



DDS-CAD Architect: IFC export

For quantity take off, the following information about the objects are exported:

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IfcSpace:

Base Quantities:

GrossFloorArea
 NetFloorArea
 GrossWallArea
 NetWallArea
 GrossCeilingArea
 NetCeilingArea
 GrossPerimeter
 NetPerimeter
 GrossVolume
 NetVolume

In addition to the defined base quantities for IfcSpace, the following quantities are added to the quantity set (Space quantities):

ClearHeight (not yet)

Comments on the base quantities

A room in DDS-CAD Architect can have holes defined, e.g. a room with a lift shaft in the middle. The holes are not considered when perimeter is calculated.

Sloped ceiling is not yet handled, thus Gross/NetCeilingArea = Gross/NetFloorArea

Gross/NetWallArea is not yet handled (not exported)

Example of quantities for a rectangular space (room) of 6.6x4.8m, room height = 2.4m:

Space quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	3ZRSokrpr2cu64stMkygcb	
Name	Space quantities	
GrossPerimeter	22.8 m	
GrossFloorArea	31.68 m ²	
NetFloorArea	31.68 m ²	
GrossCeilingArea	31.68 m ²	
NetCeilingArea	31.68 m ²	
GrossVolume	76.032 m ³	
NetVolume	76.032 m ³	
Height	2.4 m	



IfcWallStandardCase: Quantities

IfcWallStandardCase:

Base quantities:

Width

Length

GrossSideArea

NetSideArea

GrossVolume

NetVolume

Height

GrossFootprintArea

In addition to the defined base quantities for IfcWallStandardCase, the following quantities are added to the quantity set (Wall quantities):

GrossSideAreaLeft

NetSideAreaLeft

GrossSideAreaRight

NetSideAreaRight

Comments on the base quantities

Length is measured as the centre of the core layer of the wall, not the centre of the whole wall.

GrossSideArea and NetSideArea are based on the Length and the Height.

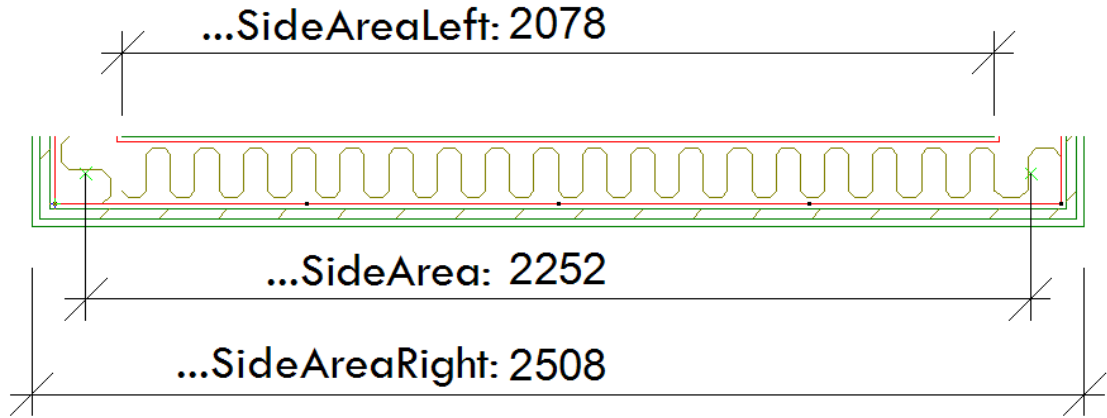
Height is height of the core layer of the wall.

NB! Right now (pr 12. march 2009), Height is “original” height before extending/cutting by structure even if wall is cut and also when wall is non rectangular. **This will be changed – se later in doc.**

The left and right side areas are measured from the lengths of the side of the total wall thickness and the actual height of the inside/left and outside/right of the wall.. See figures for the different “possibilities depending on start and end types/angles and different heights.

