.

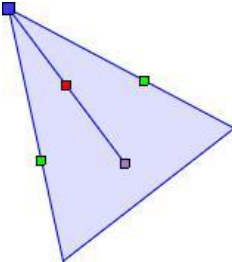


How to set perspective views?

You can open Perspective dialog by using the View menu – View properties – Perspective view command or the Perspective tool on the Navigation Pane (Eye icon).



■ Setting the view – Camera handling –The desired view is easy to set by using the camera tool.



■ The camera tool – There are the followings to be set: Camera (Blue marker), Object or Point of interest (Grey marker), Direction of view (Red marker) and the field of view (green marker). You can change the position of each marker by dragging them with a left mouse click.

■ You can change the following by using the camera tool.

■ Set camera position – By moving the camera you can change position from where you can see the scene. From the camera point you will always look at the object point. These together define the view direction.

■ Point of interest – The point of interest or object point can be moved by using the grey marker. This point will be in the middle of the view.

- Field of view – The field of view can be changed by the green markers. Use wider field of view when the view is in a small space, like bathroom and use smaller in large rooms.
- Dolly – You can dolly the camera by using the red marker. By using it, the direction of view won't be changed. It is similar to the camera dolly in movie making, when the camera is moving on a rail.

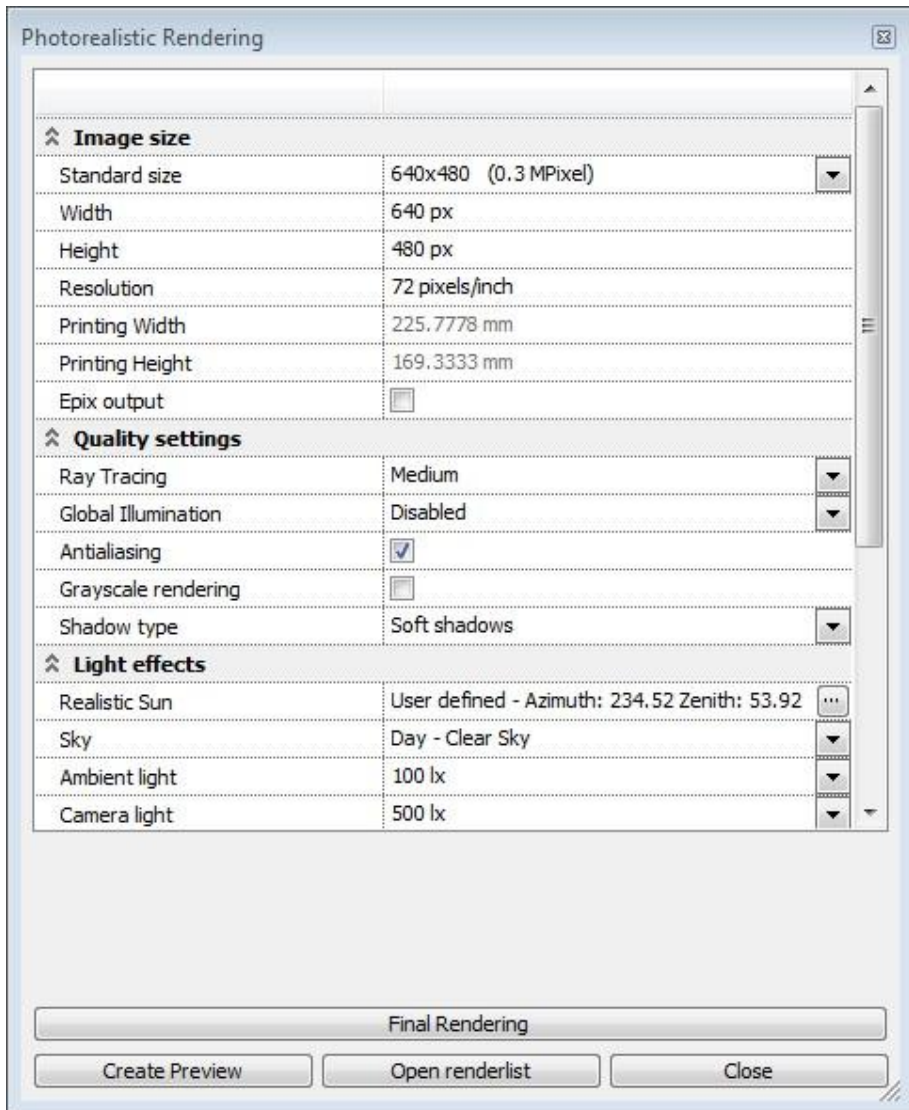
Step by step...

