

7.1 Workflow ArchiCAD

General

This guide describes the open BIM workflow based on IFC 2x3 CV2.0 between ArchiCAD and cadwork Timber construction.

IFC export ArchiCAD

Model construction in ArchiCAD

Develop a building model in ArchiCAD using the standard modeling tools. Note that the building model is constructed floor by floor and use the basics from the [BIM modeling recommendation for ArchiCAD](#) as a guide when constructing the model. Please also note the following when modeling:

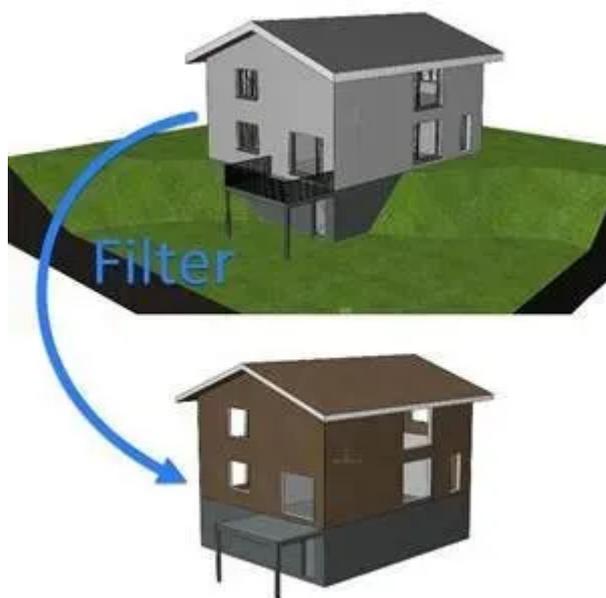
- There should be no intersections between load-bearing walls and non-load-bearing walls via corner connections. This is particularly important if only the supporting structure is filtered for the IFC export.
- Wherever possible, walls should have a single or multi-layer structure. Complex profiles should only be used where special detailing is required in the wall structure.

Take the following properties into account when setting up the model:

- Structure of multi-layer components/profiles (core, cladding, other)
- Load-bearing function of the elements (non-load-bearing elements, load-bearing elements)

IFC export

As the IFC export involves the transfer of intelligent 3D elements, you should switch to the 3D window before exporting. The aim here is to create an export model for the timber constructor from the developed architectural model using filters.



Use the following functions to display the architectural model without rooms, furnishings and surroundings as a shell model. The timber construction planner only requires the filtered elements from the architectural model.

Filter and cut elements in 3D

Hide elements that the timber construction planner does not need (window, door, skylight, possible light source and objects and especially rooms are not required).

Structural representation

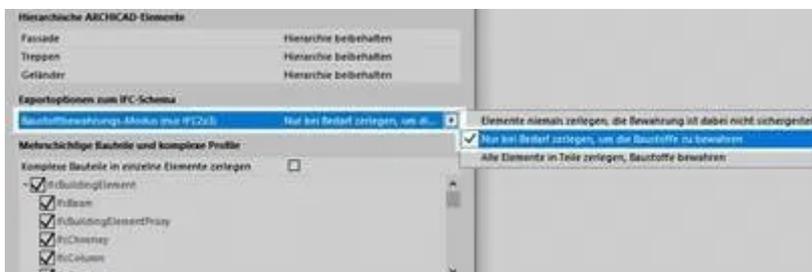
The option Only the core or at most Only the core of the load-bearing elements should be selected here. The optimal choice depends on whether the architect has already clearly defined which components are load-bearing and which are not.

Layer

Create a layer combination that filters out elements that could not be removed using the 3D filter function so that only the relevant building elements are visible.



In the settings of the IFC translator (Storage/External data/IFC), check the settings under Geometry conversions for IFC export based on the export translator cadwork and select the highlighted option if necessary.



Use the Navigator to create a section directly from the 3D window after the filters have been set correctly. Now you can save the model as an IFC file via File/Save as.... Under Export, select the option Visible elements on all floors so that the previously defined filters are applied for the export and under Translator, select cadwork.

Tip

You can link the section from the 3D window via the organizer in a publisher set for IFC export in order to save the translator for IFC export in addition to the filters.

Checking the IFC file (Quality Gate)

Before passing on your model, you should check its content. Use Solibri Office for a rule-based check or various IFC viewers, which you can download free of charge, for a simpler visual check. [IFC viewer in comparison](#)

IFC import cadwork

These instructions describe the settings for an optimal import of IFC models in cadwork, which were exported from ArchiCAD.