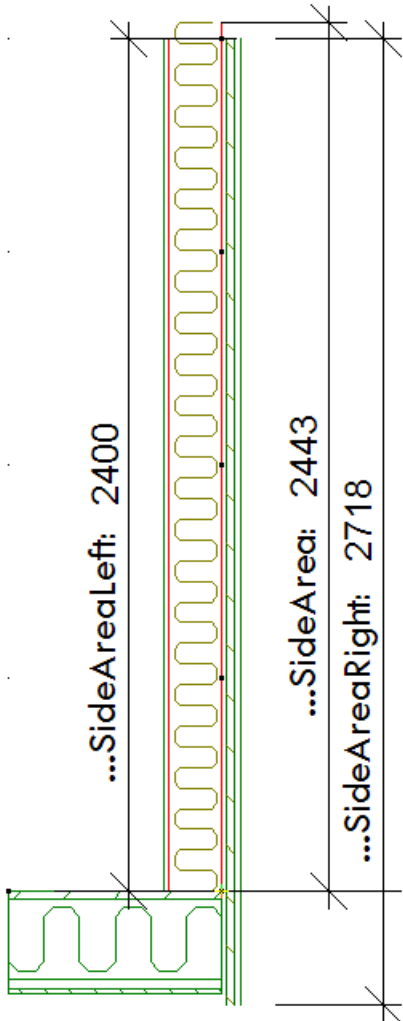


Figure 1:
Lengths used for calculating areas:





Heights used for calculating areas:





Values in this example will give the following quantities:

Wall quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	2hc5CN5UvE18YsXX\$MZyZC	
Name	Wall quantities	
Length	2.252 m	
Width	0.215 m	
Height	2.443 m	
GrossSideArea	5.50164 m ²	
NetSideArea	5.50164 m ²	
GrossVolume	1.18285 m ³	
NetVolume	1.18285 m ³	
GrossFootprintArea	0.492995 m ²	
GrossSideAreaLeft	4.9872 m ²	
NetSideAreaLeft	4.9872 m ²	
GrossSideAreaRight	6.81674 m ²	
NetSideAreaRight	6.81674 m ²	

When wall is extended to a structure above, e.g. roof, the height (Height) will not be according to the physical wall height. It will tell the “original” height of the wall.

This will soon be changed to:

If the wall is rectangular after being extended or cut by structure, Height will be the actual height of the core. Non rectangular wall will not have Height defined.



IfcOpeningElement:

Base Quantities:

Rectangular openings in element with constant thickness:

Depth

Height

Width

Non-rectangular openings in element with constant thickness:

Depth

Area

Any opening:

Volume

In addition to the defined base quantities for IfcOpeningElement, the following quantities are added to the quantity set (Opening quantities):

Comments on the base quantities

Not implemented yet as it's not of much use for quantity calculations!!!



IfcWindow:

Base Quantities:

For rectangular Windows:

Width

Height

For non-rectangular Windows:

Area

In addition to the defined base quantities for IfcWindow, the following quantities are added to the quantity set (Window quantities):

For rectangular Windows:

Area

For non-rectangular Windows:

Width

Height

Comments on the base quantities

For non-rectangular windows, Area will be the area of the surrounding rectangle and Width and Height will be the extent (max width and max height) of the window.

Example of quantities for a rectangular window 1.1x1.2m:

Window quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	2QdVMAykr3uvmthxBcvwtz	
Name	Window quantities	
Width	1.1 m	
Height	1.2 m	
Area	1.32 m ²	



IfcDoor:

Base Quantities:

For rectangular Doors:

Width

Height

For non-rectangular Doors:

Area

In addition to the defined base quantities for IfcDoor, the following quantities are added to the quantity set (Door quantities):

For rectangular Doors:

Area

For non-rectangular Doors:

Width

Height

Comments on the base quantities

For non-rectangular doors, Area will be the area of the surrounding rectangle and Width and Height will be the extent (max width and max height) of the door.

Example of quantities for a rectangular door 1x2.1m:

Door quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	09qUwX2PLEPAzwdywFLqnW	
Name	Door quantities	
Width	1 m	
Height	2.1 m	
Area	2.1 m ²	



IfcSlab:

Base Quantities:

Horizontal slab with constant thickness:

GrossArea

NetArea

GrossVolume

NetVolume

Perimeter

Width

Any slab:

Slabs from DDS-CAD Architect are always horizontal with constant thickness.