- Activate the 2D plan and make sure that the Ground floor is activated. Use the Pg Up and Pg Dn keys on your keyboard to step between levels.
- Click on the Perspective icon (Eye) on the Navigation Bar. The Perspective dialog will appear.
- Change the view content to 2D plan by using the switcher button at the left bottom corner of the Perspective dialog.
- Drag the blue marker by the left mouse button into the right top corner of the living-room and release the mouse button. The blue marker represents the camera (aka observer). Dragging the blue marker of the camera you can follow the changes in the visible 3D drawing behind the Perspective dialog.
- Drag the grey marker by the left mouse button into the left bottom corner of the living-room and release the mouse button. The grey marker represents the object of view (aka point of interest). Dragging the blue marker of the camera you can follow the changes in the visible 3D drawing behind the Perspective dialog.
- Use the scroll wheel of the mouse anytime you would like to zoom in or out.
- If you would like to use the side views of the model to refine the placement of each markers please use the view switcher icons in the Perspective dialog.

Let's make the first render from the view we just set! Before starting to calculate the photorealistic image, the software shows the properties dialog window where you can change the settings of quality, materials, shadows, lights and many more.

Use factory defaults first!

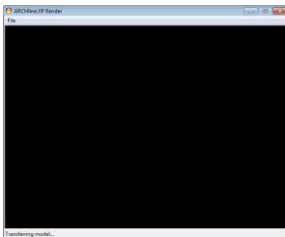
There is two main rendering methods the renderer can use to calculate the images: raytracing with global illumination. We will learn the difference between them by rendering two images. Use the following settings now:



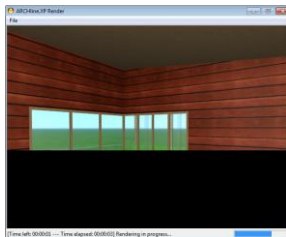
Step by step...

- Click on Rendering icon on the Navigation pane at the right bottom corner of the 3D view window.
- The Photorealistic Rendering dialog window will open up. Set the properties as shown on the previous image. Leave other values intact for now.
- When finished, click on the Final Rendering button. Soon the ARCHLine.XP Render window will pop up. Please wait until the rendered image is finished.

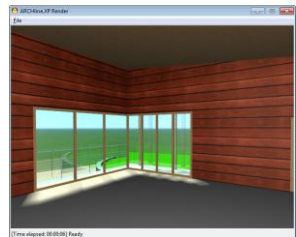
The rendering time can be different on each computer. The calculations will take longer time if the computer has fewer resources to compute the result. Please be patient by this time. You can check the workflow of the renderer by watching the following series of images:



ARCHLine.XP renderer opens in a new window



Rendering in progress



The rendering is ready and the result can be saved

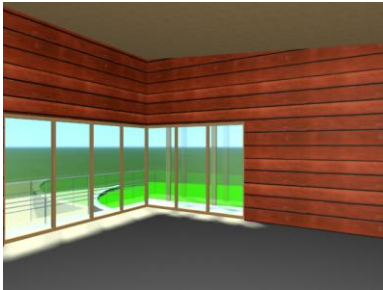
Don't close the ARCHLine.XP Render dialog when the rendering is finished, because we would like to compare its result with the following one. Activate ARCHLine.XP again and render a new image with the following settings changed as seen on the picture:

Quality settings	
Ray Tracing	Medium
Global Illumination	Interior
Radiosity	Disabled
Visible model size	8 m (Small)

Step by step...

- Activate ARCHLine.XP without closing ARCHLine.XP Render dialog, by selecting the application on the system tray of Microsoft Windows.
- Set the settings according to the previously shown image in the Photorealistic Rendering dialog window. Leave other values intact.
- When finished, click on the Final Rendering button. Soon the ARCHLine.XP Render window will pop up. Please wait until the rendered image is finished.

When the second rendering is finished you should see two pictures in the ARCHLine.XP Render windows, similar to the following examples:



Global illumination disabled
(Medium)



Global illumination enabled
(Interior)

What a difference and only few changes!

Let's analyse the results! What makes such an obviously huge difference on the rendered results? What does raytracing and global illumination mean?

