ANSA & µETA INTEGRATED SUITE FOR THE DETAILED ASSESSMENT OF FULL VEHICLE NVH BEHAVIOR

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ABSTRACT – Conducting NVH analysis, especially for large models, is a complicated process that imposes hard requirements on pre / post processing as well as on solving itself. The main difficulties that should be overcome are related to the vast amount of data that are created, the long processing / solving times and the complicated procedures involved, such as the creation of reduced models, which make the whole process more prone to errors.

To address these needs, BETA CAE Systems S.A. is developing a unified console for driving all NVH analyses. This tool (embedded in ANSA) features a simplified diagram view where all components and connectors among them are depicted and can be directly accessed. All NVH actions can be driven from within this environment. Each of the components of an assembly can acquire a reduced representation (binary or ascii modal models for all or just few selected degrees of freedom, test-based FRFs as well as calculated FRFs). The creation of these representations is streamlined and takes place in the background. Other types of components such as simplified rigid bodies and beam stiffeners are also supported. After the components are all set, various loadcases can be easily defined or even invoked from a library with saved loadcases. All information is then passed to µETA in the background which is driven to conduct an FRF based analysis for the calculation of the dynamic responses (including acoustic responses, modal participations, panel participations). Several "what-if" studies can be conducted in a fast and simple way and the tool assures that errors due to the complicated nature of NVH analysis are avoided. Streamlining of the whole process can be further augmented by the use of ANSA DM (ANSA Data Management). More features such as TPA (Transfer Path Analysis), calculation of connectors sensitivity and connectors forces are under development and will soon become available.