

What is new in SAM 8.2?

Unified selector for nodes, elements and graphics/shapes

In previous versions of SAM the selector icon had two operating modes, one for selecting mechanism related objects, and one for graphics related objects/shapes. As of SAM 8.2, there is just one selector icon.

Cascading styles (Preferences - Project - Object)

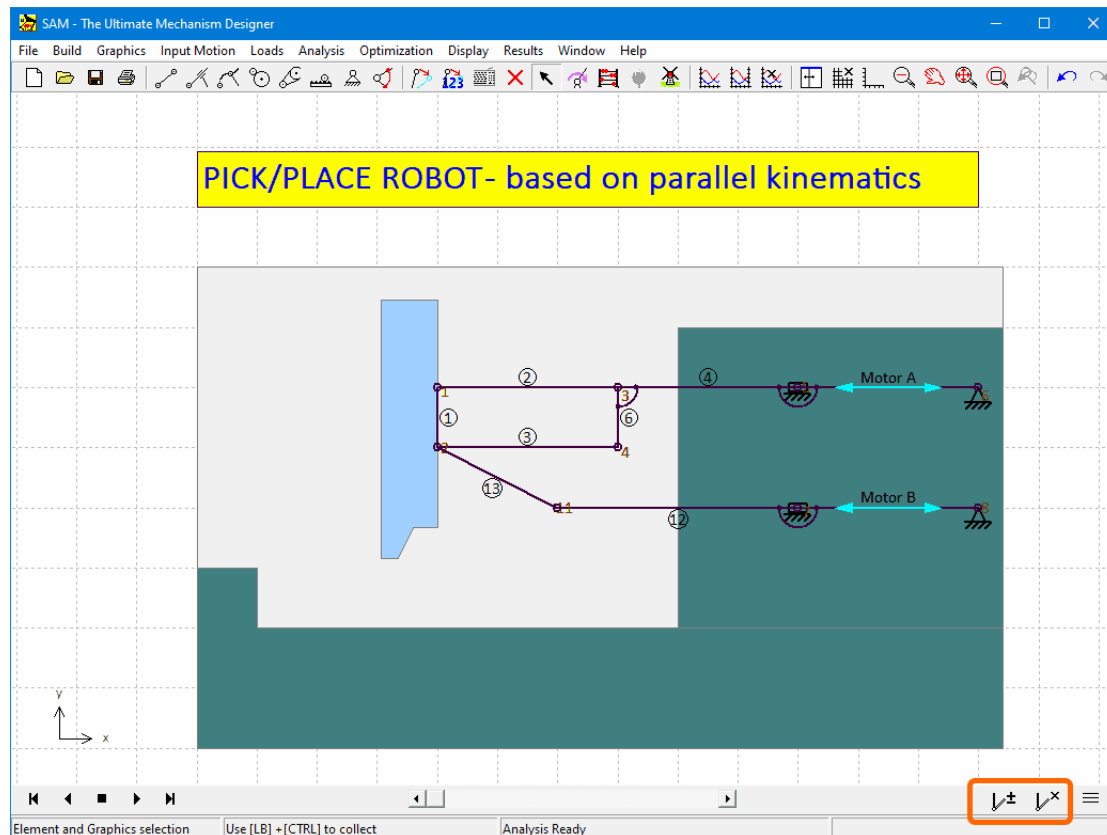
Various styles, like font size, (fill) color, ... can be defined at various levels. The settings at preferences level are the initial settings for each new project, but can be adapted at project level. Within each project, the settings at project level serve as initial values for each new object, but can be adapted at the level of each individual object. Most settings are only found at two out of these three levels.

Text box including call-out

To enhance annotation options, a text box including call-out functionality has been added to the list of available graphics/shapes.

Fill color + display order

The user can define a fill color for all shapes as well as the order in which stacked shapes are displayed.