Incoming inspection of the IFC file (Quality Gate)

The file is opened in an IFC viewer and checked for the content defined for the data exchange (designations, zero point, rotation, component classification, etc.).

IFC import

Import the IFC file into cadwork via the BIM Management Tool (BMT). The IFC hierarchy (class structure, assignment) is adopted in the BMT after the import. The individual storeys or elements can be activated and shown or hidden.

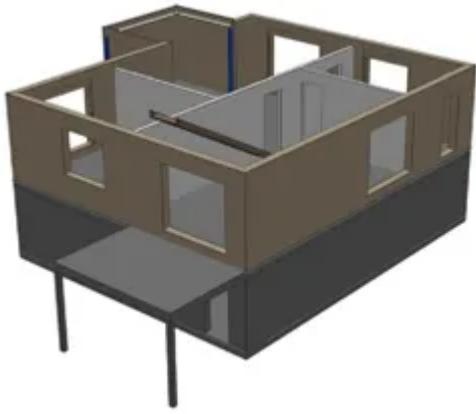


The elements are imported as show objects, which are used for visualization. Show objects cannot be used for collision control or plan output.

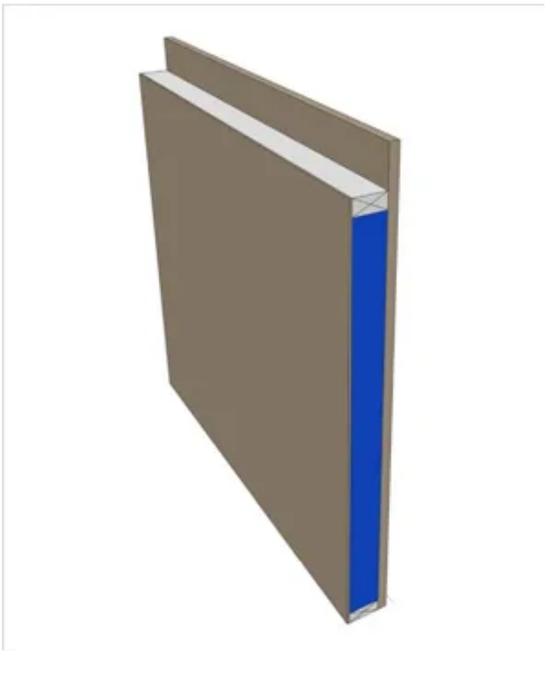
The IFC elements can be used for visual comparison with the design. It is also possible to pick up points, e.g. to carry out measurements. The most important information about the element is displayed in the info, tooltip and in the "Modify" menu.

In order for the IFC elements to be edited or used for cadwork functions, they must first be converted into cadwork elements. This is done either in the Modify menu with the function "Modify ? Create as component", or in the context menu within the BIM Management Tool. As soon as the components have been converted into cadwork elements, they are grayed out in the IFC tab and displayed in the corresponding IFC structure in the Cadwork 3D tab.

Components such as walls, ceilings, openings or roofs are recognized directly with the correct element type (wall, ceiling, opening, roof) after import into cadwork. In order to be able to continue working with the components, the corner situations and geometric dimensions must be checked.



Multi-layered components from ArchiCAD are imported in layers and not as a "uniform" volume. In order to be able to use these walls as enveloping bodies, e.g. for elementization, the individual layers of the component must be welded together. The Delete process function - **Ctrl** + **D** can then be used to remove existing processes.



multi-layer component (ArchiCAD)



modified wall (cadwork)

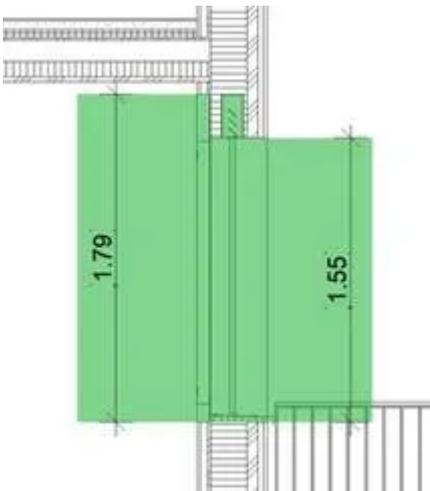
Openings - Openings

The IFC settings can be used to define whether openings should be cut into the elements or whether "openings" should be generated automatically.

