



CAD PROJEKT K&A

Operation manual

Project presentation

CAD Kitchens 8.0, CAD Decor 4.0, CAD Decor PRO 4.0

INTRODUCTION

This manual describes the various ways in which you can present the project you have created.

Enjoy working with our software!

The CAD Projekt K&A team

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Design presentation - illustrations, 3DE presentations, AVI movies, CAD Share-it application and VR

1. Introductory remarks

Presentation of the results of the work is possible in many ways. The scene in the visualization can be:

- save as regular, stereoscopic or anaglyph illustrations, in JPG or PNG formats, also with added artistic post-processing filters (options available in the "Save project" window under the icon  "Save the visualization as..." in the top menu);
- save as illustrations showing the effects of the algorithm **Path tracing**, in JPG or PNG formats;
- save as spherical panorama (JPG file with additional data so that it is displayed in 360°), which can be published on Facebook (for this purpose, after selecting the "**Spherical Panorama**" option, available in the "**Render**" tab on the left menu after selecting render "**Path tracing**", save the illustration using the icon  "Save the visualisation as..." or  "Save the visualisation");
- save as a 3DE presentation for display in **Export 3D** software (under the icon  "Save the visualization as..." in the top menu);
- save as AVI movies (standard, in 2D, so-called "animations") in which the camera wanders along a preset path and **Radiosity** rendering is generated in real time (**Path tracing** can also be generated, but it takes more time) (movie recording options are available in the "**Presentation**" tab on the left menu);
- save as AVI movies in 3D (stereoscopic) (option available in "**Presentation**" tab);
- save as AVI movies in 360 mode (so-called "spherical animations"), in which the camera, moving along the set path, can additionally look around (option available in the panel "**Path tracing**" in tab "**Render**" - after selecting it, record the movie in the tab "**Presentation**");
- save as VR presentations (files in CPV format), read by the **obserVeR** program (an option available in the "**Presentation**" panel in the left menu after performing **Radiosity** calculations; with it, you can walk in virtual reality through the designed interior in scale 1:1, using HTC VIVE / HTC VIVE Cosmos goggles, or view it on a computer screen: in first-person mode or by freely moving the camera);
- publish in CAD Share-it mobile system and store in the cloud (option available in the top menu under icons  "Publish in Share-it" and  "Share-for the last used account and send").

Note: Illustrations and videos can be presented to clients using the CAD Gallery application, available under the icon  "Gallery of completed projects" in the top icon menu in the visualization.


Note: Clicking on the icon  " Save the visualisation " saves the image file in such a location and with such settings as were last selected in the "Save Visualization" window, available under the icon  "Save the visualisation as..." " (if the last mode selected was "3DE Presentation", the file [in 3DE format] will not be saved, but the "Save Visualization" window will open, where you can save the 3DE file or change the mode).

Export scenes to JPG and PNG files

1. Basic information

Once the room arrangement is completed, i.e. textures, materials, paints and claddings are applied, appropriate properties and effects are given to selected objects, and most importantly - the optimal parameters of lights and renderer are selected, the user can save a number of illustrations of the project, for example, in different projections, in several proposed color versions or with day and night lighting.

To do this, you need to:

- adjust the view so that the room looks attractive;
- turn on the lights so that all the emitters effects and stage lighting can be seen;
- click the icon  "Save the visualization as...";
- in the "Destination file" field, the storage location and file name are given - you can freely change them by typing in new ones or by selecting the "Select" button;
- you can select the illustration recording mode (Illustration 1) ("Standard picture", "Stereo picture", "Anaglyph picture", „3DE presentation" or "Path Tracing") (the first three options save the view with direct lighting or the results of **Radiosity** calculations, while the last one is used to save the results of **Path tracing** calculations, and becomes active when performed in the "Render" tab on the left menu);

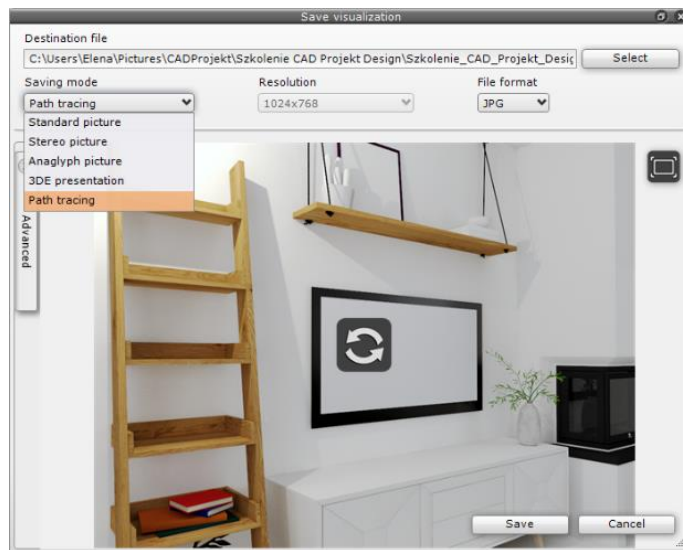


Illustration 1 Saving the exported scene file in the visualisation

- you can choose the resolution of the saved file (Illustration 2) - from 1024 x 588 all the way up to triple Full HD quality (5760 x 3240) (also the resolution of the view, i.e. the screen reduced by the menu bars);
- if you select the "Path tracing" saving mode, the image will save at the resolution selected in the "Path tracing" panel in the "Render" tab in the left menu;
- the maximum resolution available gives a quality of more than 18 million pixels, more than standard digital cameras, and is designed for large-format printing;
- to save the file, select the "Save" button - the file will be saved in the specified location.

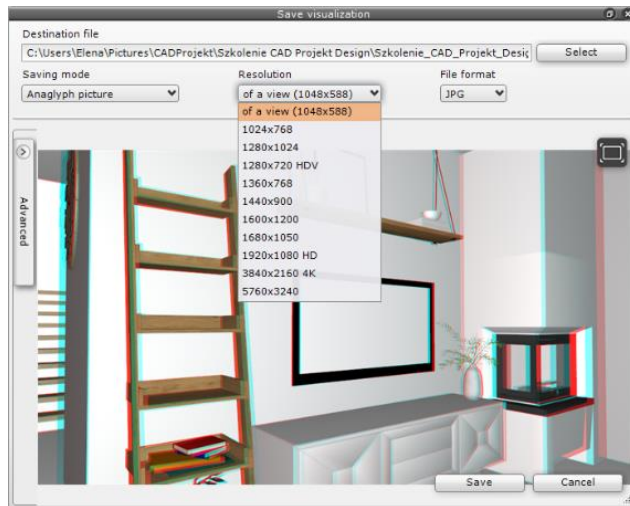


Illustration 2 Choice of resolution for anaglyph illustration

2. Advanced options

In the left part of the "Save visualization" window, there is a closed by default panel "Advanced" (Illustration 3) in which options are available, described in the following table.