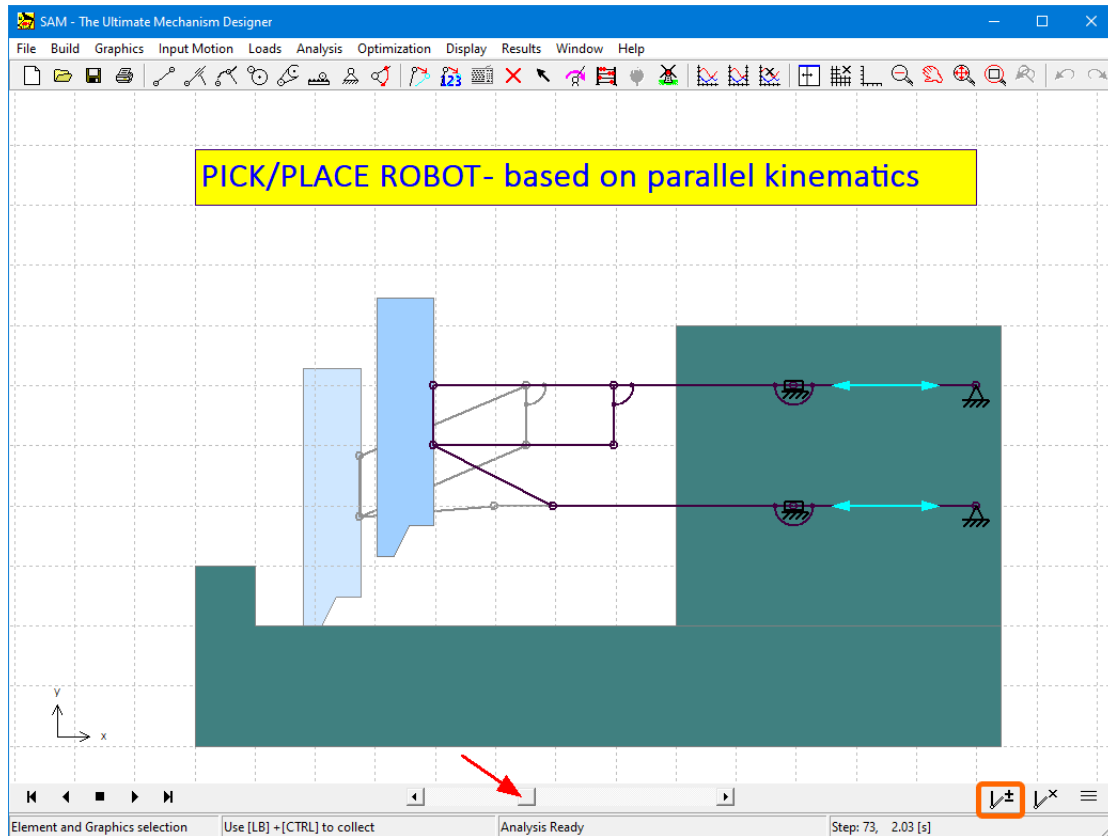
Example showing fill color and display order

Freeze/Unfreeze

Sometimes it is desirable to display one or more additional positions of the mechanism during stand-still or animation. For that purpose freeze/unfreeze buttons have been added to the animation player.

The first one adds/removes one single position, and the second button removes all additional positions.

Moving the mechanism towards the corresponding position and pressing the freeze/unfreeze button does the trick.



Adding/Removing a freeze position by moving the mechanism towards the corresponding position and pressing the add/remove button

