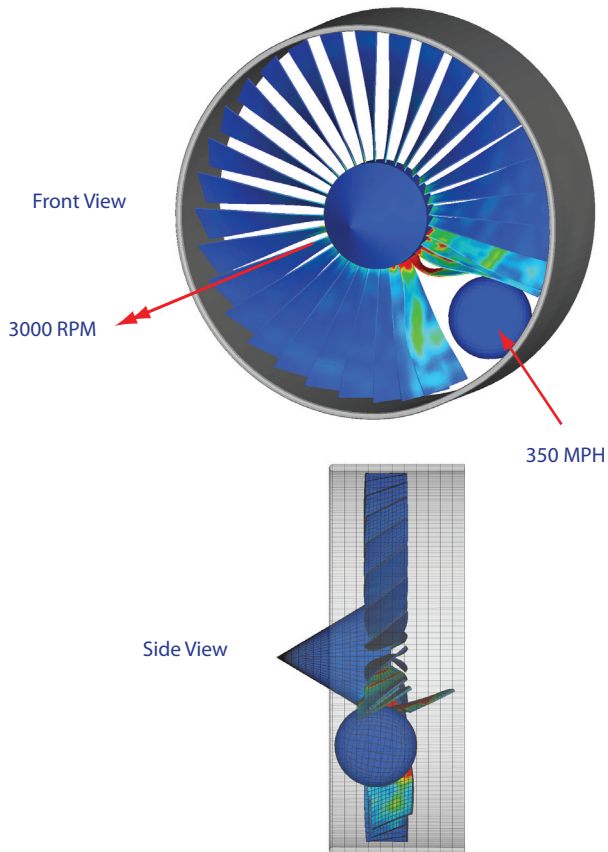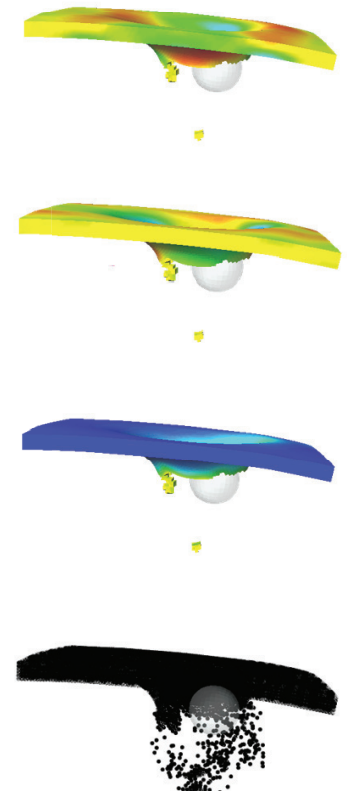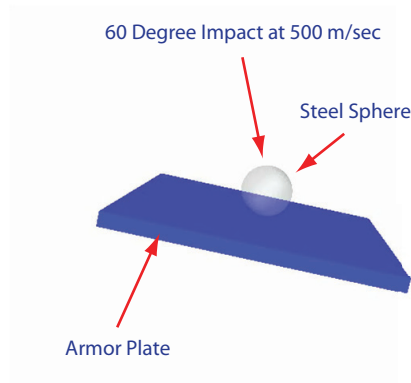# NEi Explicit

What is NEi Explicit?

NEi Explicit is a parallel explicit solver for large deformation contact problems such as impact, and very large multi million degree of freedom static and quasi static models.

Front View

3000 RPM

350 MPH

Side View

High speed bird strike model with turbine blade self contact

Explicit Transient Dynamics

Fully automatic time step control, large deformation and large rotation elements with contact options, material failure and element deletion options.

60 Degree Impact at 500 m/sec

Steel Sphere

Armor Plate

Sphere impact on steel plate shows material deletion capabilities

Power

The explicit architecture lends itself to highly scalable parallel performance, and large deformation contact solutions with highly nonlinear material behavior.

Speed

NEi Explicit solver is well suited for large types of nonlinear problems, providing fast, robust performance because there are no matrices formed, which means a small memory footprint for the model.

Compatibility

Imports Nastran bulk data files (*.NAS, *.BDF, *.DAT). Generates FEMAP .FNO binary output files.

