

AUTOMATION OF PRE- AND POST-PROCESSING IN FERRARI GT CARS PROJECT

Dr. Luciano Mariella, Rubens Curatola

Ferrari S.p.A

KEYWORDS –

ANSA, META, CFD, pre-processing, post-processing, automation, Batch Meshing, Python

ABSTRACT

The current automotive market every day is becoming more demanding in many different aspects (models and variants, lead time, costs, technical requirements, etc.). To win such a challenge, the automotive industry is reacting in many ways, and one of them is moving to a more “digitalized” factory, widening the use of virtual simulations before moving to physical reality. Following this trend, the aero/thermal/acoustic aspects of a new car are increasingly investigated and managed through CAE before to build initial prototype.

Ferrari is not an exception on this regard: all the modern GT cars derive from a processes and strategies that are heavily depending on CFD simulations, especially during the conceptual phase of the project. Indeed, at the early stage important aspects like external aerodynamics performance, crew cabin air conditioning, underhood and batteries thermal management are evaluated using CFD, and due to the overall tight constraints already mentioned, is crucial to handle the full CAD-to-results process in an accurate, fast and robust manner.

To improve such a workflow, assisted by BETA CAE specialists, we recently finalized “CFD tools automatization” campaign that led to a remarkable improvement of the overall efficiency in pre- and post-processing stages. Surface and volume mesh generation using ANSA is now widely relying on the Batch Meshing technique, while post-processing with META is fully automated through direct Python scripting integration.