Tip

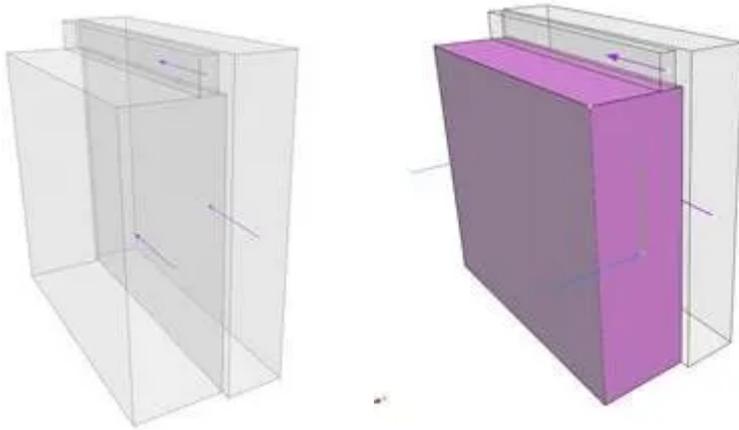
To generate the opening bodies automatically during import, the "Cut openings" function is not activated.

The exchange requirements of the project must define how the dimensions of the opening are defined.



Vertical section "Opening"

The opening element consists of a volume. Depending on requirements, this must be adapted by cutting. It is recommended to continue working with the volume marked below. Important: Check the dimensions of the opening!



IFC export cadwork

These instructions describe the export settings for IFC models that are to be imported into ArchiCAD. For successful data exchange using the IFC schema, exchange definitions must be created in advance.

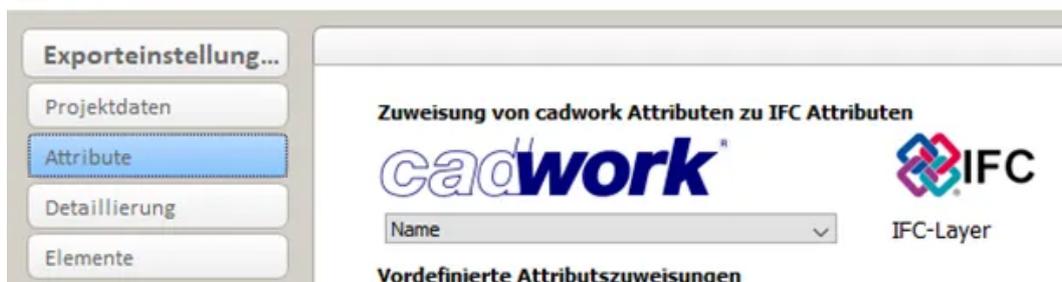
IFC export

- All elements are assigned to the correct storey.
- All elements have a unique name.

Tip

Assign the "Name" attribute to the IFC layer. This gives the architecture optimum "filter" options for the components.

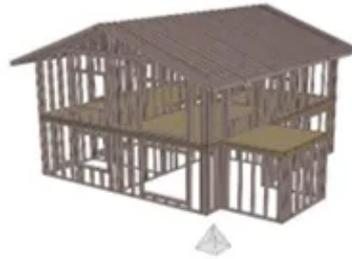
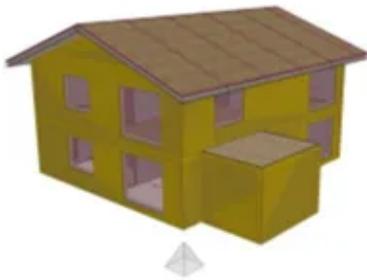
 3D



- Correct floor designation
- Correct specification of storey height
- cadwork elements contain the correct designation of the IFC type
- The local position of the building is coordinated

Tip

Use a physical object as a zero point (e.g. pyramid)



Only the elements defined in the exchange requirements are exported. The level of detail can be controlled via the export settings.

Tip

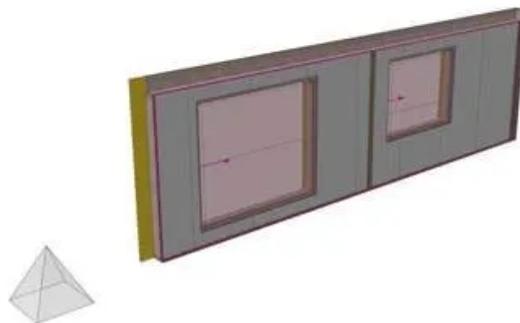
Data exchange: **as much as necessary but as little as possible** (information and geometry)



Export element construction

The following settings are recommended for the correct structuring of assembled components (element construction) in the IFC schema.

