

CarSim 2024.0 New Features

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This document lists notable new features in CarSim 2024.0.

VS Solver Architecture: Delayed Initialization

A new option to delay initialization was added to allow imported variables from external software such as Simulink to be used to initialize the vehicle state before the simulation starts. This is needed when variables that are critical for determining the initial state of the model are provided by user VS Commands or imported from external software. A new system parameter `OPT_DELAY_INIT` is used to choose an alternate time to perform the initialization. Details are provided in a new Tech Memo, *Initialize a Vehicle with Imported Ground Z*, and new examples were added to the database.

VS Math Models

The following options were added to the CarSim Math Model:

1. Driving in reverse is now supported when using the built-in Speed Controller in acceleration control mode (`OPT_SC = 5`).
2. An idle speed controller can be installed on IC powertrains to regulate the input throttle and automatically prevent engine stall. For more information, see the *Engine Idle Speed Controller* section in the *Powertrain Systems* Help document.
3. Siemens MF-Tyre/MF-Swift tire model is now supported on Linux 64-bit system environment.

VS Browser: Graphical User Interface (GUI)

CarMaker Converter

The CarMaker Converter is available to read CarMaker datasets and convert them to CarSim properties, setting values in a CarSim database using COM automation with the Browser. This

converter has been updated with general performance improvements. If you'd like to use the converter, please contact Mechanical Simulation technical support.

Other Improvements

The menu option **File > Export to Simian** has been replaced with **File > Export ADP Package**. This action will automatically create a package of the current model that the Applied Intuition software platform (ADP) can import and use. The file extension is **.vspak**.

Real-Time Platform: Vector CANoe

The VS Solvers now support the Vector CANoe Real-Time platform, which includes VN8900, VT6000, and RT Rack. These devices together form the Vector Tool Platform and are equipped with a Windows operating system. The CANoe platform is supported by the existing VS Browser (using the **Models: Transfer to Remote RT Target** library). Example runs were added to the database and the **Real-Time and DS Systems > Vector CANoe Guide** documentation was added.

Documentation

Built-in Help Documents

The following Technical Memos were added:

1. Initialize a Vehicle with Imported Ground Z

The following Reference Manuals have been updated:

2. System Parameters in VS Math Models
3. VS Browser Reference Manual
4. VS Commands Reference Manual
5. VS Math Model Manual

The following documents in the **Help** menu have been updated:

6. Powertrain Systems

The following Technical Memos have been updated:

7. CarMaker Converter

The following RT and DS documents have been updated:

8. A&D Guide
9. Concurrent RT Guide
10. dSPACE RT Guide
11. ETAS RTPC Guide
12. NI RT Target Systems

13. RT-Lab Target Systems

14. Speedgoat Guide

Japanese Language

Japanese language documentation is now available from the user section of the Mechanical Simulation website. The documents available at the time of this writing are translated from versions 2023.1 and 2023.2, with 2024.0 equivalents available later.

Database

New examples were added in the following categories.

Engine Idle Controller

A new simulation shows a vehicle on a hill with the built-in engine idle controller that prevents stalling at low speed.

Imported Ground Elevation

New simulations are added to show several methods for handling user-defined road surfaces using Simulink or VS Commands. The examples make use of the new system parameter `OPT_DELAY_INIT` that allows imported variable to be used during the initialization of the vehicle model. Details are provided in a new Tech Memo, *Initialize a Vehicle with Imported Ground Z*.

Reversing with Accel Control

A new simulation shows a vehicle with a trailer backing into a parking location using the acceleration control mode of the speed controller (`OPT_SC = 5`).