

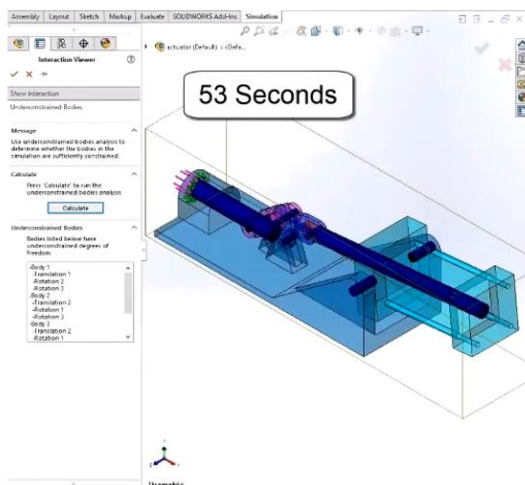
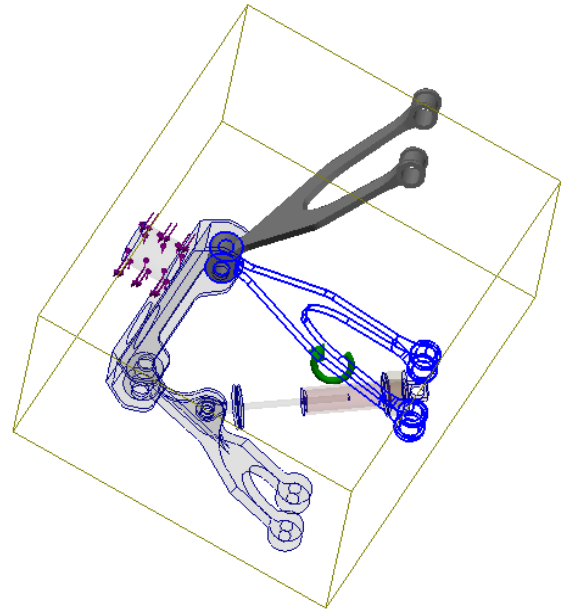
### SOLIDWORKS SIMULATION TOP ENHANCEMENTS IN 2023

SOLIDWORKS provides us with fresh improvements and tools to enhance SOLIDWORKS Simulation's functionality and usefulness. The developers at SOLIDWORKS review all the wonderful customer's input and utilize it to make software better. This blog illustrates some of the major enhancements in Simulation.

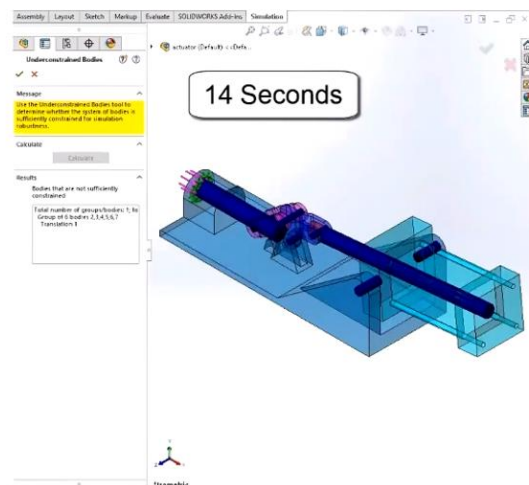
#### Under-constrained Bodies:

To find any rigid (or free) body modes, we previously used the Underconstrained Bodies diagnostic tool. Body translation or rotation is possible when fasteners, connectors, or contact conditions are insufficient. The issue is that the rigid body movement failed to provide a true representation of the entire assembly.

The Underconstrained Bodies tool in SOLIDWORKS Simulation 2023 uses a Singular Value Decomposition (SVD) to more quickly identify free body modes and provide unconstrained displacements for the entire assembly. Additionally, while identifying rigid body modes of components, users of SOLIDWORKS Simulation Professional and Premium can use the Underconstrained Bodies tool to take contact interactions and bolt connectors into account.



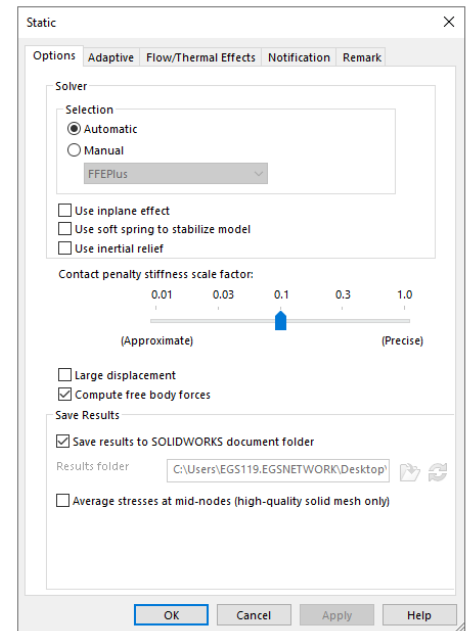
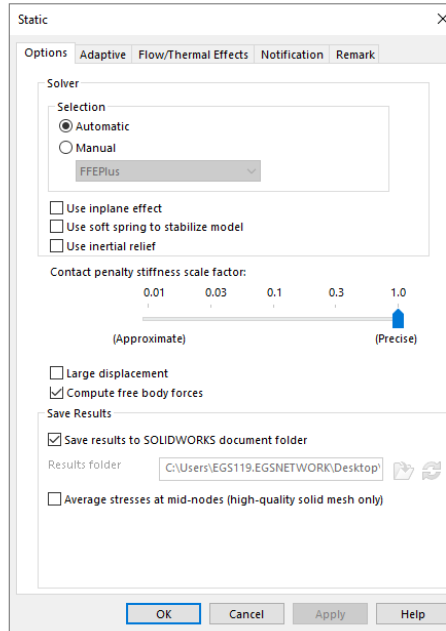
SOLIDWORKS 2022