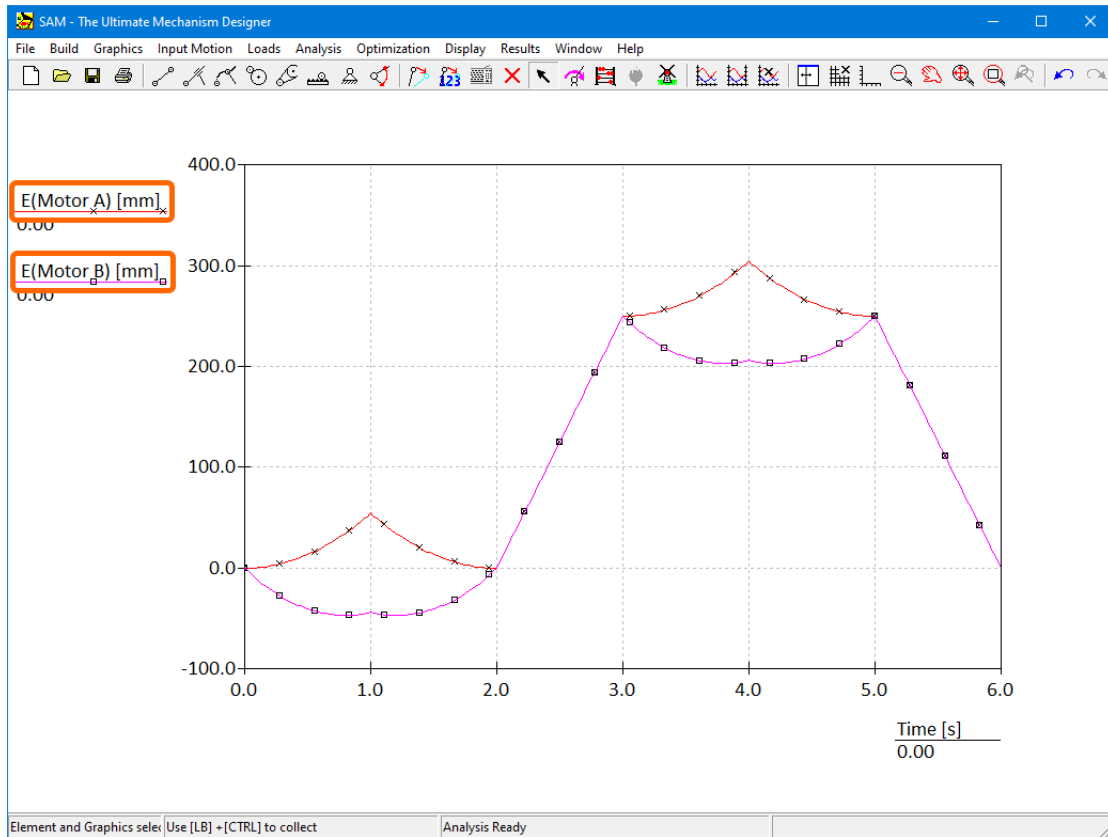
Movable element/node labels

Sometimes one feels the need to overrule the default location of the element/node labels as defined under File>Preferences>Display. After selecting an element or node, the right-mouse drop-down menu now also offers the command 'Move Label', which allows to adjust an individual label with the mouse.

User-defined element/node labels

The default numbers to identify a element or node have been replaced by labels. Initially, the label is identical to the internal element/node number. In the previous example of the pick&place robot, the two linear motor elements correspond to elements 5 and 7, but the labels have been replaced by 'motor A' and 'motor B'.

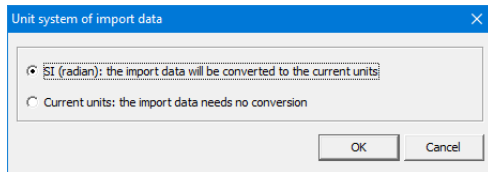
Please note that in the xy-plots these user-defined labels are displayed (see example below), whereas during post-processing of results (Results>User Defined...), the use of the internal identification numbers is still required.



Motion (=elongation E) of the driving elements with labels 'Motor A' and 'Motor B' are shown as function of time

Unified import of data (no more linking to files + option to interpret data as SI or current units)

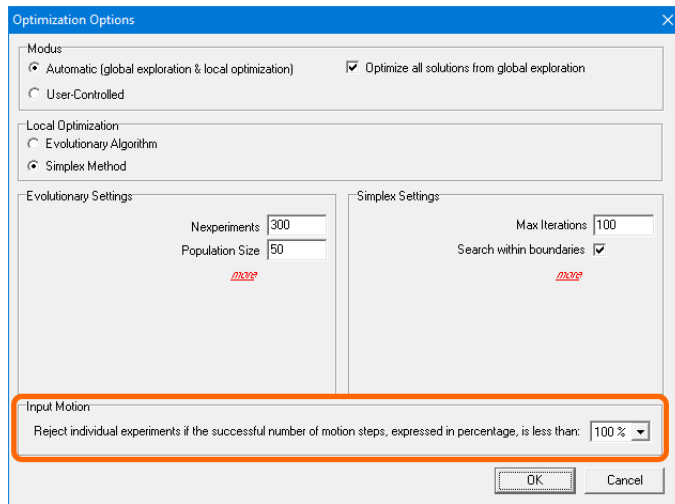
- In previous versions of SAM external data (motion files, optimization reference files, forces definitions ...) was sometimes accessed via a link to the file, and sometimes the data was imported and stored within the SAM project file. As of SAM 8.2, all external data is always imported and part of the SAM project file.
- During the import process the user can state the unit system of the external data. If the data in the external file is based on SI(rad) units, an automatic conversion into the current unit system being used in SAM will be executed. If the data in the external file is already in line with the current units, the user can choose the second option and import the data without conversion.



Dialogue in which the user can choose which unit system corresponds to the data in the import file.

New optimization option: rejection of experiment based on percentage completed motion steps

In most cases, it is useful to reject any optimization experiment during which the full motion could not be completed. Generally, this is caused by convergence issue since the indicated input motion step cannot be executed by the mechanism. However, in some optimization cases, for example in case one wants to maximize the output motion range of a mechanism without knowing upfront what the corresponding input motion will be, it can be useful to accept experiments that did not complete all input motion steps. To facilitate this, an extra optimization option has been introduced, which defines the rejection of an experiment based on the percentage of completed motion steps. The default value is 100%, meaning that the entire motion cycle must be completed, but the value can also be set to 75%, 50%, 25% or 10%.



New optimization option