ColBot
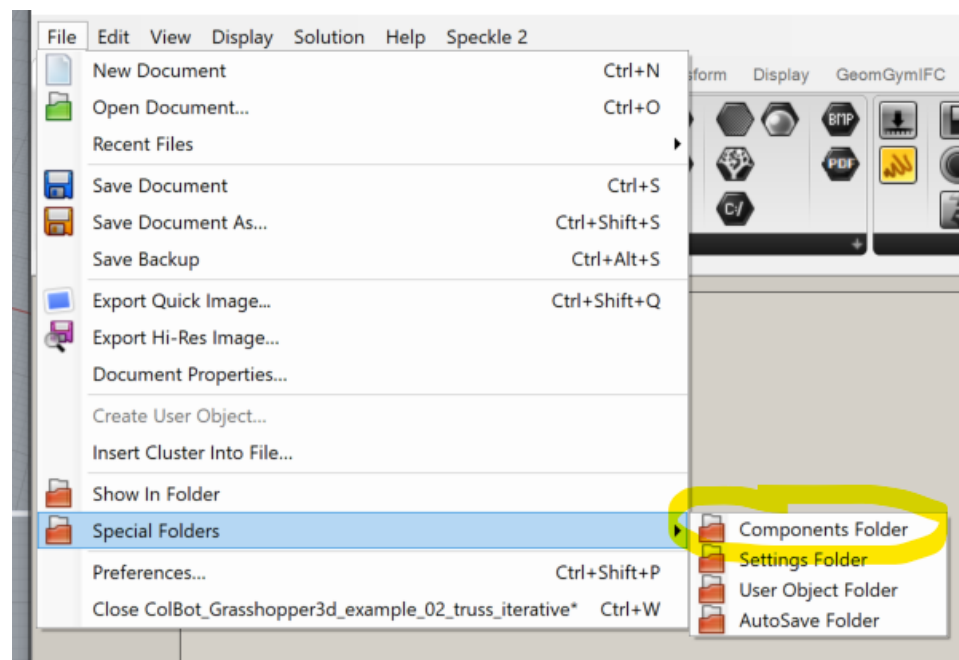# Rhino Grasshopper3d components

Installation

Copy paste the AECforward grasshopper component into the grasshopper component folder

Name	Type
AECforward	Grasshopper Assembly

The grasshopper component folder can be found at file/special folders

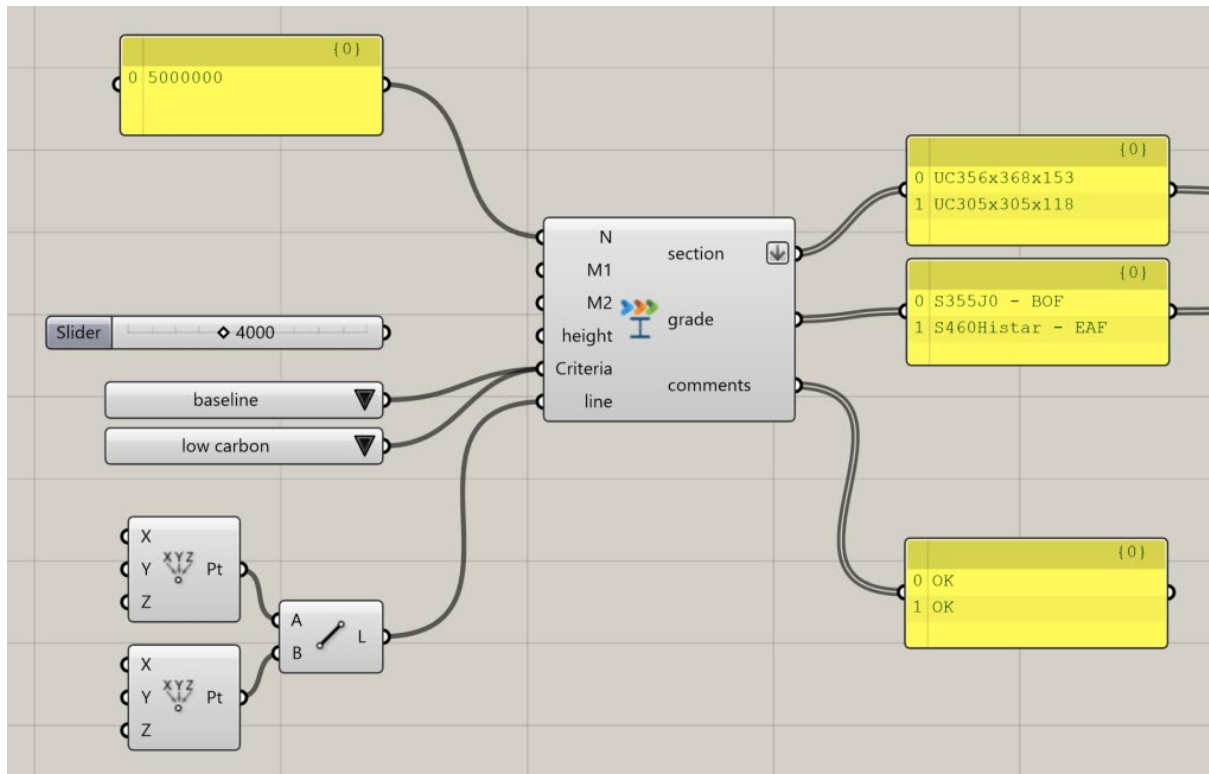The component will use an external link to *api.AECforward.ai*