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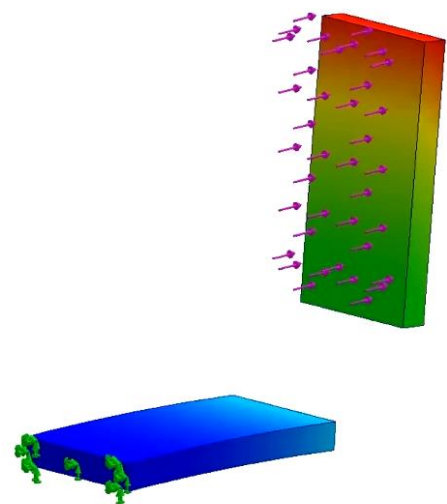
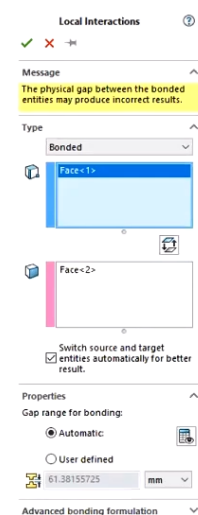
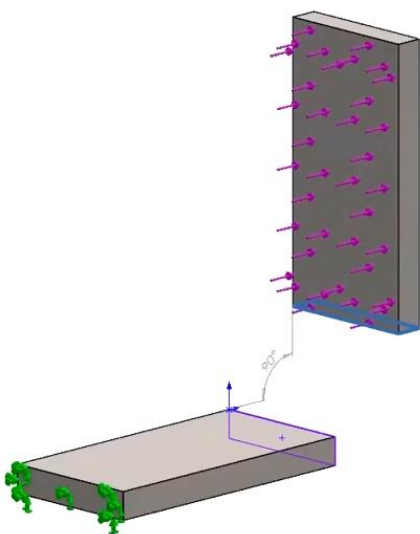
### Penalty Stiffness Control:

To provide a realistic solution for studies involving contact interactions in linear static studies, you can use the Contact Penalty Stiffness Control tool in SOLIDWORKS Simulation 2023 and set the scale factor to 1.0. To evaluate design iterations and the general behaviour of the model, you might choose a lower scale factor in order to get an approximation of the answer more quickly. To accomplish convergence more quickly and with shorter solving durations, a small amount of contact pressure accuracy will be needed.



### Enhanced Bonding:

In earlier versions, the application would cause error when constructing local interactions on non-facing surfaces. You were unable to build the bonded connection in your preprocessing setup.





Evolution thro' Knowledge

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## Engineering Global Solutions

Surface-to-surface bonding is now permitted on faces that are not facing one another and do not have a projection region between them, which has greatly improved the bonding interaction in SOLIDWORKS Simulation 2023. This new capacity is applicable to fatigue and design studies linked to linear static investigations, as well as to frequency, buckling, and linear dynamic studies.

### Improvements in Linkage rods:

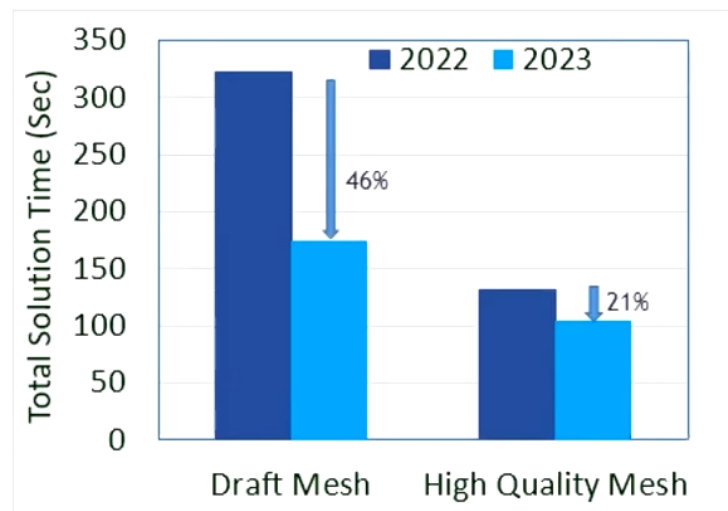
In SOLIDWORKS Simulation 2023, Linkage rod Connector now available in Non-linear Static & Non-Linear Dynamic Studies. You can specify a Linkage Rod connector between cylindrical faces, circular edges (for shells), or vertices to model the behavior of connecting rods. Removed Connecting arm Components / Subassemblies.

### Solver Enhancements:

Function-based processing for the FFEPlus iterative solver is extended to frequency, buckling studies, and to the linear static studies that include node-to-surface interactions and virtual wall definitions. For linear static, frequency, and buckling analyses, function-based processing replaces file-based processing, which optimizes the transmission of stiffness data to solve the systems of equations. For study involving frequency and buckling, solution performance is enhanced. This image shows the effectiveness of the solution for a typical frequency study.

In addition, solution performance is improved for linear static studies that contain:

- Node-to-surface bonding and contact interactions
- Virtual wall definitions



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