STRADYNA : A custom built GUI to integrate customer specific LS-DYNA pre and post-processing routines

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ABSTRACT

SNECMA, a member of the SAFRAN GROUP, develops, produces and markets jet engines for commercial airplanes. To better predict the behaviour of systems and to design new engines, their needs of numerical simulations are becoming more and more important and it is necessary to optimise and to assure the quality of their finite element models.

For example, they use LS-DYNA to study bird, tire and ice ingestion and blade-out effects on the turbo reactor fans and carters. The increase in the models accuracy and size creates a need to automate several redundant operations, previously performed with LS-PrePost, Matlab, or others specific SNECMA's tools (Fortran, Visual Basic, ...).

STRADYNA is a piece of software with a user-friendly interface that is developed with ALYOTECH to perform some of these LS-DYNA pre and post processing tasks and to reduce the time spent on model generation and analysis post-processing. It allows users to read and write LS-DYNA keyword input files, to launch LS-PrePost in batch mode (no graphic) and to perform operations from the LS-DYNA database. To customize the interfaces and to ensure portability on all operating systems, STRADYNA has been developed in JAVA and many efforts have been done to handle important models (inputs, dynain, ...). This technology allows evolutions, adaptability and easy implementation of new capabilities into a common structure based on a single main interface.

Since the end of the last year, this tool has been an official simulation tool at SNECMA. Today, 3 new modules are being developed and implemented in STRADYNA and in the future this software could be included into the general SNECMA processes (PLM, ...).

Keywords: LS-PREPOST, J2SE, automated processing