Components
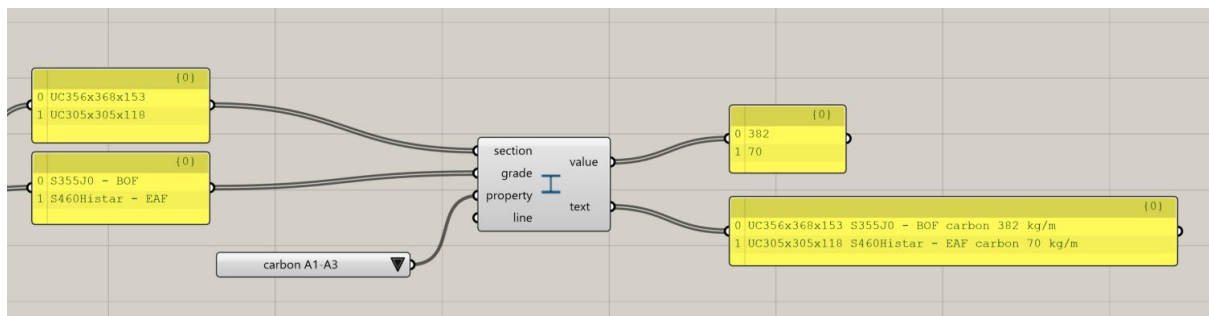
There are two components provided:

bots / ColBot:

Predict best steel column sections for different loads and objectives (e.g. low carbon or cost)

utilities / SectionProperty

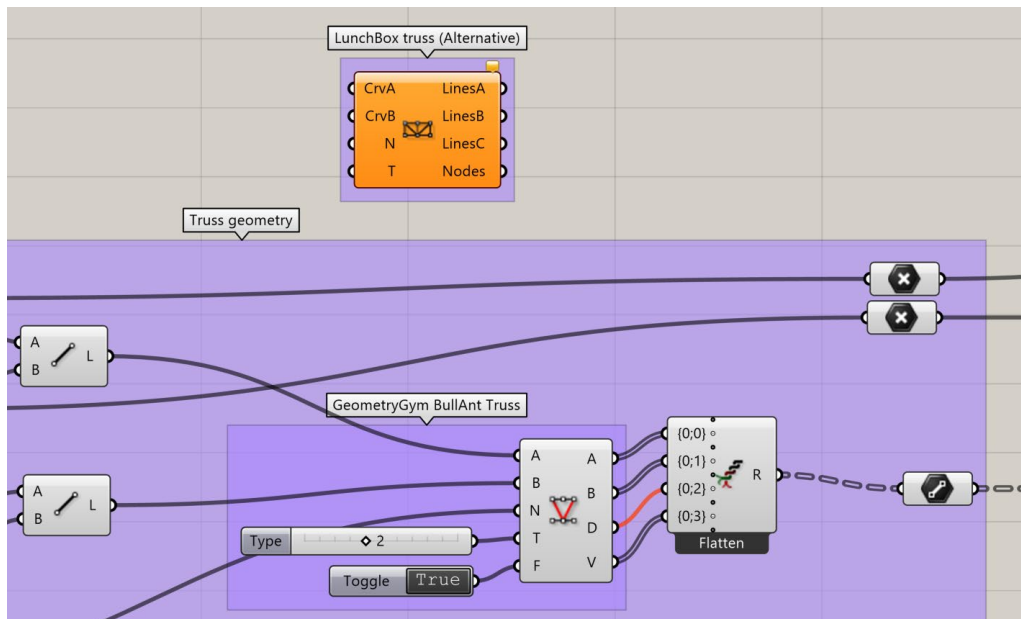Provide different properties of the steel sections. (cost, weight, embodied carbon…)

