Explicit Dynamics Goes Mainstream

ANSYS 12.0 brings native explicit dynamics to ANSYS Workbench and provides the easiest explicit software for nonlinear dynamics.

ANSYS has expended significant effort in the area of explicit dynamics for release 12.0 — including the addition of a new product that will make this technology accessible to users independent of their simulation experience. In addition, enhancements to both the ANSYS AUTODYN and ANSYS LS-DYNA products provide considerable benefits to their users.

Newly introduced in ANSYS 12.0, ANSYS Explicit STR software is the first explicit dynamics product with a native ANSYS Workbench interface. It is based on the Lagrangian portion of the ANSYS AUTODYN product. The technology will appeal to those who want to model transient dynamic events such as drop tests, as well as quasi-static events involving rapidly changing contact conditions, sophisticated material failure/damage and/or severe displacements and rotations of structures. In addition, it will appeal to users who can benefit from the productivity provided by other applications integrated within the ANSYS Workbench environment. Those who have previous experience using ANSYS Workbench will find that they already know most of what is needed to use ANSYS Explicit STR.

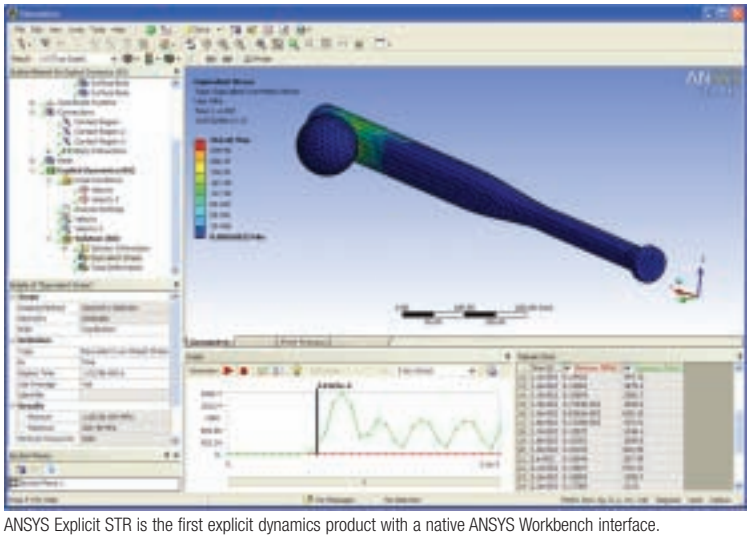
The ANSYS Explicit STR tool is well suited to solving:

- Drop tests (electronics and consumer goods)
- Low- to high-speed solid-to-solid impacts (a wide range of applications from sporting goods to aerospace)
- Highly nonlinear plastic buckling events (for ultimate limit state design)
- Complete material failure applications (defense and homeland security)
- Breakable contact, such as adhesives or spot welds (electronics and automotive)

The real benefit of ANSYS Explicit STR software is the work flow afforded by operating in the ANSYS Workbench environment. While many different simulation processes are possible, here is an example of the typical steps a user might take:

- Associatively link to a parametric CAD model or import a geometry
- Create a smooth explicit mesh using the new explicit preference option and/or patch-independent mesh method within the ANSYS meshing platform; automatically create part-to-part contact by using the new body interactions tool
- Fine-tune contact specifications if desired by utilizing breakable or eroding contact options
- Load and/or support an assembly and/or parts as usual
- Assign material properties from the comprehensive material library
- Solve interactively either in the background or via remote solution manager (RSM)
- View progress of solution in real time using concurrent post-processing capability, new to ANSYS Workbench at 12.0
- Explore alternative design ideas via parametric changes to the CAD model and easily perform re-solves, just like other ANSYS Workbench based applications
- Use the ANSYS Design Exploration capability to automate the parametric model space exploration

In addition, users of the full version of ANSYS AUTODYN (structural- plus fluids-capable) have access to the ANSYS Explicit STR interface; consequently, they will be able to transfer implicit solutions from the ANSYS Workbench environment for doing implicit–explicit solutions, such as bird strike analysis of a pre-stressed fan blade. ANSYS LS-DYNA software users will be able to use the pre-processing portion of ANSYS Explicit STR and output a .K file for solving and post-processing outside of ANSYS Workbench. ■



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Wim J. Slagter of ANSYS, Inc. is available to answer your questions about explicit dynamics.