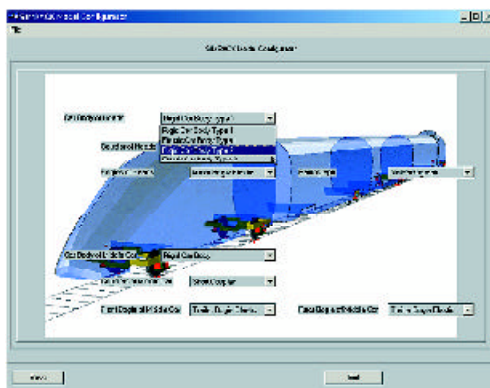
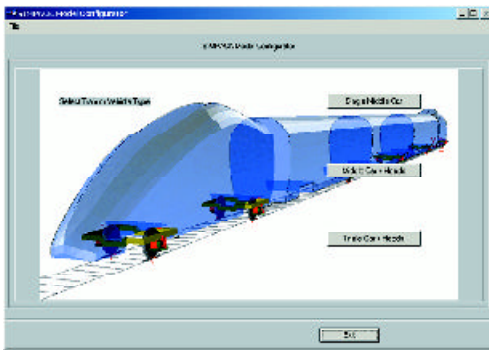


Construction of a Railway Vehicle – Simulation Models Using a Substructure Database and Model

The use of substructures in SIMPACK makes it possible to build up many different types of a model based on a substructure database which contains the variants of the model components. This perfectly supports the handling of simulation models of vehicles which are available in multiple configurations of car bodies, motor and running bogies. The user, by means of special graphical user interface to assemble the model, can build up the desired simulation model with just a few mouse clicks.



The substructure technique has been approved for effectively generating model variants of railway vehicles (SIMPACK News volume 4, second issue). Each model variant for every assembly can be placed in the substructure database, ready to be used. Users can then set-up even complex models of railway vehicles very quickly just by assembling pre-defined model components. Examples of substructures are as follows:

- Single-axis assembly: with or without motor
- Two-axle bogie: motor bogie, trailer bogie, independent wheels assembly,
- Jakobs-bogie: with or without motor,
- Secondary suspension: air-spring, flexicoil
- Car body: rigid body model, elastic body, middle-car, end-car
- Coupling and buffers: short coupling, long coupling, automatic coupling

Often there is the need for setting up modular trains in different configurations, e.g.:

- Single car,
- Train, comprising of two or more cars,
- Articulated trains with or without Jakobs-bogies.

The template method has proved itself for a convenient set up of model variants of the above kind. It can be realised by one or more levels.

At first the one-level approach shall be illustrated: The structure of the whole model is defined here, e.g. one car body, in two different variants, together with two bogies, each of them either with or without motor. The secondary suspension is alternatively an air-spring or a flexicoil-spring. The according template in the graphical user interface displays for each component the different variants, so that they can be chosen by the user. After selecting the combination of the desired substructure models by marking them in the user interface, the user will need just one mouse click in order to have the complete vehicle model automatically set up by the user interface.

If the user wishes to be free even in terms of the structure of the vehicle models that he can set up from the palette of substructure assemblies, the template method may be extended to several levels. Our project engineers will be glad to create, by your order, a model database including the appropriate graphical user interface, which are tailor-made for your specific demands. With this GUI you will be able to create with some more mouse clicks arbitrary variants of the deposited substructure assemblies.

This offers great benefit especially for engineers, who are not particularly skilled in setting up SIMPACK simulation models, want to take advantage of the models created by experts.