Rendering methods

❖ Raytracing

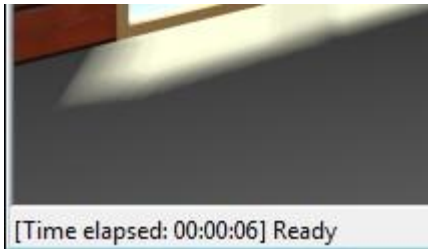
In computer graphics, ray tracing is a technique for generating an image by tracing the path of light through pixels in an image plane and simulating the effects of its encounters with virtual objects. Ray tracing is capable of simulating a wide variety of optical effects, such as reflection and refraction, scattering, and chromatic aberration. See more: [http://en.wikipedia.org/wiki/Ray_tracing_\(graphics\)](http://en.wikipedia.org/wiki/Ray_tracing_(graphics))

Just take a look at the surface of the glass on the rendered image to see an example of rendered reflection.

❖ Global illumination

Global illumination is a general name for a group of algorithms used in 3D computer graphics that are meant to add more realistic lighting to 3D scenes. Such algorithms take into account not only the light which comes directly from a light source (direct illumination), but also subsequent cases in which light rays from the same source are reflected by other surfaces in the scene, whether reflective or none (indirect illumination). Theoretically reflections, refractions, and shadows are all examples of global illumination, because when simulating them, one object affects the rendering of another object. See more: http://en.wikipedia.org/wiki/Global_illumination.

Did you notice that the different amount of time was necessary to render the two images? The raytrace method finished quicker than the global illumination calculations. The time spent with a render is at the left bottom of the opened render dialog window.



Computers with lower performance would calculate the rendered image slowly. The picture above is just an example; rendering time on your computer may be different.

The previous example shows that different settings could result not only in quite different quality, but in quite different rendering speed also. It is a good choice to use only raytracing for a quick draft result during work if the model is not too large, and use detailed settings only when creating the final renders.

❖ Radiosity

Radiosity is actually another solution for global illumination. In ARCHLine.XP render its prerequisite is the Raytracing and the Global illumination to be turned on. The result of using radiosity will be a subject of another tutorial.

All finished renders can be saved by using the File menu / Save as... command in render dialog. You can close both render dialogs when finished.

Step by step...

- Switch to a render dialog using the system tray of Microsoft.
- Choose File menu / Save as... command and specify the file name and path in the appearing dialog. Finally hit the Save button.
- After saving you can close the renderer without losing the rendered image.

- Repeat the previous steps in the remaining render dialog also.

RENDERING SETTINGS

In the following you can learn the possibilities of the basic settings of the renderer.

In the first part we will learn the connection between image size, resolution and DPI and later in the second part about quality settings. We will learn the necessary knowledge to choose the good settings.

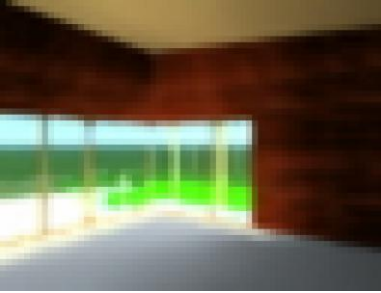
Later you can see the settings and effects of different shadow types.

Finally you can study a bit about the so-called bump mapping which can give drastically increased detail level to your rendered image with only just a few settings. You can learn also its effect on the rendering speed and performance.

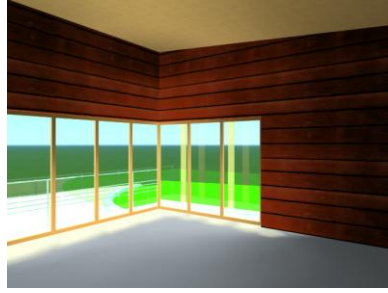
Let's start!

IMAGE SIZE

The first images you rendered by following the steps of this tutorial booklet was set to the resolution 640 x 480 pixels. Let's see what it means in detail. When choosing a standard image size or typing a user defined resolution you can give it in pixels. Ergo, this way we set how detailed we would like to see the image represented by the small dots, called pixels. Take a look at the following two images.



