Optimizing CAD management for multibody dynamics modeling

More efficient workflows with Adams Modeler

Overview

In present-day mechanism simulation, working with large and complex assemblies is the norm. Support for managing and editing large multi-level assemblies is essential. Consolidating the CAD assembly parts into a set of moving parts that make sense for MBD analysis is a frequent and typically time-consuming task. Manipulating a parametric model to fit a particular simulation intent is not always straightforward and typically involved requests to the CAD group for support, even for minor modifications. Once these changes are accomplished, the updated CAD is re-imported, and model building progresses.

Adams Modeler provides several benefits to tackle these challenges during the process of creating an MBD model. The Adams Modeler interface provides an improved user experience in managing imported CAD data. Any multi-level hierarchy is maintained in the imported CAD through a built-in concept of Assemblies and Sub-Assemblies. In essence, the CAD is not flattened into a set of sibling parts under one parent model.

While retaining the CAD hierarchy, Adams Modeler also allows easy grouping of the parts. Using the drag and drop capability in the model tree, users can modify the imported CAD hierarchy into a set of moving parts best suited for motion analysis.
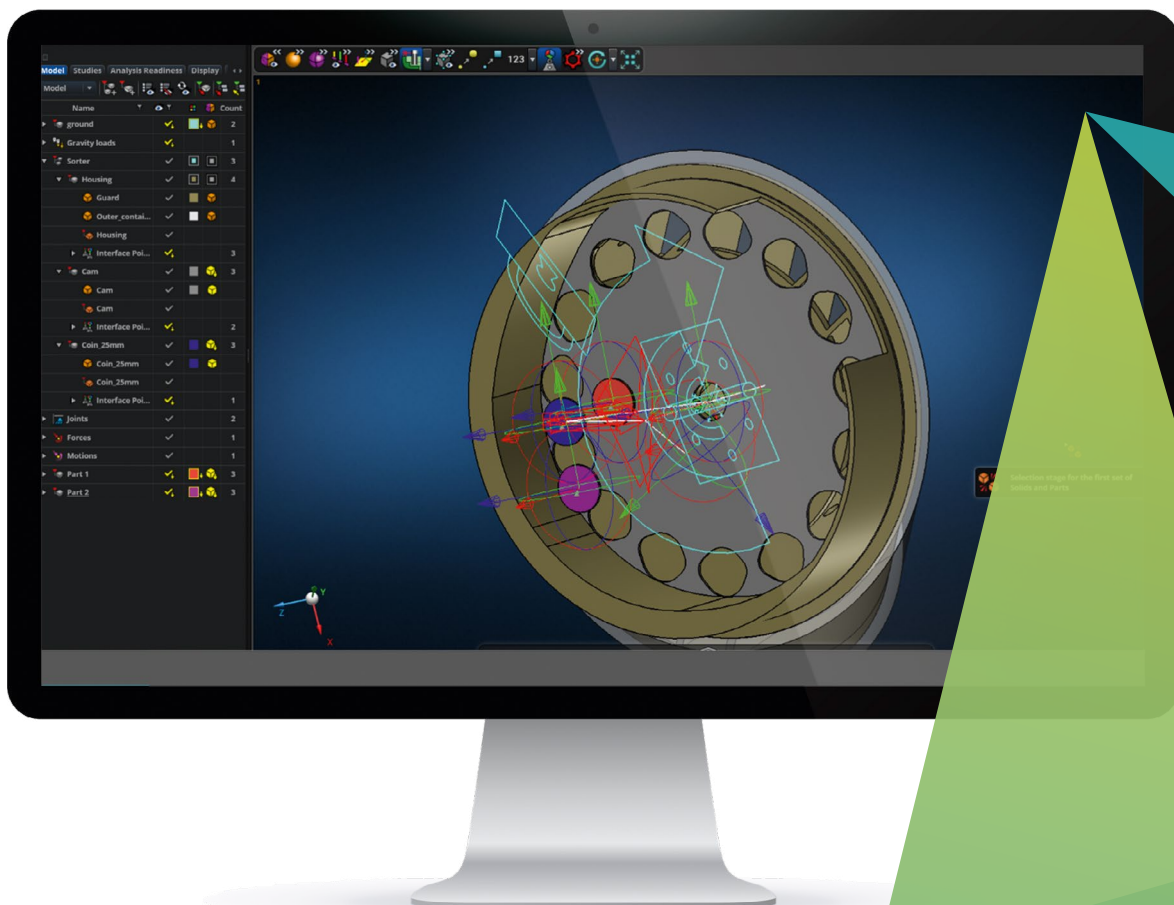
Effective CAD Visualization

Adams Modeler also provides several convenient tools for managing the visualization of imported CAD. This is especially useful for large models with several layers of hierarchy. The model browser has columns with visual cues and controls for setting visibility, color and render mode of model objects. To facilitate better interactivity with the CAD geometry, support for child objects to either inherit from the parent or express an exception to the parent's setting is included.

Effective Geometry Modification

Central to the Adams Modeler interface is a direct modeling paradigm. This enables users to make quick modifications and for those changes to propagate to dependent mechanism objects. In addition, the interface provides more tools for editing imported geometry compared to the Adams View interface. For example, feature picking and editing, pushing/pulling faces, changing hole diameters, feature removal, and re-locating bodies are more convenient and intuitive tasks. Using these tools, users can make changes to the imported geometry and accomplish tasks such as making minor modifications to the geometry from within the Adams Modeler interface.
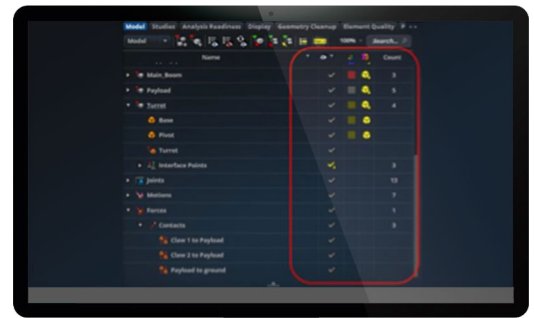
Effective CAD Management

Adams Modeler transforms how the MBD users interact with CAD data and makes associated workflows much more straightforward. Users can manage and organize the CAD data in a manner that facilitates MBD model creation. Minor modifications to the geometry can be seamlessly accomplished from within the Adams Modeler interface. These improvements ultimately result in a more productive Adams model-building experience.
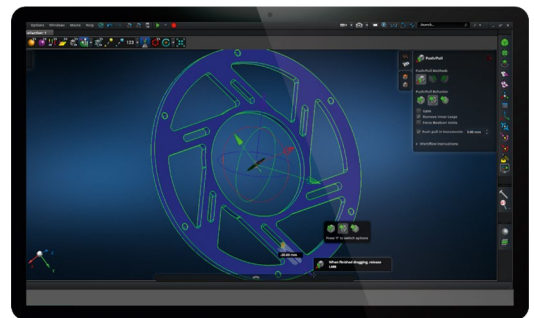
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