

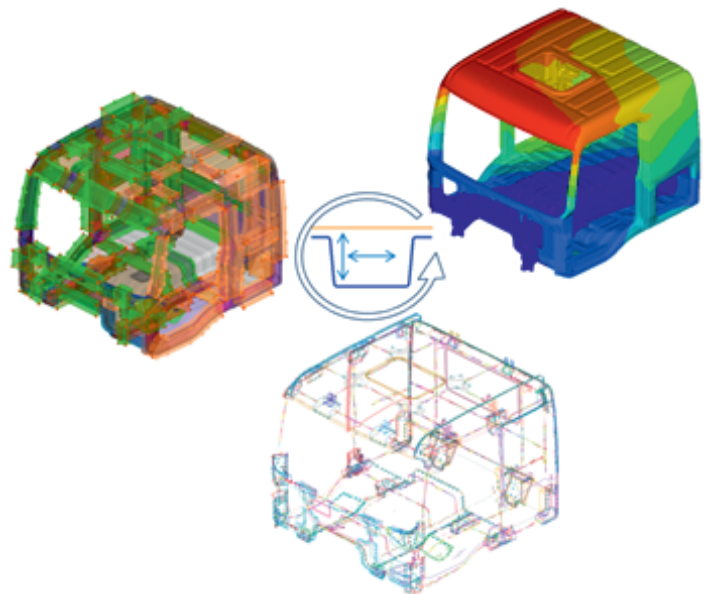
Hyundai Motor Company: Beam Section Optimization

Challenge

- Concept Shell mesh model to beam model.
- Shape optimization set up for Beam section.
- Apply optimization results of Beam section on Shell mesh Concept model.
- Minimize repetitive tasks by Automation.

Approach

- Initially the process of converting shell mesh concept models to beam models was defined manually. However manual actions were labor intensive and time consuming. And it's impossible to make the interactive function between Beam section & Shell mesh. Also the set up for the optimization was complicated and the reflecting of the results on the concept model was not possible.



Results

Using ANSA and a Tool created with Python script:

- Allows easy selection and creation of beam elements.
- Facilitates the selection of different types of Cross Sections, Junctions representation, model types (just frame or frame with panels).
- Automatically Creates Optimization set up with shape and thickness design variables and removes invalid cross section changes.
- Can easily use the Optimization results and reflect the new cross section shapes on the shell concept model.

" We made the interactive function tool between beam section and shell model, and the optimization result was imported in shell model automatically. In front loading stage, we could provide a well defined BIW model for design team using this process. This is a simple, easy and powerful tool for CAE engineers"

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