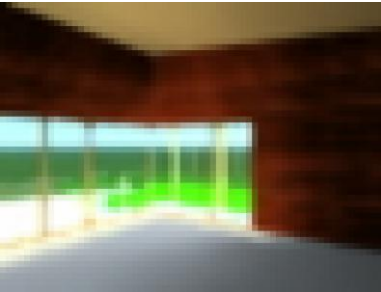
64 x 48 pixels



640 x 480 pixels

The resolution of the image on the left side is 64 x 48 pixels and resolution of the picture on the right side is 640 x 480 pixels. The same scene can be visualised by different resolutions, using (and calculating) different amount of pixels.

In Resolution you can set the pixel density of the image (aka DPI) also. This setting will define the actual size of the image when visualised in some certain software. Let's see the previous images on this page printed in low DPI and high DPI:



64 x 48 pixels with low DPI



64 x 48 pixels with high DPI

To understand the differences, the following description could be helpful:

In case of the first image the DPI was set to a low value. DPI or Dot-Per-Inch means how many dots will be printed per inch. If DPI is low that will result in larger image even it is a small resolution picture.

In case of the second image, where the resolution is similar to the previous one, but DPI was set to high the visual size resulted in smaller and cleaner image. It's because higher DPI allows more dots (pixels) to be printed per inch.

QUALITY SETTINGS

At the first lesson we realised the quality differences between raytracing and global illumination. Let's see other quality settings for now!

❖ Antialiasing

With the help of Antialiasing, the edges of a rendered scene will be more realistic, smoother at a lower resolution. This feature requires additional calculations, thus increasing the render time. Let's render two images with antialiasing enabled and disabled and compare the results!



Without antialiasing



With antialiasing



Step by step...

- Activate the interactive 3D content window. Start Rendering by using the icon on the Navigation pane at the right bottom corner of the window.
- Set Antialiasing to be disabled now in the appearing Photorealistic Rendering window at the Quality settings section.
- Make an image by clicking on the Final rendering button.

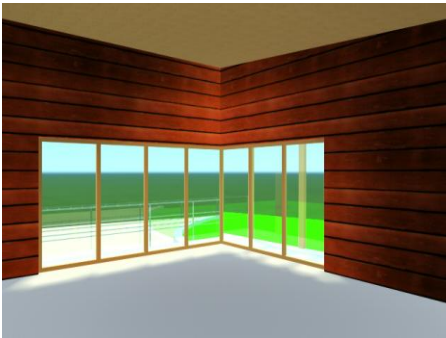
- After the rendering is finished, activate ARCHLine.XP by using Microsoft Windows system tray. Tick the option Antialiasing now to be enabled now in the Photorealistic Rendering window at the Quality settings section.
- Make another image by clicking on the Final rendering button.
- Compare the results.

Did you notice that the first image (without antialiasing) is rougher than the second one? This feature is visible especially at lower resolutions (640x480) and enabling antialiasing will help to make it disappear. When using large resolution (Over approx.: 1.5-2Mpixels) the antialiasing won't be necessary to be enabled. It's because of the relations between Resolution and DPI settings we discussed in this booklet earlier.

❖ Visible model size

You should set up this value to approximately the main, visible part of the model. Reducing this value will improve accuracy of shading at the cost of performance.

Create a rendered image first with 20 m (Medium) visible model size. When finished, create another one, from the same point of view but with 8 m (Small) visible model size).



20 m (Medium) visible model size



8m (Small) visible model size

Step by step...

- Activate the interactive 3D content window. Start Rendering by using the icon on the Navigation pane at the right bottom corner of the window.
- Set Visible model size to 20 m (Medium) now in the appearing Photorealistic Rendering window at the Quality settings section. This option can be used only if Global illumination is not "Disabled".

- Make an image by clicking on the Final rendering button.
- After the rendering is finished, activate ARCHLine.XP by using Microsoft Windows system tray. Set visible model size to 8 m (Small) now in the Photorealistic Rendering window at the Quality settings section.
- Make another image by clicking on the Final rendering button.
- Compare the results.

Did you notice? At first the rendering was finished quite quickly. The result is not so bad, but if you take a closer look you will find completely or partially missing shading on surfaces. In case of the second image, the shading of the rendered result is much detailed, especially on the floor surface. Let's see what visible model size do in detail.

When defining Visible model size, you set the important part of the actual view in the whole 3D scene. Let's see an example. In this previous exercise the living room size was 7.4m by 7.3m. At first we have set the Visible model size to 20m which is larger than the typical actual size of this room from that camera position. The renderer used these settings for shading so the smaller surfaces suffered the loss of shadow details. When we have set a smaller Visible model size (8m) which fits better for this view then the shading became more detailed.

