

Scenery from the Google 3D warehouse rendered with MotionDesk.



A Feast for the Eyes in MotionDesk

Realistic graphical visualization in 3-D animation

The realistic visualization of moving objects and their environment is indispensable to hardware-in-the-loop (HIL) simulation. The new version of MotionDesk shows simulation results in an online animation with significantly enhanced graphics. Optimized performance and handling are also included.

Enhanced 3-D Graphics

The new version of MotionDesk, dSPACE's 3-D animation software, includes a highly detailed, finely drawn 3-D landscape environment that gives driving scenes a real-world feel. As with previous versions, users can integrate their own 3-D objects to produce extremely convincing roads and scenes.

Sophisticated anti-aliasing smooths lines and edges to avoid unwanted jagged outlines. Texture filtering is also applied to suppress "pixel flickering", in which pixels appear on the wrong objects. This makes the entire image smoother and more

harmonious. With modern graphics cards, these graphical enhancements hardly have an impact on performance, so they can also be used on less powerful computers.

Flexible Instrument Display

MotionDesk animates not only the vehicle itself, but also its individual instrument displays. The values shown by the speedometers, engine speed indicators, status displays, etc., are always up-to-date. Four types of display are available (figure 1):

- Numeric digital displays for force vectors, etc.

- Dial gauges for speedometers, engine speed indicators, etc.
- Bar displays for fuel-level indicators, etc.
- LEDs for gear indicators, indicator lights, etc.

There are extensive configuration options for each individual instrument that let you design its appearance, size, and value range. The displays can be positioned wherever required: relative to moving objects so that they move synchronously to the objects; on the dashboard; as head-up displays on the windshield; or as labeled force vectors at the

vehicle's wheels. Or they can also be inserted into the scene statically – at the bottom edge of the picture (figure 2).

The display values of a simulation are saved and can be displayed on the instruments again at a later time.

Optimized Blockset

The MotionDesk blockset was completely worked over for the new version. The blockset acts as the interface between Simulink, the dSPACE simulation hardware, and



Figure 1: The display instruments can be placed on moving objects.

The optimized graphics make the scenes more realistic, giving users the feeling they are in the middle of the action.



Figure 2: Instruments can be displayed inside or outside the vehicle.

Profile of MotionDesk

- Version 2.1.4
- 3-D animation software to visualize simulated mechanical systems in real time
- Intuitive graphical scene design
- 3-D object library with objects in VRML2 format
- Online and offline animation modes

MotionDesk. It transfers the motion data (such as the kinematic chain in the simulation of a robot arm motion) from a Simulink model to MotionDesk. The handling and configuration have been simplified for enhanced usability: For example, blocks can now be grouped and more clearly arranged. In addition, model initialization under Simulink is faster, and

processing time during real-time execution has been reduced. The new MotionDesk version is available with an online license or a more inexpensive offline license. Simulation runs can also be made without connection to a hardware-in-the-loop simulator. This early testing boosts the simulation quality and saves valuable time on the HIL

simulator. You can switch between online and offline simulation whenever required, without having to modify your project. ■