The functions "Stereo sidebyside" and "Separated stereo" become active when the recording mode "Stereo picture" is selected, which saves stereo pairs (pairs of images, showing the scene from different angles, which, when viewed with stereoscopic 3D glasses, give a 3D impression). The default setting for stereo images is "top-down" (one below the other), since this is the mode in which most viewing devices operate.

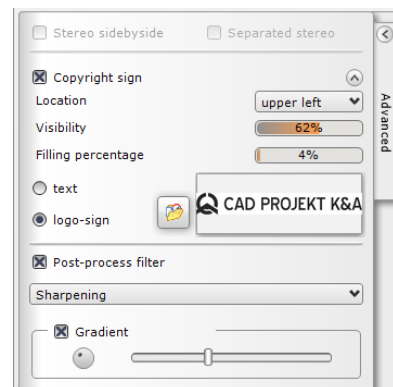


Illustration 3 "Advanced" tab

Option	Description
Stereo sidebyside	- saves stereo pair in side-by-side mode, instead of "top - bottom";
Separated stereo	- saves the stereo pair as two independent files - one for the right eye and the other for the left eye (the "_R" and "_L" designations are added to the file names), because some devices for viewing stereoscopic images use such a solution;
Copyright sign	- selecting this option adds a copyright sign to the saved picture (to access its settings, expand the panel with the arrow);
Location	- determines the location of the copyright sing (in the corners or in the center);
Visibility	- affects the degree of transparency of the copyright sing;
Percentage of filling	- determines the size of the copyright sing (the lower the value, the smaller the mark);
Text	- selecting this item makes the Copyright sign in the form of text; - in the text field you can enter any string of characters from the keyboard; - the font type and its style (bold, italic, etc.) can be changed by clicking on the "Font selection..." icon (Illustration 4);
Logo-sign	- checking this option allows you to put an image (logo) on the picture; - to select a file, click on the "Select file" icon." (Illustration 4);
Post-process filter	- when this function is selected, a drop-down list of filters becomes available(Illustration 5);

	- after indicating the filter in the list, refresh the preview of the saved file by clicking on the round arrow in the center of the preview (Illustration 7) or the [F5] key on the keyboard;
Gradient	- tonal transitions for post-processing filters - their range (sharpness of transition) and direction (position) can be adjusted) (Illustration 6).



Illustration 4 Options for the Copyright sign - text or logo-character

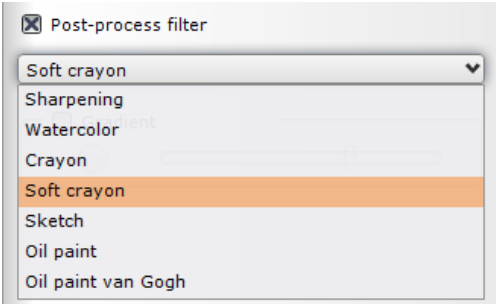


Illustration 5 List of post-processing filters

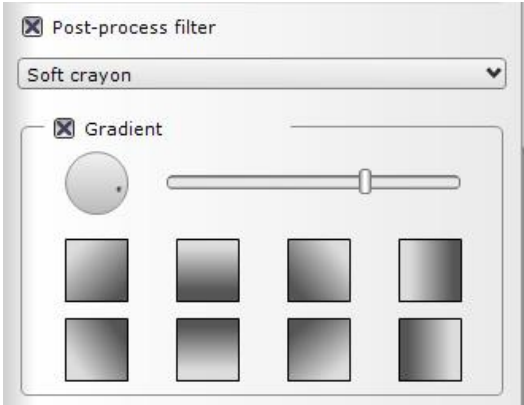


Illustration 6 Options for tonal transitions- adjustment of position (circle and square icons) and range (and at the same time the sharpness of the transition - slider)

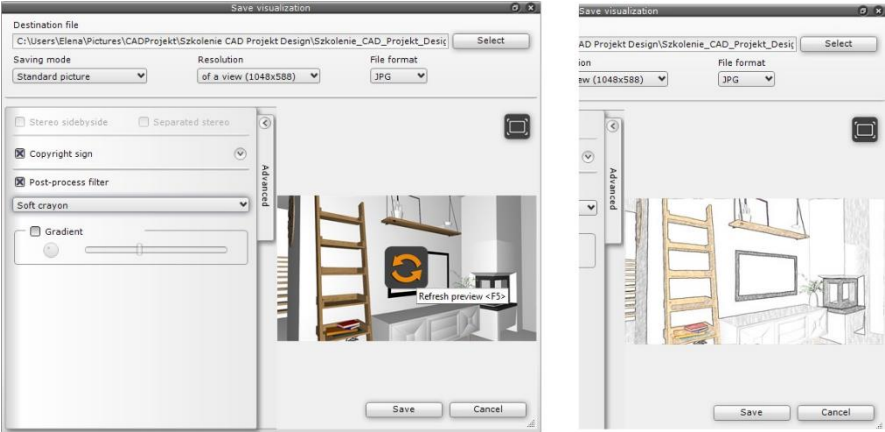


Illustration 7 Left - the selected filter "Soft Crayon" and the refresh view icon on the illustration preview; right - the appearance of the illustration after refreshing the view














The illustrations created in this way can be presented using the **CAD Gallery** module, described in section 5 of this manual.

Note that the parameters of visualisations saved as 'Stereo Pictures' are determined by the settings of the 'Separation' and 'Convergence' sliders for the 'Anaglyph' option, available in the 'Basic Render' panel on the 'Render' tab of the left menu.

Scene export to 3DE files and support for Export 3D

Exporting the scenes in a visualization to files in the **Export 3D** (3DE) application format, follows a similar principle to saving visualizations to JPG and PNG files. The only difference is that when creating a 3DE presentation, the camera should be properly positioned - it should be in the focal point of the room or in some other attractive location, as the room will rotate around the axis determined by the camera's position at the time of recording when the presentation is played back.