Important

■ Although the Visible model size setting in the Photorealistic Rendering dialog window is a dropdown list you can use any user-defined value also. In this case, instead of clicking on the small arrow of the list just click on the actually visible value and start typing. Be careful and do not use too small values, because if you do so the render time could increase exponentially without any real visible result at the end.

❖ Modify materials

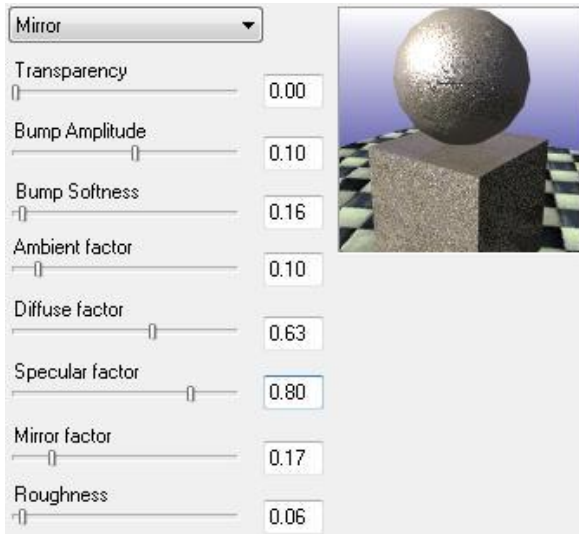
Use Modify materials to open the Material manager. Here you can check and change the settings of materials before rendering. You can learn more about modifying materials in the next paragraph.

❖ Bump mapping

Enable the Bump mapping option to visualize bumps and wrinkles on surfaces. Each material can have different Bump mapping based on its own properties. To decrease rendering time you can leave this option disabled and the Bump mapping will be not calculated, all the surfaces will look smooth.

In the following example we will set Bump mapping for a selected material and use it on the floor surface. At the end we will compare the images with and without Bump mapping feature on two rendered images.

Open the Material manager and select the material called Crema_Mafil_Select from the Marble and granite material library. Drag and drop it into the Project category on the left. Set its properties according to the following image and finally apply it onto the floor surface.

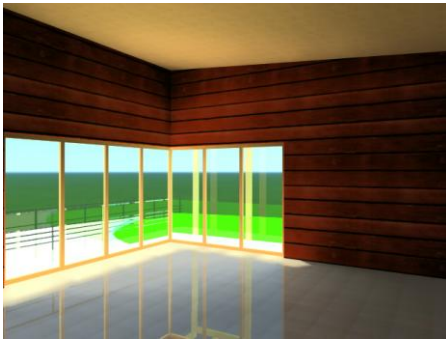


Step by step...

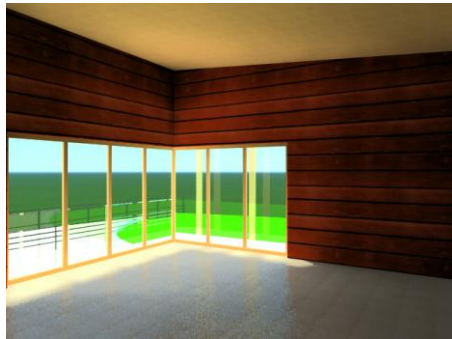
- Open Material manager in Tools menu / Accessories.
- Select Marble and granite at the left side of the appearing dialog window and click on Crema_Mafil_Select material.
- Drag the selected material into Project material category on the left side and release mouse button.
- Answer "Yes" to the appearing message.
- Select Project material library and click on the copy of the original Crema_Mafil_Select material.
- Click on the Modify... button at the bottom part of the Material dialog. The Material properties dialog window will open up.

- Change Bump amplitude to 0.10 and Bump Softness to 0.16. You can do so by dragging and moving the slider or simply re-typing the value that can be seen at the right of the slider. Do not forget to use "." (Dot) as a decimal separator!
- Click on OK to close the dialog and click on Close to exit the Material manager.
- In the 3D window right click on the floor surface and in the appearing Slab popmenu choose Properties...
- The Slab properties dialog window will open. Click on the first button named Concrete in the right top corner of this dialog. This is the material button of the top surface of a slab element.
- Select the previously prepared Crema_Mafil_Select material from the Project library in the Material manager and click on the Select button at the right bottom corner.
- You can see the top surface material is changed in the dialog. Click on OK.