Example files

ColBot_Grasshopper3d_example_01_basic.gh
This example demonstrate basic use of the components:

ColBot_Grasshopper3d_example_02_truss_iterative.gh

This example allows to predict a full truss design to reduce the embodied carbon or minimise costs.

Karamba is required for the finite element model solver.

To generate the truss either BullAnt or Lunchbox components are required.

This is an iterative design. The DataDam needs to be activated until the design has converged. Usually after a couple of iterations.

Click on the DataDam until the "best Sections" match the "Current sections"
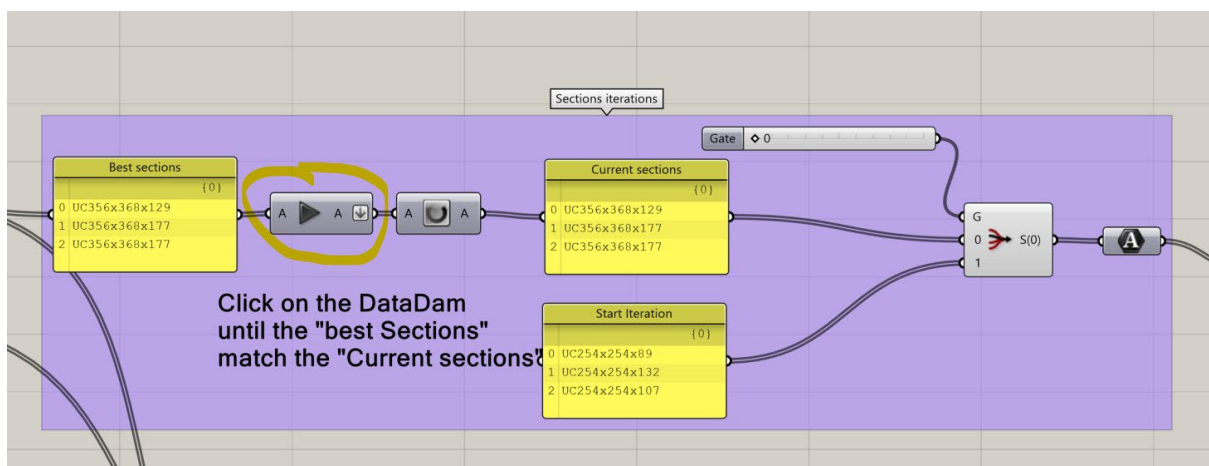
ColBot – Readme

Questions? Comments? or want full detailed calculations?

Please email us at bots@AECforward.ai.

What is this about

ColBot is predicting the best structural steel column (UK market). The column of height Ly is loaded by an axial force N and some bending moments.

The best selected columns have different grades S355, S460 and different steel making processes BOF (basic oxygene furnace) or EAF (Electric Arc Furnace).

The option weight_S355 corresponds to a baseline basic design using S355.

The carbon option considers the embodied carbon for the production stages A1-A3.

Disclaimer

AECforward.ai own all intellectual property rights to the apps, API, components associated with ColBot.

This design has been generated automatically using a machine learning process and hence is approximate.

Steel raw material varies and depends on market conditions. Cost estimates are provided for information only and are based on average user's input or specific inputs.

The Information provided is for Informational/Educational purposes only and should not be treated as a substitute for or replacement of professional structural engineering advice.

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