To export a scene you need to:

- after setting up the camera and turning on the lights, select the icon  "Save visualization as...", specify the file name and location, and select the save mode "3DE Presentation" (which will automatically set the 3DE file format);
- to add an copyright sign, go to the "Advanced" tab and select this option, then to change its settings, expand the panel using the arrow  (Illustration 2);
- after clicking "Save" the file will be saved in the indicated location and will be ready to be played using the **Export 3D** module;
- to play the animation, first find the module **Export 3D** - if a shortcut icon for the module has not been created on the desktop, find it in the place where the program is installed;
- to do this, right-click on the program's shortcut icon on the desktop and select "Properties" from the unfolded context menu, followed by "Find target item" or "Open file location";
- the user will be taken to the program's installation location, where he will find the Export3D.exe file, marked with the icon  and run it by double-clicking with the left mouse button;
- export 3D module will be launched (Illustration 8);
- to start the presentation, click the left mouse button anywhere in the module window, which will cause the buttons to appear - to load the animation file, you need to select the button  button and point to its location on the disk to play it ;
- to switch to full-screen mode, select  in the upper right corner;
- to zoom in, press  to zoom out ;
- rotate the scene right/left, up/down using the arrows ;
- to hide the arrows, click , to bring them up again, select ;
- to stop the presentation select the icon , to close module click .

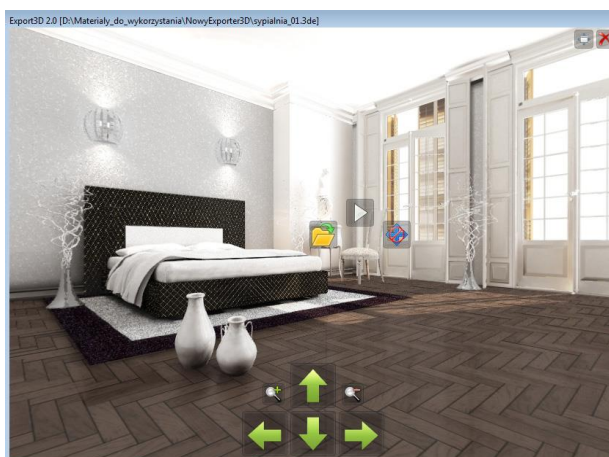


Illustration 8 Appearance of Export 3D module

Please note that 3D presentations can be played using Export 3D on computers where CAD Decor PRO is not installed. It is sufficient to upload the saved animations and the Export3D.exe file to such a computer.

Create AVI videos

The function of recording and saving AVI videos in the rendered room is available in the **"Presentation"** tab in the left menu (Illustration 9). The buttons there allow you to create videos in the form of a virtual walkthrough of the project, which is rendered in real time (for the **Radiosity** algorithm; if the **Path tracing** algorithm is selected, it will take longer to render). You can save AVI standard videos, stereoscopic videos (3D videos) and spherical panorama videos (360 videos). All videos are created based on the user's own path, and the procedure is as follows:

- first, go to the **"Scene settings"** in right menu and in the **"Camera"** panel, set the angle, rotation and speed of the camera according to your preferences (during the recording of the track, it will be possible to change these settings);
- if the path for the video is created at the same time as performing **Radiosity** calculations, then it is a good idea to set the time interval for showing the results of calculations (refreshing the appearance of the rendered scene) to zero, which will avoid slowdowns;
- if a 360°movie is to be saved (the so-called "spherical animation"), it is necessary to perform **Path tracing** calculations beforehand and select the **"Spherical panorama"** option in the **Path tracing** panel in the **"Render"** tab (Illustration 10) and run **Path tracing** calculations;
- after making the above camera and renderer settings, you can go to the **"Presentation"** tab (Illustration 9);
- before starting recording, select the appropriate resolution (choices are: 320x240, 640x480, 36x600, 1024x13, 1280x720, 1280x36, 1920x1080 and 4K);

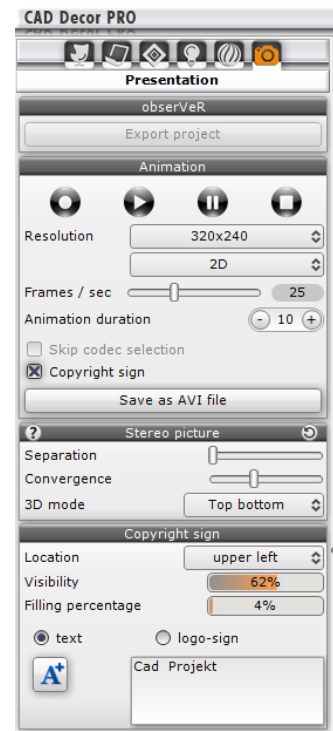


Illustration 9 AVI video creation panel

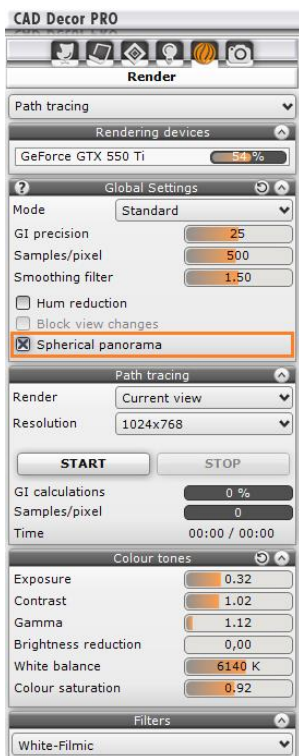







Illustration 10 "Spherical Panorama" option

- you can also change the number of frames per second using the slider - the default setting is 15 frames/sec, which is typical for computers (the number of frames displayed per second affects the creation time and smoothness of playback);
- you can also choose to skip (or not) the codec selection (by default, it is indicated after recording a track, and on subsequent recordings the selection is skipped) and add an copyright sign (after selecting this option, the **"Copyright sign"** panel opens, where you can adjust its parameters on the same principle as for saving illustrations);
- to start recording a track, click the button (It will turn red:);
- during recording, you can move the camera in selected directions using the mouse and keyboard arrows: $\uparrow \downarrow \leftarrow \rightarrow$ (Up/down, left/right control; pan or rotate camera);
- you can also use the **[Ctrl]** and **[Shift]** keys to control the camera, pressing and holding them changes the camera control mode (**[Ctrl]** switches from panning to tilting and vice versa using the arrow keys, and **[Shift]** enables zooming in and out using the mouse);
- take care of the fluidity of the movements performed;
- to change the shot or camera angle or speed during recording, select the pause button (active will change color);
- you can also choose to skip (or not) the codec selection (by default, it is indicated after recording a track, and on subsequent recordings the selection is skipped) and add an

copyright sign (after selecting this option, the "Copyright sign" panel opens, where you can adjust its parameters on the same principle as for saving illustrations);

