GRASSHOPPER PLUGIN FOR AXISVM

Component 3.0

AxisVM X5 R3 OR LATER VERSION

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Table of contents

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1. COMPONENTS

1.1. ATTR

Cross-section

Usage This component is used for selecting a Cross Section from the AxisVM profile catalogue. After loading the cross-section can be selected by double-clicking on the *Cross-section component*.

Input There is no Grasshopper input for this component.

Output Selected cross-section as a text value. If OK is not pressed, it returns null / empty Text Value.

Advantage Graphical user interface for selecting.

Disadvantage Loading cross-sections from a catalogue is very slow, and loading uses many resources.

☞ **If the catalogue is loaded, the Selecter DialogBox appears automatically.**

Materials

Usage This component is used for selecting a Material from the AxisVM material catalogue. After loading, the material can be selected by double-clicking on the *Materials component*.

Input There is no Grasshopper input for this component.

Output Selected material in a text value. If OK is not pressed, it returns null.

Advantage Graphical user interface for selecting.

☞ **If the catalogue is loaded, the Selecter DialogBox appears automatically.**

1.2. BASE

Line to AxisVM Line

Usage This component is used for sending lines from Rhino to AxisVM. Lines can be defined as members (truss) if material and cross-section are both defined.

Input
- Lines as list
- Material as a text value *(optional)*
- Cross-section as a text value *(optional)*

Output AxisVM lines as a list (if lines can be defined as trusses, they will be sent as trusses)

☞ **Lines are created independently in the component.**

Mesh to AxisVM Mesh

Usage This component is used for sending mesh structures from Rhino to AxisVM. Mesh structures can be defined as

- domains
- surfaces (shell)
- lines or trusses (from mesh edges)

Input
- Mesh as list
- Material as a text value *(optional)*
- Cross-section as a text value (will be used only if the output is connected to edges) *(optional)*
- Thickness as a double-precision floating number *(optional)*

Output AxisVM Meshes as a list. If necessary inputs are missing then basic values will used in another's component input (material=S235 and thickness=10cm for surfaces and domains).

NodeSupports

Usage This component is used for creating node supports.

Input 6 double-precision floating numbers for stiffnesses of node support.

Output AxisVM node support

Point to AxisVM Point

Usage This component is used for creating nodes from Rhino to AxisVM

Input
- Points as a list
- Node support as an item *(optional)*

Output AxisVM Node

1.3. SEND

GrasshopperToAxisVM

- This is the main component of the plugin. Currently, every communication between Grasshopper and AxisVM is done by this component.
- After creating this component, a new AxisVM application will be initialized with a new Model. Currently, only new models can be created from Grasshopper.
- If any of the input parameters are changed the component will refresh the newly created AxisVM model's status.

Usage This component is used for sending Objects to AxisVM.

Input (* - as a list)

- AxisVM Points* Points will be created from an AxisVM Point *(optional)*
- AxisVM Lines* Lines will be created from an AxisVM Line *(optional)*
- AxisVM Surfaces* Surfaces will be created from an AxisVM Mesh *(optional)*
- AxisVM Domains* Domains will be created from an AxisVM Mesh *(optional)*
- AxisVM Edges* Edges will be sent from an AxisVM Mesh *(optional)*

Output There is no Grasshopper output for this component.

☞ **Loading of this component blocks any Grasshopper - user interactions.**

2. KNOWN ISSUES

- Cross-sections's component loading is slow.
- Only new AxisVM applications can be created by this version.
- Loading Rhino/Grasshopper is slower due to reading information from the catalogue.
- Loading a Grasshopper project which contains *Materials*, *Cross Sections* will always ask for selecting values after the project is loaded, which slows down the opening of the project.
- Loading a Grasshopper project which contains *GrasshopperToAxisVM* components can cause multiple AxisVM applications opened at the same time.