Advantages

NEi Explicit is a completely new explicit dynamics module from NEi Software. Our new explicit module provides solutions for highly nonlinear, contact/impact simulations. Solve larger, highly nonlinear, contact problems faster.
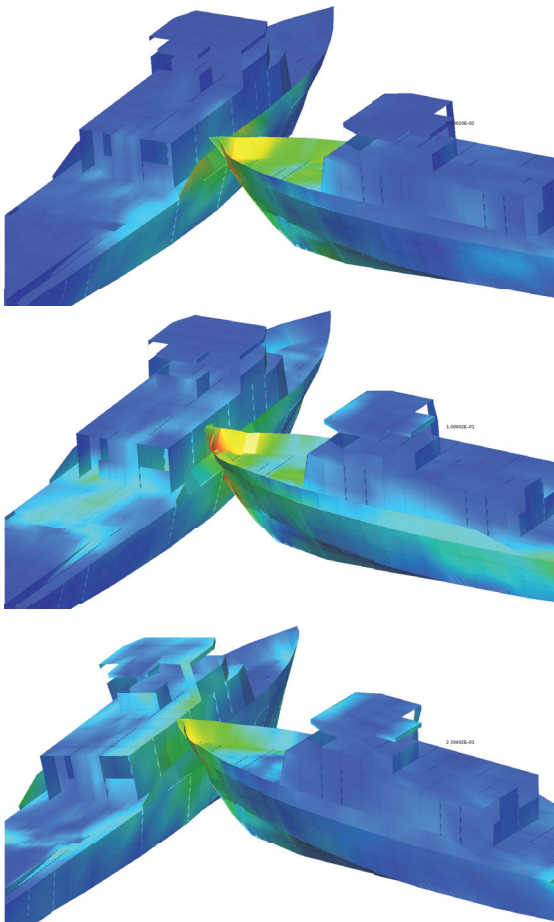
The explicit dynamics algorithm forms no element stiffness matrices and has no global stiffness matrix. It has an extremely small memory footprint. This means you can solve problems with millions of degrees of freedom on a PC with a single processor. For even faster solutions, solve the problem in parallel using widely available dual and quad core processors. NEi Explicit provides scalable parallel performance across a wide spectrum of processors.

NEi Explicit is fully integrated with the Nastran Editor. Existing NEi Nastran customers will find the transition to explicit dynamics completely intuitive. We offer a complete general purpose library of Nastran elements including:

- Solid – CHEXA, CPENTA, CTETRA
  Shell/Membrane – CQUAD4, CQUADR, CTRIA3, CTRIAR,
  Structural – CROD, CBEAM, CBAR, CELAS1
- All element formulations are full, large deformation, large rotation formulations.

The contact surface definitions in NEi Explicit are fully consistent with the advanced contact options in our NEi Nastran offering. All contact formulations provide fully automatic contact tracking as we detect surface contact changes throughout the entire deformation process.

Material failure and element deletion options are available in the NEi Explicit module allowing sophisticated modeling of perforation and tearing of models under ballistic impact conditions.

Ship collision study

Why NEi Explicit from NEi Software?

Our customers offer the best reason for choosing NEi Software for CAE technology software provider -- our industry-regarded technical support and training. Whenever you have questions, you can connect directly with our staff of experienced FE analysts and quickly get reliable, practical answers. Testimonials by our customers provide the best insight to why technical support and training is a major consideration in their choice of a software vendor.

At NEi Software, technical support is an essential part of providing engineering software. NEi Software pioneered the transition of Finite Element Analysis (FEA) to the desktop in the early 1990's. Since then NEi has been at the forefront and committed to developing, supporting, mentoring, and providing professional level training in Femap, Nastran, and Computer Aided Engineering (CAE) software for mechanical engineering. NEi leads the CAE community in technical support and demonstrates this commitment with efforts like unique software features such as context sensitive Help, innovative distance e-learning, mentoring programs, and a year round schedule of training classes.

Our in-house technical support team conducts our training classes, provides mentoring services, and consults on FEA projects. Our support of Nastran and FEMAP is highly regarded in the industry for its responsiveness, quality, and technical proficiency. At NEi Software you do not get transferred to third parties for support questions or rely on users with limited or passing product knowledge. Your technical questions are answered directly by our in-house staff of engineers who are trained and experienced in Finite Element Analysis software. Your questions receive quick and professional attention via email, telephone, or web demonstrations. Our customers offer the best endorsement for our support efforts and we invite you to read their Testimonials. Any software evaluation you undertake should include an evaluation of the technical support team and the type of interaction you will receive.