- you can then go back to the "Scene settings" tab in the right menu and change the camera options;
- then you can return to the "Presentation" tab and resume recording;
- to stop recording, select the stop button  (active will change color );
- the recorded video can be played back to check the effect – button  (active: );
- to check the end result, turn on the lights (**[F1]** or icon );
- if the recording meets your requirements, you can save it to disk by clicking the "Save to AVI file" button;
- the user will be prompted for the name and storage location of the AVI video (Illustration 11);
- in the next step (if this is the first writing to an AVI file after starting the program), the user will also be asked to select a compressor (Illustration 12) (then the box "Skip codec selection" will be automatically checked and, unless the user decides otherwise, it will no longer be necessary to indicate the codec on subsequent writes);

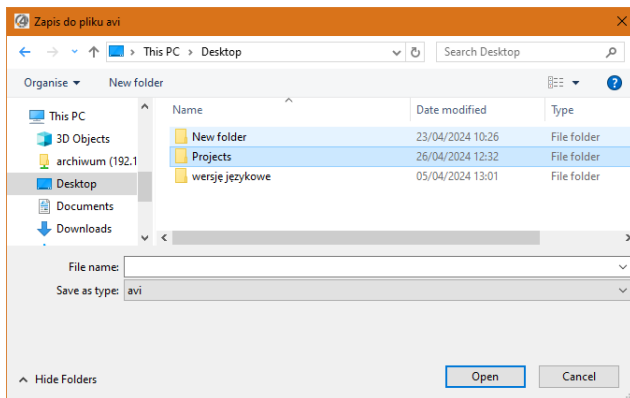


Illustration 11 Video recording of the visualization in AVI format

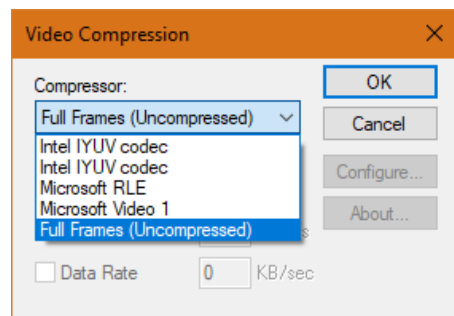
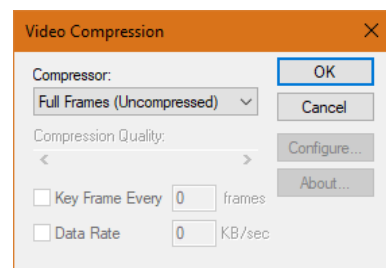



Illustration 12 Codec selection

- the process of saving the video can take anywhere from a dozen to several dozen seconds (for direct lighting and **Radiosity** renderer) or longer (for **Path tracing** renderer);
- video rendering time for the **Path tracing** algorithm (including spherical animation recording, i.e. 360° videos), depends, among other things, on the performance and number of graphics cards;
- the saved video can be played directly by double-clicking on its icon at the save point, using any video playback program, as well as in the **CAD Gallery** module (described in the next section);
- AVI movie of project visualization can be run on any computer without installing CAD Decor PRO - the only condition is to have software that plays files in AVI format;
- 3D AVI movies (stereo) should be played on devices adapted to display this type of files;
- AVI 360 videos (spherical animations) can be published on Youtube - it is then necessary to undergo additional processing, such as Spatial Media Metadata Injector, which adds special meta-data to the file, indicating that it contains spherical video, so that Youtube recognizes it properly and displays it correctly. For more information, visit: <https://support.google.com/jump/answer/7044297?hl=> .

CAD Gallery module

"CAD Gallery" is a special application for presenting illustrations and videos (Illustration 13), which can work as part of CAD Decor PRO, or independently. It launches from the visualization level - it is available under the icon  "Gallery of completed projects".

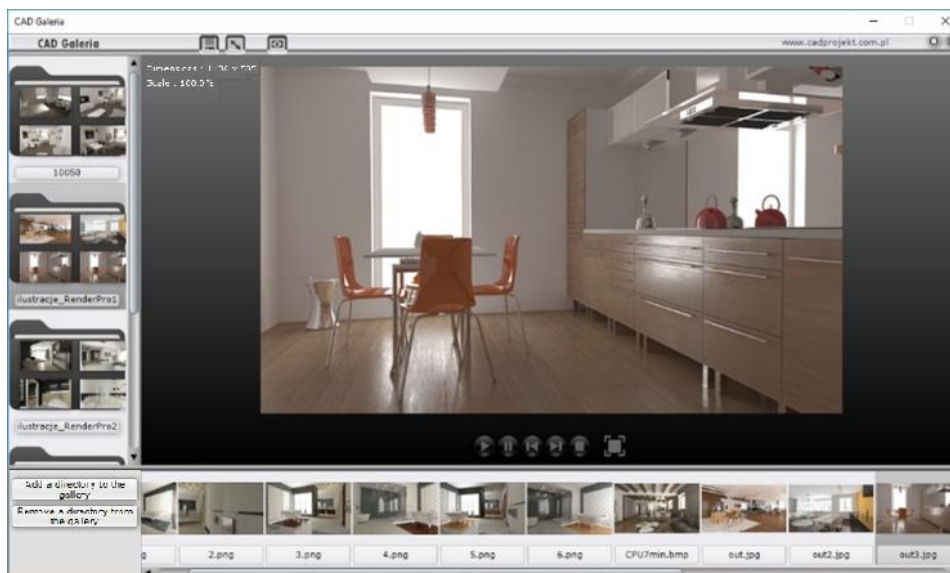


Illustration 13 Appearance of the CAD Gallery module

CAD Gallery can also be installed on any computer and can be used to present project visualizations and videos without installing CAD Decor PRO. Principles of using this module are as follows:

- to add a new folder with illustrations to the list in the gallery, click the **"Add a dictionary to the gallery"** button, and then point to the location of the folder, containing image files, on disk (Illustration 14);
- to add a directory, select any file stored in it and click **"Open"** (Illustration 14);
- in the same way, you can upload a folder with movies - the folder will appear on the left side of the **Gallery** module window (Illustration 14);
- after clicking on it, the illustrations (or videos) contained in it will appear in the bottom bar and a large preview of the first one will appear in the central part of the module;
- you can switch between illustrations using the arrows on the keyboard or by clicking on them with the left mouse button;
- when a video is selected for presentation, a large file play button appears (which distinguishes video from image files) (Illustration 15).

