MULTIDISCIPLINARY TOPOLOGY AND PARAMETRIC OPTIMIZATION OF A BIW, FOLLOWING A UNIQUE HOLISTIC PROCESS WITHIN ACP OPDESIGN

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KEYWORDS –
Topology optimization, Parametric optimization, Shape optimization

ABSTRACT
Topology optimization has raised a new challenge in the optimization processes: how to interpret and convert its results into smooth 3D surface geometry (parametric if possible), to use it subsequently in other applications such as shape optimization.
Our approach for developing a solution to this problem is based on the morphing boxes and cross section tool technology of ANSA and was applied on a BiW.
Substructuring, as a solution to the problem of long computational times in full vehicle optimization for crash load cases,
is well known for a long time. But it brings along certain time-consuming procedures.
A process driven environment, as a new BETA's software tool, ACP OpDesign, has been developed to facilitate the creation
and management of multiple ready-to-solve substructures, based on the capabilities of the preprocessor.
Within this environment these substructures are subjected to various load cases, evaluated regarding their results und updated accordingly.
The main loop of the process is concluded with the setup of the of the MDO.