

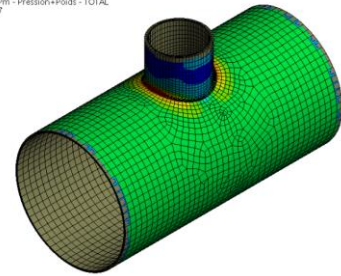
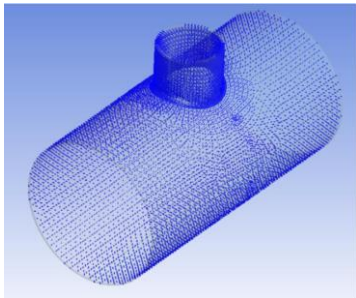


Software for automatized validation of mechanical components

DAES under and F4E Contract has developed software that automates the post-processing of finite element simulations by assessing the thermo-mechanical behavior of structures against the design criteria. In addition to automating a time-consuming and error-prone process, the solution provides an optimized design without oversizing while respecting standards RCC-MR. The solution is also already available for the RCC-M criteria, applicable to the Pressurized Water Reactor (PWRs) design components and therefore for the nuclear sector.

The technology

To reach performances, reliability and safety objectives, ITER mechanical components have to be designed, manufactured and tested according to a specific “Mechanical Design Standard”: ITER SDC (for “Structural Design Criteria). DAES has developed a Software to be plugged in ANSYS Mechanical Workbench Software, the so called “MRx-Fem ANSYS App”, which enables the comparison of the thermal-mechanical behavior of structures with design criteria: ITER-SDC



Automatization of post-processing of FEA simulation according to RCC-MR

MRx-Fem ANSYS App enables the automatization of post-processing of FEA simulation according to RCC-MR, the applicable mechanical design standard for ITER Components. After Coding and Qualification tests of this software, the compliance check of mechanical components is secured and largely accelerated.

A solution that not only saves time but also reduces human error and over-design of components

Complexity of post processing of FEA simulations to comply with Iter requirements leads designers to perform exhaustive verifications of all the criteria only on the sub-parts that are considered critical. Based on human expertise and “engineering judgment”, this may lead to miss zones of components where safety margin can be underestimated or, at the same time, cand lead to unnecessary margins (by overdesigning other zones).

Collaboration opportunities

DAES is available for all requests and services interested in this know-how. The software has been already adapted to the RCC-M design standard which addresses the Pressurized Water Reactor (PWRs) components design.

Fusion for Energy

Email:

technologytransfer@f4e.europa.eu