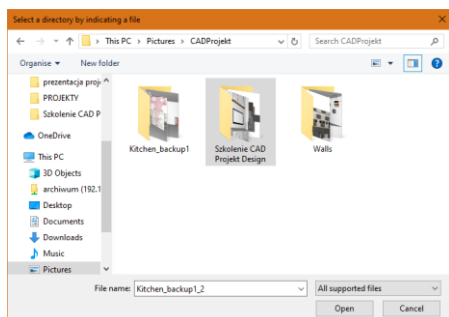


Illustration 14 Opening a new directory in the application "CAD Gallery"

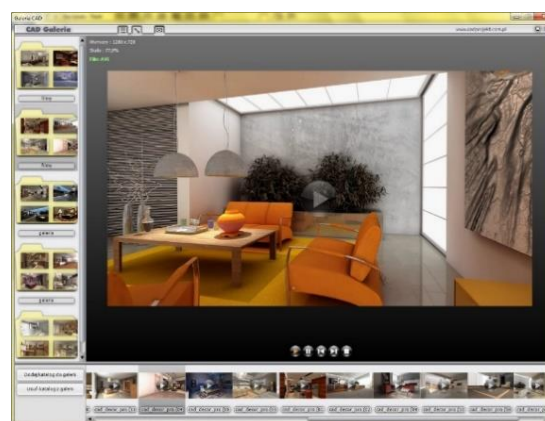


Illustration 15 Playback of a video file in the CAD Gallery module - visible playback button in the central point

Export the project to virtual reality and support the obserVeR application

1. Introductory remarks

Users of CAD Decor PRO and CAD Decor and CAD Kitchens with the Render PRO module have the ability to present their work in virtual reality (on computer screens or with HTC VIVE or HTC VIVE Cosmos goggles (Illustration 16) in the **obserVeR** application. When viewing the project in VR on a computer screen, there are two ways to move around (the "**walk**" and "**free camera**" modes), while the goggles allow you to freely move and look around inside the designed interior at a scale of 1:1. We write more about moving around in VR in section 4.6.



Illustration 16 HTC VIVE goggles

The **obserVeR** application can be made available to project recipients to allow them to evaluate the results of their work. Along with the installer, sent in a link or downloaded from our website, you should provide self-created CPV files, that is, visualizations rendered using the **Radiosity** algorithm, and then exported to VR in the visualization of CAD Decor and CAD Kitchens with the Render PRO module or CAD Decor PRO. The procedure for creating CPV files is outlined in next section, and the sharing of applications and projects in section 7.

2. Project preparation and export to VR

In order to create CPV files for presentation in virtual reality, once the design is complete, it must first be rendered using the **Radiosity** method. To do this, go to the visualization on the "**Render**" tab (Illustration 17) and start the calculation process by selecting the "**START**" button. Before doing so, it's a good idea to make sure that the "**Scene diagnostics and repair**" option (Illustration 17), which prevents so-called inverted surfaces from occurring in the scene, causing improper lighting distribution (Illustration 20). To check for inverted surfaces in your project, you can go to the "**Scene settings**" tab in the right menu and use the "**Show inverted surfaces**" function in the "**Diagnostics**" panel (Illustration 18).

In order to achieve the most optimal results, wait until the **Radiosity** calculation is brought to the point where it is no longer noticeable to further improve the appearance of the scene (to end it, select the "**STOP**" button) (Illustration 17). It may also be useful to perform **Ray tracing** calculations but note that reflections in mirrors and on reflective surfaces are presented in a simplified form in the **obserVeR** application, not exactly in accordance with the principles of optics (this is to keep the application's hardware requirements as low as possible).

It is also worth remembering that the distribution of light in **obserVeR** is slightly different from the appearance of the scene after the calculation of **Radiosity** in CAD visualization and sometimes it is required to adjust the lighting parameters to achieve optimal results in virtual reality.

Once the scene is rendered, it is important to place the camera in the right place - where you want the virtual tour to start. It is worth avoiding placing it too close to objects (e.g. furniture), as when viewing the project in VR on a computer screen in 'walk' mode, the camera reacts to past codes and stops, which could confuse the viewer at the very beginning of the tour. It should also be noted that when starting **obserVeR** on a computer screen, the camera automatically positions itself at a height of 170 cm (i.e. the eye level of the average viewer in

the real world). It is therefore best to place it at this height in the rendered scene to ensure that there are no obstacles in the area and that the view of the room is attractive.

Note: The camera settings in the right visualisation menu (lens angle, rotation, speed) do not affect the camera behaviour in VR projects.

Once the project is rendered and the camera is properly positioned, you can export the project to VR. To do this, go to the "Presentation" tab in the left menu and select the "Export project" button in the panel "obserVeR" (Illustration 19). Then specify the name and storage location of the exported CPV file (Illustration 21).