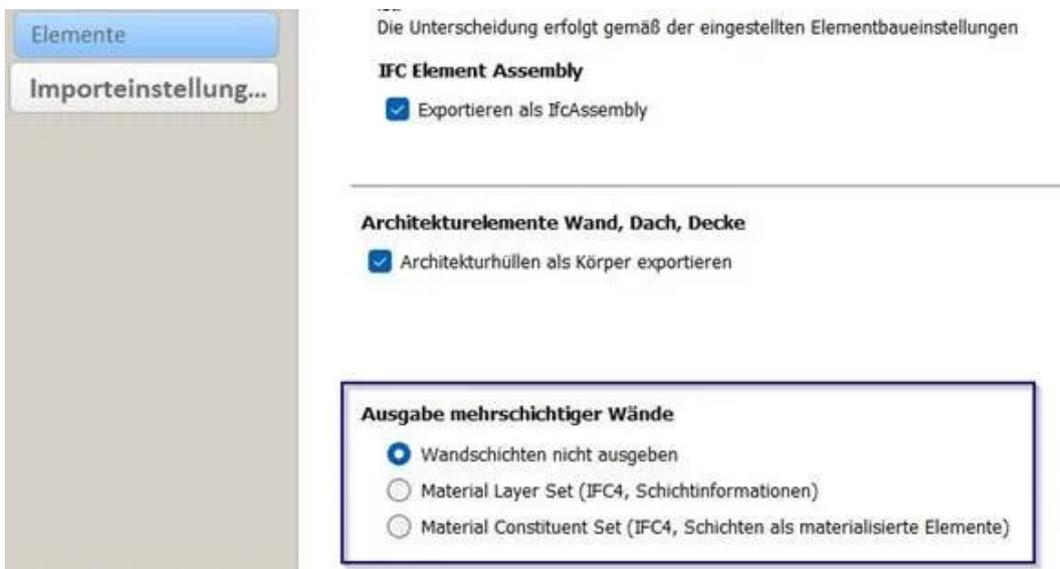
- Envelope bodies are visible for export (information of the envelope body is exported, (mandatory for a correct IFC hierarchy)
- Envelope contains the correct IFC entity (Wall, Opening, Slab, Roof, ...).





Multi-layer walls

As of version 30, it is possible to export multi-layer walls. The layers can be exported as information or materialized elements. We generally recommend exporting without wall layers.



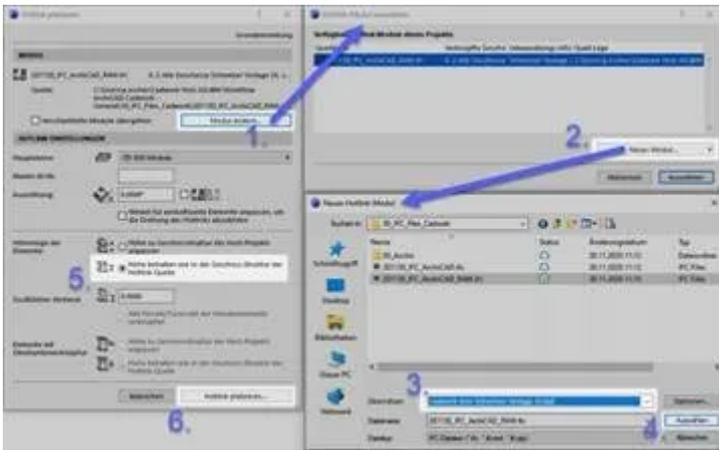
Checking the IFC file (Quality Gate)

Before passing on your model, you should check its content. For a visual check, use one of the various IFC viewers that you can download free of charge (e.g. Solibri Anywhere, FZK Viewer, etc.).

IFC import ArchiCAD

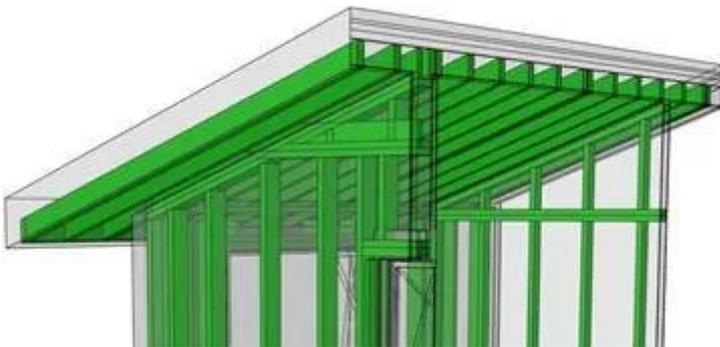
IFC import

ArchiCAD offers you various methods for importing an IFC model. The method via hotlink/module is recommended so that project changes can be updated as easily as possible. To do this, select File / Hotlinks/Modules / Place hotlink... In the adjacent screenshot, the settings are highlighted so that the import works optimally.



