



## Hyundai Motor India Engineering Body-In-White (BIW) Modelling Automation Tool

A complete automation for BIW  
modelling

Modelling of BIW components involves tedious and time-consuming manual tasks such as, grouping parts, extracting middle-surface, and generating a mesh that follows required quality criteria guidelines.

Segregations of Parts based on their types is a complex task, as the data received from the design team usually consists of a combination of sheet-metals, casted parts, curves, etc.

As a result, an automated process for the proper assignment of mesh treatment during batch mesh or casting, based on the detected part type, would save considerable time and effort.

This is what the BIW Modelling Automation Tool accomplishes in Hyundai Motors India Engineering by employing efficient and robust algorithms by BETA CAE Systems.

“This Automation tool for BIW modelling has helped us streamline the BIW meshing activity for sheet metal parts.

This is a simple, easy and powerful tool for CAE engineers.

The support from BETA CAE Systems India is exceptional during the development process”

**Bharath Kumar**

Hyundai Motor India Engineering

Sheet metal - Skin	(0/0)
Sheet metal - Thick	(6/6)
Sheet metal - Mid	(6/6)
Instances - Mid	(3/3)
Instances - Skin	(0/0)
casting	(10/10)
Standard-Parts	(0/0)
Misc	(6/6)
Other	(31/31)

Draw parts  
per  
"Part Type"

MID	(6/6)
Thick with MID	(6/6)
Empty Value	(0/56)

Draw parts  
per  
"User/Sheet metal - Thick"

## Challenge

The aim was to prepare a process that helps create a standardized result and that also reduces the training time for new engineers.

In more detail, the list of challenges involved the following:

- Accurate differentiation of part type.
- Semi-automatic geometry clean-up.
- Identification of duplicate/overlapping parts.
- Mid-surface extraction for complex and unusual geometries (e.g. parts that cannot be skinned automatically).

## Approach

Common standard parts are identified and stored in a centralized database. With reference to this database, these parts are excluded from the modelling treatment.

Individual parts run through a complex algorithm that determines the appropriate part type.

Overlapping and duplicated parts are determined by various in-built functionality within ANSA (e.g. similar Groups, connectivity Groups, etc.).

Batch-meshing is performed on Parts designated as "meshable", for which quality checks and mesh-fix are performed.

Similar parts are detected and left out from manual mesh correction.

In the final step, the mesh is copied to all the similar parts available in the entire database.

## Benefits

- Seamless process for all CAD data.
- Available in GUI and no-GUI execution.
- No-GUI execution can be easily integrated to any CAD Management process.
- Reduced training time of new engineers.

## Results

Hyundai Motor India Engineering, using the BIW Modelling Tool developed by BETA CAE Systems, has achieved the automation of modelling processes for all valid input files. All in all, a significant amount of time is reduced in modelling and in training.

For more information visit BETA CAE Systems visit [www.beta-cae.com](http://www.beta-cae.com)