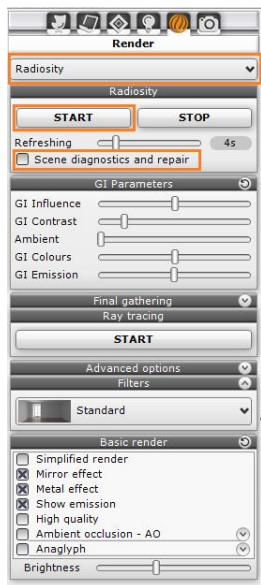


Illustration 18 Radiosity rendering options

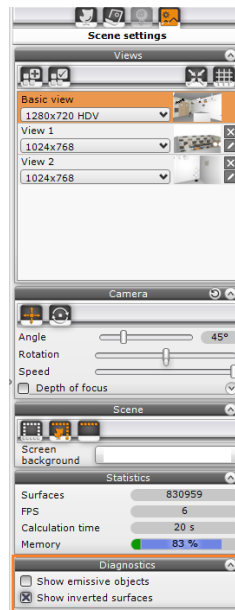


Illustration 19 Scene diagnostics

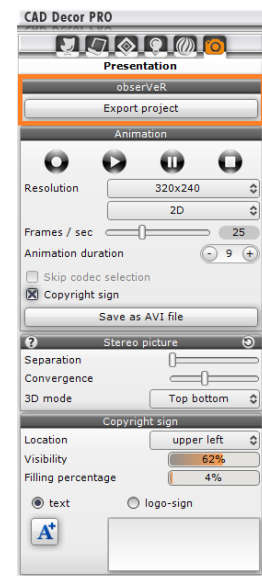


Illustration 20 Option to export to VR

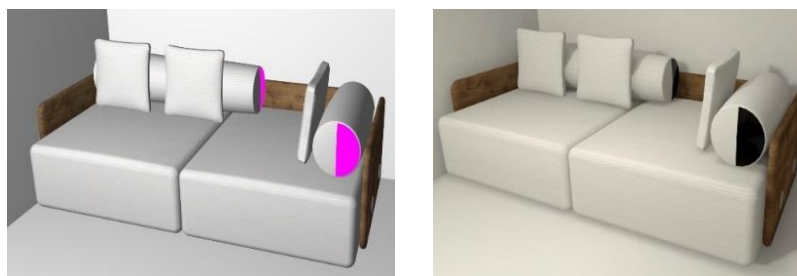



Illustration 17 An example of an object with inverted surfaces - visible incorrect lighting distribution

Note: If you are using HTC VIVE Goggles, make sure the goggles are properly positioned on your head. Adjust the straps so that the goggles are secure and comfortable, otherwise the image may be blurred.

3. First steps with obserVeR

The obserVeR application can be launched in several ways:

- by double-clicking on the shortcut icon on the desktop ;

- by launching it from the Start menu (Illustration 22);
- by running the obserVeR.exe file in the CAD Decor PRO program location (Illustration 23);
- double-clicking on the CPV file.

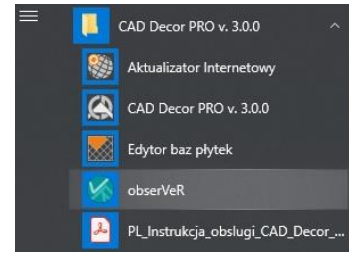


Illustration 21 Launching Start menu.

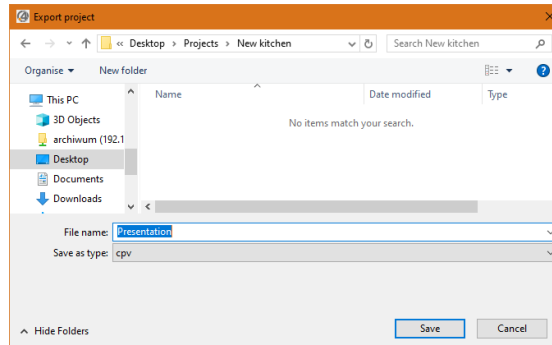


Illustration 22 Typing the name of the project and pointing to the CPV file storage location



After launching **observed**, the program's main window (Illustration 24) shows the view without the HTC VIVE / HTC VIVE Cosmos goggles connected - if they are connected, the options "walk" and "free camera" disappear from the application's top menu, because in the mode with the goggles, only the walk mode is available).

To start the walkthrough, select "Load file" from the top menu. The "Opening file" window will open, where you should point to the project with a left-click and confirm the selection with the "Open" button (Illustration 25).

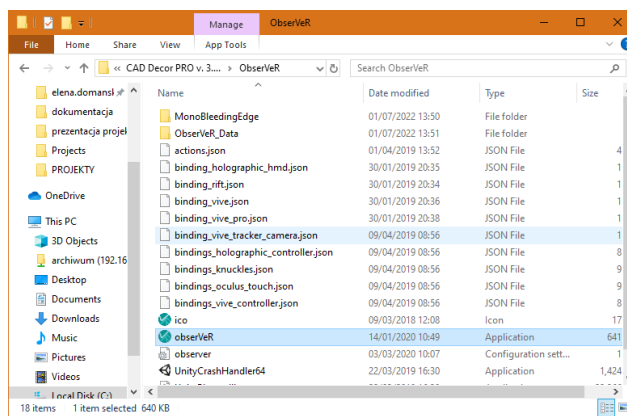


Illustration 23 Observed application on your computer - in place of installing program

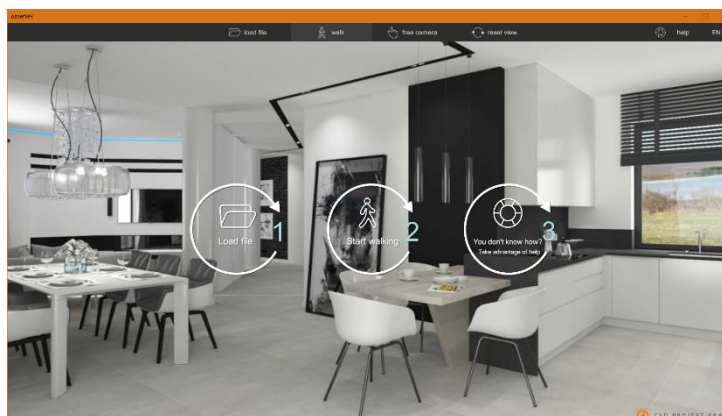


Illustration 24 Main window of observed program in view without connected HTC VIVE goggles

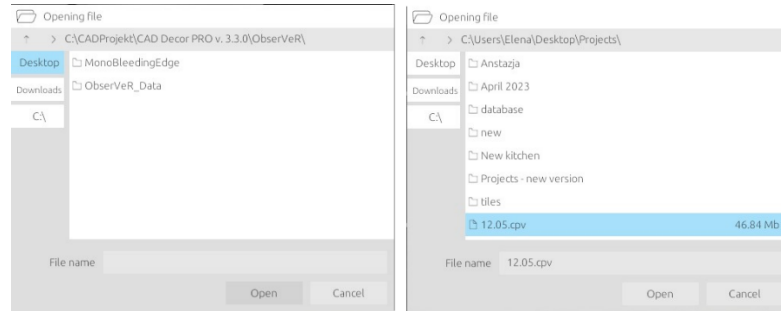


Illustration 25 Loading a file into the obserVeR application

4. Preparing the HTC VIVE Setup

4.1. Description of the setup components

The HTC Vice set includes:

- goggles, which the viewer places on the head (it should be adjusted with the help of fastening straps; it is also possible to adjust the distance of the lenses from the eyes and adjust the pupil distance with the help of knobs);
- controllers that the viewer holds in his hands (to walk around the project, one is enough) (Illustration 26);
- docking station (Link Box), which is connected to the computer and goggles in the manner described in the instructions included with the device (the station must be plugged into a power socket);
- two base stations (localizers), or viewer position recorders, which analyse the position of the goggles and controllers.