When finished with the settings you can render an image without Bump mapping and another one when this option is enabled. Compare the results.



Without bump mapping



With bump mapping

Step by step...

- Click on the Rendering icon on the Navigation pane of the 3D window.
- Please make sure if the Bump mapping option is disabled in the appearing Photorealistic rendering dialog window.
- Click on the Final rendering button and wait for the result.

- Activate ARCHLine.XP at Windows tray, and enable the Bump mapping option in the Photorealistic rendering dialog window.
- Click on the Final rendering button and wait for the result.
- Compare the results.

Take a look at the floor surface! What a terrific difference and we have been using the same materials in both cases!

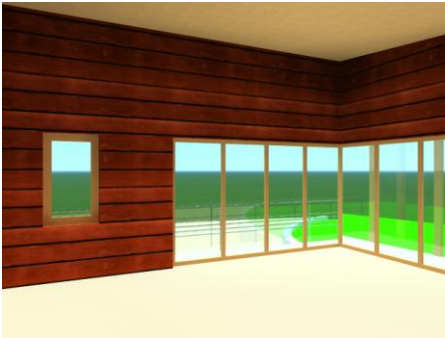
While on the first image the whole surface is smooth the second image shows pretty realistic bump features of the reflective stone surface. Bump mapping is more visible in cases we can see the lit surface in low angle or if there are shadow borders on the surface.

As we could see this feature becomes more wonderful if the material is reflective (Mirror, Glass, Phong) instead of a plain matte setting.

❖ Shadow type

In ARCHLine.XP you can use different shadow types on the rendered results.

Let's render two images by using the first two shadow types now.



No shadow



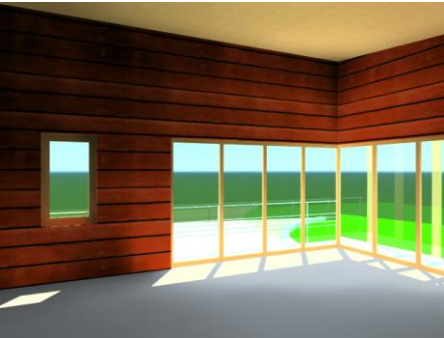
Soft shadows

When using No shadow and Soft shadows settings you will see similar results as above. On the left side you can see there are no shadows cast by direct light, but surface shading cast from diffuse lights is drawn because besides Raytracing, Global Illumination was also used. On the right side direct light casts shadows onto the surfaces. The border of the shadow is smooth.

Step by step...

- In the Quality settings part of the Photorealistic Rendering dialog window please set Shadow type to No shadow.
- Click on Final rendering and wait for the result.
- Activate ARCHLine.XP at Windows tray, and set Shadow type to Soft shadows in the Photorealistic rendering dialog window.
- Click on the Final rendering button and wait for the result.
- Compare the results.

Let's render two images by using the last two shadow types now.



Hard shadows



Hard shadows, that emits through transparent surfaces

The left side image is quite similar to the one we have created using Soft shadows. There is only one big difference. The borders of cast shadows are sharp. The right side image is also with sharp shadow edges but compared to the first image it contains the result of changing the light colour emitting through the blueish glass material. All surfaces are coloured now a bit. Mostly you can see this on the ceiling and on the floor. This happens because in case of the fourth shadow type the software is able to calculate with this colouring effect so the originally white rays emitted through the glass became a bit blue.

Step by step...

- In the Quality settings part of the Photorealistic Rendering dialog window please set Shadow type to Hard shadows.
- Click on Final rendering and wait for the result.
- Activate ARCHLine.XP at Windows tray, and set Shadow type to Hard shadows, that emits through transparent surfaces in the Photorealistic rendering dialog window.
- Click on the Final rendering button and wait for the result.
- Compare the results.

Using different shadow types is a great tool to visualize the same scene in different situations. Hard shadows for example will decrease the size of the model making it look like a closer and smaller mock-up. It can also be used to have a studio lit effect or very sunny daylight. Using Soft shadows can make the model larger, more real, and also adds a bit of the real effect of sunlight dissolve.

Congratulations!

You have just reached the first milestone in rendering in ARCHLine.XP!

You can render images of your model now and you already know a lot about features that may have been sounded very difficult at first! Please feel free to run through this booklet any time again you feel you need to refresh your knowledge!