In addition to the defined base quantities for IfcSlab, the following quantities are added to the quantity set (Slab quantities):

Comments on the base quantities

Example of quantities for a rectangular slab of 6.6x5.4m, thickness 0.250m and with a rectangular hole of 2.4x1.8m:

Slab quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	1Gks5Gl595xBxcyn9XUN3u	
Name	Slab quantities	
Width	0.25 m	
Perimeter	32.4 m	
GrossArea	35.64 m ²	
NetArea	31.32 m ²	
GrossVolume	8.91 m ³	
NetVolume	7.83 m ³	



IfcRailing:

Base Quantities:

Length

In addition to the defined base quantities for IfcRailing, the following quantities are added to the quantity set (Railing quantities):

Comments on the base quantities

Railing is not handled yet



IfcBeam:

Base Quantities:

Length
CrossSectionArea
OuterSurfaceArea
GrossVolume
NetVolume

In addition to the defined base quantities for IfcBeam, the following quantities are added to the quantity set (Beam quantities):

Comments on the base quantities

Profiled steel beams will not have CrossSectionArea, OuterSurfaceArea or Gross/NetVolume according to the profile but acc to the extent of the profile.

Example of quantities for a beam 96x148mm, length=3.0m

Beam quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	0AzmIrF2zAm96015zqcrV8	
Name	Beam quantities	
Length	3 m	
CrossSectionArea	0.014208 m ²	
OuterSurfaceArea	1.49242 m ²	
GrossVolume	0.042624 m ³	
NetVolume	0.042624 m ³	



IfcColumn:

Base Quantities:

Length
CrossSectionArea
OuterSurfaceArea
GrossVolume
NetVolume

In addition to the defined base quantities for IfcColumn, the following quantities are added to the quantity set (Column quantities):

Comments on the base quantities

Profiled steel columns will not have CrossSectionArea, OuterSurfaceArea or Gross/NetVolume according to the profile but acc to the extent of the profile.

Example of quantities for a column 98x98mm, length=2.533m

Column quantities (IfcElementQuantity)

Name	Value	Description
GlobalId	0mS5DLJC12cejBnGB9C_uD	
Name	Column quantities	
Length	2.533 m	
CrossSectionArea	0.009604 m ²	
OuterSurfaceArea	0.992936 m ²	
GrossVolume	0.0243269 m ³	
NetVolume	0.0243269 m ³	



IfcMember:

Base Quantities:

Length

CrossSectionArea

OuterSurfaceArea

GrossVolume

NetVolume

In addition to the defined base quantities for IfcMember, the following quantities are added to the quantity set (Member quantities):

Comments on the base quantities

Not yet exported from DDS-CAD Architect. Exported from DDS-CAD Construction.



IfcCoverings:

Base Quantities:

Flooring

GrossFloorArea

NetFloorArea

Ceiling

GrossCeilingArea

NetCeilingArea

Cladding

GrossWallArea

NetWallArea

In addition to the defined base quantities for IfcCoverings, the following quantities are added to the quantity set (Covering quantities):

Comments on the base quantities

Not yet exported from DDS-CAD Architect.



IfcCurtainWall:

Base Quantities:

GrossSideArea

NetSideArea

Width

In addition to the defined base quantities for IfcCurtainWall, the following quantities are added to the quantity set (CurtainWall quantities):

Comments on the base quantities

Not yet exported from DDS-CAD Architect. Only IfcWallStandardCase is exported.



IfcRampFlight:

Base Quantities:

Ramp with constant thickness:

GrossSideArea

NetSideArea

Width

Any ramp:

GrossVolume

NetVolume

In addition to the defined base quantities for IfcRampFlight, the following quantities are added to the quantity set (RampFlight quantities):

Comments on the base quantities

Not yet exported from DDS-CAD Architect. Exported from DDS-CAD Construction.