Illustration 26 Virtual walk in HTC VIVE goggles

4.2. VIVE software installation

The prerequisite for using the HTC VIVE / HTC VIVE Cosmos goggles is to install the necessary software from the manufacturer's website <https://www.VIVE.com/us/setup/VIVE/> and create an HTC|VIVE account (this is one of the installation steps). The VIVE installer will also check if your computer is VR-ready - if not, a message will be displayed accordingly.

4.3. Hardware requirements for VR

To ensure that your computer is ready to present your projects in virtual reality, please check the hardware requirements on the HTC VIVE / HTC VIVE Cosmos goggles manufacturer's website (<https://www.vive.com/us/ready/>) and our Render PRO module requirements (<https://www.en.cadprojekt.com.pl/system-and-hardware-requirements/>).

4.4. Space preparation and calibration

To be able to use the HTC VIVE goggles comfortably, you need to provide enough free space and prepare it: remove any obstacles and make sure there are electrical outlets nearby to connect the docking station and base stations.

The base stations should be placed opposite each other (e.g., in opposite corners of the room), at a distance of no more than five meters and at a height of about two meters (above the viewer's head, such as on shelves or tripods). The area of use of the goggles should be clearly visible from both locators and they must detect each other..

Before taking a virtual walk, you need to calibrate the space. depending on how large the area is, you can use either room mode (e.g. 3 x 4 meters) or point mode (e.g. 1 x 1.5 meters). In the first case, you can walk around the entire designated area - until a blue grid is displayed, marking its boundary (e.g., a wall), and in the second - move a few steps in a radius around the indicated point (the boundary will be marked by a blue circle on the floor). Detailed instructions for the calibration procedure will be displayed on the computer screen after connecting the HTC VIVE headset.

4.5. Navigating the project in virtual reality

Moving around in the obserVeR application is done differently, depending on whether the viewer is using HTC VIVE / HTC VIVE Cosmos goggles or watching VR projects on a computer screen. In the first case, he or she is immersed in an alternative world in which all proportions are depicted at a scale of 1:1, so the spatial layout corresponds 100% to that of the real world. In this space one can move freely, experiencing firsthand what the ergonomics and appearance of the designed interior will be like. You can look into every corner, assess the aesthetics and convenience of the solutions used.

In the second case, when viewing VR projects on a computer screen, there are two movement modes to choose from: "**walk**" and "**free camera**", and you use a mouse and keyboard to move around.

All the ways of moving are described in detail in the paragraphs below.

5. Navigating in the HTC VIVE goggles

Using the goggles, the viewer has only one way to move - a free virtual walk through the entire project (including when it consists of several rooms). The camera is located exactly at the level of the viewer's eyes and mimics the real movements of a person in the real world (walking, all changes in body position, turning the head, etc.). Moving can also be done using a controller, which the viewer holds in his hand - it allows teleportation to other places in the room. Controlling the controller involves aiming at the appropriate points in the design (green circles are displayed when they are pointed at) and using the buttons located on the controller (after aiming at a teleport, the appropriate button will be highlighted in the controller's preview). Do not teleport to an unknown space (e.g., behind a wall), as you risk being moved outside the project (if this situation occurs, you can use the "**reset view**" function to return to the starting point).

During a virtual goggle walk, one can penetrate closed doors, walls and other obstacles, but the most advantageous situation is when there are wide-open doors between rooms and one can see what is behind them before passing through them - then there is no risk of hitting the center of the object (e.g., a closet or wall), or going outside the design, which could involve disorientation in the viewer and difficulties in returning to the interior of the room. To move to another floor or mezzanine, one needs to use the teleportation function, aiming where the viewer wants to go. You can move up the stairs (using teleportation).

5.1. Navigating the computer screen (without connected goggles)

In the version without goggles, there are two modes of movement: "**walk**" and "**free camera**", and movement is done using the mouse buttons and arrow keys on the keyboard.

5.1.1. Moving in ,“walk” mode

The "walk" mode is the default, set automatically when the application is launched. Walking around the project on the computer screen starts at 170 cm above the floor, at the point where the camera was positioned when the CPV file was exported (this is the average height of the viewer's eyes in the real world). Moving-it occurs at a constant level-forward, backward and side-to-side (using the ←↑↓→ arrows on the keyboard), always at the same speed. It is not possible to move the camera up or down. in walk mode there is collision control and therefore it is not possible to penetrate furniture, walls, closed doors or any other objects (as in real life). However, if there is an open door in the project, the user can walk through it to the next room (if it is opened wide enough).

In walk mode, you can climb and descend stairs - to do so, position the camera at the foot or top of the stairs and use the ↑ arrow on the keyboard to move forward. The camera will move in a step-like (jumping) fashion. Use the left mouse button to look around in all directions (360°, including upwards and sideways). You can simultaneously use the arrows on the keyboard (for example, to move forward) and the left mouse button (turning the camera in any direction, as if the walking character were looking around himself).

5.1.2. Moving in "free camera" mode”

When viewing VR projects on a computer, you can switch from "walk" mode to "free camera" mode and back again at any time. when you switch modes, the camera can move to a different height (when you return to walk, it will return to 170 cm level). The free-floating camera mode allows the camera to penetrate walls, ceilings, floors and other objects in the project and move up and down unhindered.

Vertical movement can occur in two ways:

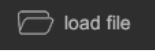

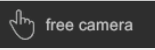
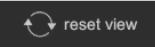
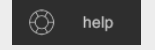



- jumping, using the right mouse button: press the button, hold it down and move the mouse forward (the camera will rise higher) or backward (the camera will lower);
- smoothly, after pointing the camera up or down using the left mouse button and simultaneously pressing the arrow ↑ or ↓ on the keyboard - the camera will glide in the direction in which it is pointed.

