Abstracts

Towards an automated procedure of an ABAQUS Standard/Explicit model build-up. An innovative approach to data management and model validation.

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ABSTRACT

ANSA and μETA PostProcessor offer unique modelling techniques and solutions to CAE problems in a seamless and efficient way.

ANSA is capable of producing an ABAQUS model of the highest standard, giving accurate and reliable control over model entities with minimal effort. Data handling and model verification tasks are undertaken by the software, allowing the engineer to focus on problem solving and decision making – yet giving the ability to control every model detail.

This automated procedure includes the extraction of non-geometrical data from CAD-files, as well as part attribute assignment and defeaturing. Meshing is performed through batch mesh sessions using analysis specific parameters and quality criteria. Assembly process is achieved using a BiW Connections' Manager that allows the generation of mesh dependent or independent connection types, as well as the conversion between different welding representations.

ABAQUS oriented definition and use of SETs allow the definition of initial and boundary conditions, contacts and output requests, thereby making the model easy to manipulate and update. Change or replacement of the elements automatically update the SET contents.

Material data are loaded and handled through a material database. Moreover, the materials of the model can be updated with new material values at any time during pre-processing, while a versatile 2D-plot utility allows the GUI-based management of material data tables.

Model sanitation and integrity checks are automatically performed as per ABAQUS and the user is prompted to apply a fix. Finally, model output options allow model to be broken down to a number of self-complete substructures to generate test-runs and reduce the time of the final run.

μETA PostProcessor allows engineers to rapidly validate the analysis results and produce the project's report.

Automatic retrieval of available results and discipline specific data visualization is fully automated with the use of session files.

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keywords: ABAQUS Standard / Explicit, FE-model, automation, validation, post-processing