framatome

SYSTUS

The multiphysics finite element simulation software, 100% French

Regulatory analyses in accordance with RCC-M and ASME design codes

Challenge

Companies engineering mechanical, thermomechanical, or electromagnetic systems must prove their structures' reliability under significant loads and deformations. With stringent requirements and complex testing conditions, this becomes challenging. SYSTUS helps by studying the behavior of structures under these conditions using implicit resolution algorithms.
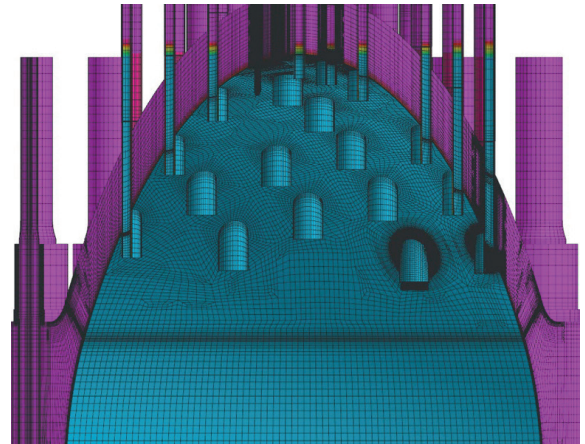
Solution

SYSTUS allows for the study of the behavior of a structure subjected to mechanical (static and dynamic), thermomechanical or electromagnetic loading, including large deformations and large displacements.
The software relies on a structure modeled by a mesh that can be composed of beams, bars, piped, shells, plates or even two-dimensional or three-dimensional elements.
SYSTUS allows for the simulation of advanced nonlinear material behaviors (such as the Caboche model) through laws implementing isotropic or kinematic hardening, viscoplasticity, or hyperelasticity.
SYSTUS also addresses contact nonlinearity problems by offering a set of elements and tools dedicated to this issue.

User benefits

- A catalog of training courses tailored to each use
- Possibility to develop specific industry modules
- An interface language that allows easy access to the internal functions of the code
- A turnkey calculation service offering
- A responsive and attentive support team
- Active user community

Your performance is **our** everyday **commitment**

Technical information

- Thermal, mechanical, thermomechanical and electromagnetic calculations
- Various structural elements
- Fracture mechanics:
  - Global method
  - Local method
  - X-FEM method
- Suitable for the study of various failure modes:
  - Fatigue
  - Creep
  - Excessive deformation
  - Plastic instability
  - Sudden rupture
  - Buckling

Key figures

77 specific training modules for the use of SYSTUS

45 years of use by the leading solutions providers in the nuclear industry