Button	Moving mode	Description of movement in obserVeR on computer screen
Right mouse button	free camera	Move the camera up and down (it is necessary to hold down the button and move the mouse forward or backward);
Left mouse button	free camera, walk	Turning in all directions (looking around);
Arrows on the keyboard	free camera, walk	Moving sideways (right/left arrows: ← →) and forward and backward (up/down arrows: ↑ ↓).

Note: If you leave the room and have problems getting back in, the 'reset view' function, which returns the camera to its original position, may be helpful.

6. ObserVeR application menu

The availability of functions in the **obserVeR** application changes depending on whether the VR projects are presented only on the computer screen or whether the HTC VIVE / HTC VIVE Cosmos goggles have been plugged in (then the options for changing the movement mode disappear). In the table on the next page we provide a summary of all options and information about their availability and use.

Option	Availability	Description
 load file	with and without goggles	- allows you to select the CPV file to be presented;
 walk	without goggles	- the camera wanders at a fixed height of 170 cm above the floor; - movement takes place using the mouse and keyboard (according to the rules described in the table in subsection 5.2.2. on the previous page); - no possibility of penetration through walls and closed doors, but it is possible to pass between rooms if an open door is inserted (wide enough open) and to walk on stairs;
 free camera	without goggles	- in this mode, the camera can move to any height, such as another floor; - can penetrate ceilings, floors walls, furniture, closed doors, etc.;
 reset view	with and without goggles	- helpful function when the camera is outside the project or inside the object (e.g., walls) and the user cannot return to the tour; - moves the camera to the interior of the project (to the starting point of the);
 help	with and without goggles	- displays camera control tips and an icon that opens the user manual (Illustration 27);
 Operation manual	with and without goggles	- this icon appears when the program's help is displayed; - after selecting it, the user is taken to the manual, which opens in a web browser (Internet access is required);
 EN	with and without goggles	- in the upper right corner of the screen you can expand the list of available language versions and change the language of the application at any time;
	with and without goggles	- after clicking on this icon, information about the latest available version of obserVeR will be displayed (you can download it or cancel the operation by clicking "skip"); - This icon will not be available, if obserVeR has been installed using the CAD Decor PRO updater.

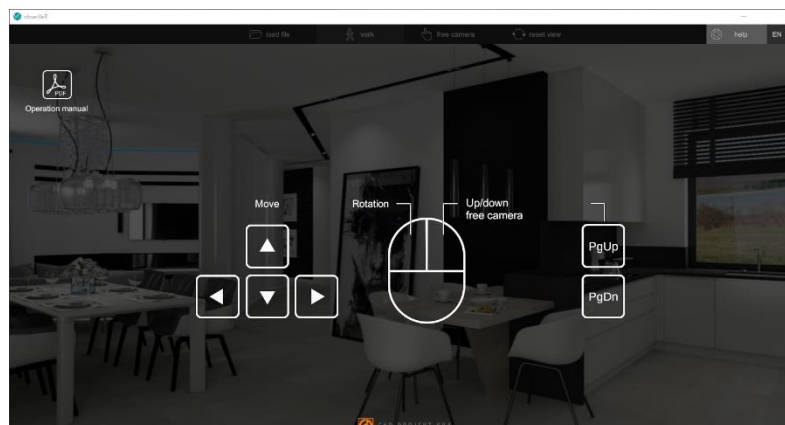


Illustration 27 ObserVeR application help - in the upper left corner you can see an icon that opens the user manual

7. Sharing applications and projects

To forward the **obserVeR** application and your projects to your customers, send them the installer link below: https://cadprojekt.com.pl/zasoby/inne/obserVeR_Installer.exe and self-created CPV files with VR projects to explore. CPV files can be placed on any file-sharing server, for example: Dropbox (<https://www.dropbox.com/>), Microsoft OneDrive (<https://onedrive.live.com/about/pl-pl/>) or Google Drive (<https://www.google.com/drive/>).

The customer should install the **obserVeR** application and then load the CPV files received into it. He can immediately explore the room on the computer screen, and after connecting the HTC VIVE / HTC VIVE Cosmos goggles, he can also take a real virtual tour in the room.

Please note that we do not offer any support in this area and that you are responsible for providing the obserVeR application and projects to your customers.

8. Changing the language

The **obserVeR** application is available in seven language versions: Polish, English, Spanish, Czech, Hungarian, Slovak and Russian. The language can be changed at any time by selecting it from the drop-down list in the upper right corner of the application window(Illustration 28).

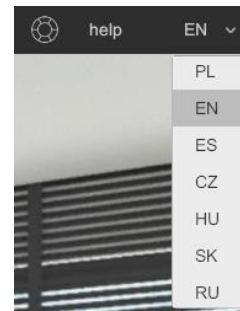


Illustration 28 Language selection

Additional information

1. Instructional videos

- Presentation of the project in the form of AVI movie track
- Animation made with CAD Decor PRO 4.X program
- 360 movie made with CAD Decor PRO 4.X program

2. Shortcuts and commands

The document compares keyboard shortcuts in the .4CAD and visualization environments and lists the most frequently used commands in versions up to 3.Xi/7.X and version 4.X/8.X (both 34 and 64 bit versions of the environment). Find the document at: <https://www.cadprojekt.com.pl/zasoby/pdf/opisy-techniczne/shortcuts-4-0-8-0-eng.pdf>

This document provides an overview of keyboard shortcuts and commonly used commands in the .4CAD environment for visualization. The shortcuts and commands can be issued using either the mouse or keyboard. It can be accessed at: <https://www.cadprojekt.com.pl/zasoby/pdf/opisy-techniczne/shortcuts-4-0-8-0-64bit-eng.pdf>

In the above list, LPM and RMB stand for left and right mouse buttons, respectively. A command notation with a + sign (e.g. [Ctrl] + [Z]) indicates that both keys should be pressed simultaneously, while a notation with a >> symbol (e.g. [E] >> [Enter] or [Space]) means that you should first type E and then press [Enter] or the space bar.

Technical support

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Contact form

We would like to inform you that we provide training in the use of our programs. For more information, please visit our website: <https://www.en.cadprojekt.com.pl/trainings/>

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