AUTOMOTIVE BONNET DESIGN – ANSA CAPABILITIES TO ENHANCE THE ACCURACY OF THE FE SIMULATION RESULTS

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ABSTRACT –
The growing pedestrian protection requirements are, in recent years, critical in the automotive product design process. Need to accurately and reliably represent bonnet behavior is vital for the new vehicle development. Not only
to successfully release the product into the market, achieve the lightweight design, but also to allow more challenging styling solutions.

This paper explains the influence of the aluminium stamping process (mainly material thinning) on the FE simulation results, ranging from pedestrian head impact performance to the quasi-static torsional stiffness analysis. This very detailed approach can improve the model accuracy (i.e component mass, HIC values or stress levels) and allows engineers to investigate the problem in more details.

Finally, the wind-load simulation will be taken into consideration. ANSA has capabilities to accurately transfer the results from CFD simulations onto the FE model. Furthermore the flexibility and intuitive user interface allows more detailed solution to the problem. Two different wind pressure mapping processes will be described and their results investigated in this paper.