With this method, the model is simply referenced and can be updated at the touch of a button. All other variants can be found in the quick reference guide "[IFC import](#)" in the IDC support database.

You can use the graphical override to check that the timber construction model matches the architectural model in the 3D window.



Integrating timber construction into plans

If you receive a model reduced to the timber construction, you can use the components from it as supplementary, plan-graphic elements for floor plans or sections.

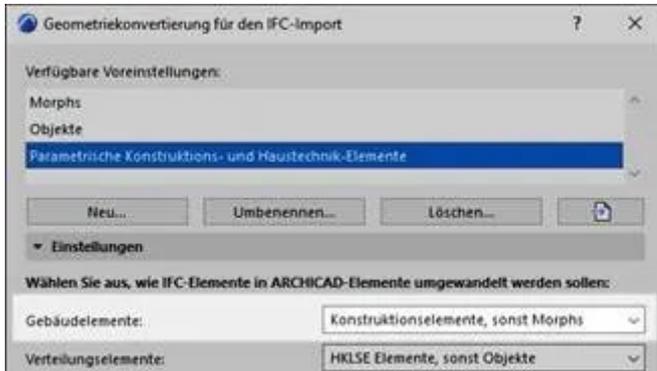
Please note that there are some optimization options for basic tool settings and IFC translator settings, which you should check or adjust before importing.



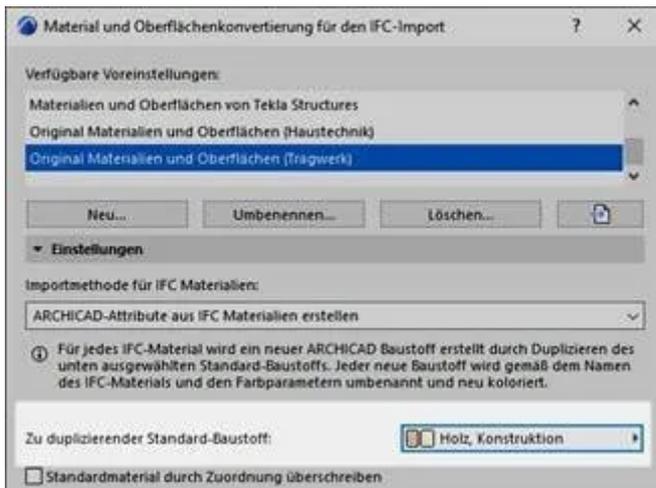
IFC import settings

Open the IFC translator settings in the menu File / External data / IFC / IFC translator... and select the translator cadwork under the Translator for import tab. Based on its basic settings, you should optimize two options:

1. under Geometry conversion, the option Construction elements should be selected for building elements, otherwise Morphs. This is because, unlike objects, morph elements generate a real floor plan representation.

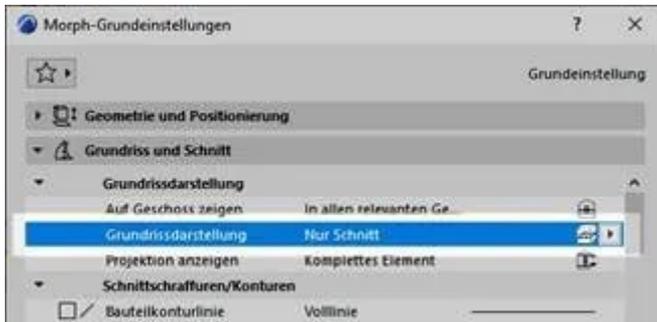


2. under Material and surface conversion, the standard building material should be changed from concrete to timber or timber, construction. If necessary, a detailed building material assignment can also be created so that the hatching representation in relation to the elements of the timber construction corresponds to your wishes.



Basic settings Morph tool

To ensure that only the cut elements of the timber construction are visible in the floor plan, you should check the basic settings of the Morph tool before the IFC import. Under Floor plan view, select the Section only option.



Tip

If, for example, you want to see the timber construction as a soffit for the top floor, you must import this floor individually as a hotlink and first select the basic setting for the floor plan display (Projected with soffit) in the morph tool settings.