

# Virtual Structure

**Purpose:** Automating the creation of a top-level assembly structure (900 Level) by using BEC hedge/Excel data and incorporating reference assemblies to decrease dependence on the top-level assembly.

## Functions:

- The tool fetches assembly titles & numbers from hedge excel
- Generate blank assembly structure in solid edge as per hedge Excel input
- The tool adds top-level reference assembly under each 810-level

## Constraint:

- Any changes in the Hedge documents template can cause possible failure in the tool.

# Virtual Structure

## User Interface Guide:

1. Launch the Automation tool and access the Virtual Structure tool by clicking on it.
2. Click the "Browse" button next to the hedge Excel path and choose the input hedge Excel file for the structure.
3. Click the "Browse" button next to the directory and designate the output folder for the assembly.
4. Once all paths are assigned, click the "Generate Assembly" button to initiate the process. Upon completion, the output assembly file will be available in the specified output folder.
5. If necessary, close the tool to use other tools.
6. Subsequently, users can copy and transfer the designed components to the appropriate reference assembly

The screenshot shows the 'Virtual Structure' tool interface. On the left is a dark sidebar with a '+ Add/ Update' button (callout 1) and a 'Virtual Structure' button highlighted with a red dashed box. Below this are buttons for 'New Part Creation', 'Part/ Sheet-Metal Update', 'Assembly Validation', 'Design', 'QC Report', and 'Configuration'. The main area is titled 'HEDGE EXCEL' and contains a table titled '3D MODEL STRUCTURE HIERARCHY - LOCOMOTIVE 900-00028/Main Assembly'. The table has columns for various systems like CARBODY, COUPLER, EXTERIOR, OPERATOR CAB, TRUCK, BRAKE, PROPULSION, HVAC, AIR, and HYDRAULIC. Below the table is a tree view showing the assembly structure, including '900-00028.asm Title', 'Coordinate Systems', 'Reference Planes', and various subsystems like 'CARBODY SYSTEM ARRANGEMENT', 'COUPLER SYSTEM ARRANGEMENT', etc. (callout 4). At the bottom right are 'Close' (callout 5) and 'Generate Assembly' buttons. Callout 2 points to the 'Browse' button next to the 'Hedge Excel Path' field, and callout 3 points to the 'Browse' button next to the 'Output Directory' field.

3D MODEL STRUCTURE HIERARCHY - LOCOMOTIVE 900-00028/Main Assembly									
CARBODY SYSTEM ARRANGEMENT	COUPLER SYSTEM ARRANGEMENT	EXTERIOR APPOINTMENTS ARRANGEMENT	OPERATOR CAB ARRANGEMENT	TRUCK TO CARBODY ARRANGEMENT	BRAKE SYSTEM ARRANGEMENT	PROPULSION SYSTEM ARRANGEMENT	HVAC SYSTEM ARRANGEMENT	AIR SYSTEM ARRANGEMENT	HYDRAULIC SYSTEM ARRANGEMENT
810-01	810-02	810-03	810-04	810-05	810-06	810-07	810-08	810-09	810-10
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM
FRAME	COUPLER	STEPS	INSULATION	TRUCK	INDEPENDENT BRAKE	ENGINE/ ALTERNATOR	HVAC UNITS	COMPONENTS	COMPONENTS
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM
SUPER-STRUCTURE	COUPLER CARRIER	HANDRAILS AND STANCHIONS							
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM							
OPERATORS CAB	DRAFT GEAR	GRAB BARS							
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM							
LONG HOOD	UNCOUPLING	SAFETY CHAINS							
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM							
HOOD AND COVERS	FLOW	MIRRORS							
GROUPED IN SYSTEM	GROUPED IN SYSTEM	GROUPED IN SYSTEM							