

**A** powerful, flexible, real time simulation environment for the design, development and validation of complete vehicle components, systems and subsystems.

Inspiring  
Business



## The **need** - key drivers behind the development of Dynacar

- 1 The need to **reduce** automotive **product cost** and **development time**.
- 2 New propulsion systems generate **new vehicle systems and subsystems with unique development requirements**.
- 3 **Lack of intermediate development tools** between simulation and prototype.
- 4 **Lack of simulation tools that bring together everything** so that all systems and subsystems interact with the component under development.

## Dynacar SOLUTION

**Dynacar**  
by tecnalia

**S<sup>1</sup>** Our methodology is based on models for the development of new systems that incorporate, right from the initial design stages, the complete vehicle in real driving conditions.

**S<sup>2</sup>** An advanced platform for the design, development and validation of complete vehicle systems or subsystems that is comprised of:

- A dynamic real-time vehicle model with different modules (suspension, battery, steering wheel, etc.) that can be substituted by physical components analysed in a test bench environment (Hardware in the loop).
- The dynamic model is connected to a vehicle simulator (steering wheel, accelerator pedal and brake) that can be driven in a virtual environment, thereby reproducing “real driving” conditions (Human in the Loop).

**S<sup>3</sup>** A high performance electric vehicle was developed and tested to validate Dynacar’s models and modules.

## testim<sup>o</sup>nial

*<< The Dynacar model combined with our advanced test bench allows GKN Driveline to reduce development time, since we are now able to test the complete electric powertrain in multiple cases that deal with longitudinal as well as lateral dynamics. >>*

*José Manuel Cubert,  
Engineering Director in GKN*

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## the product

- **Real-time** dynamic vehicle model.
- Integrated in **Veristand™**, National Instruments' software for testing management and control (Hardware in the Loop).
- An **open and flexible simulation platform** in which one can easily incorporate different vehicle subsystems models developed in other programming languages (Simulink, Matlab, dSpace...).
- Can be used in different design stages and allows for all design and validation functions to be combined in one unique, complete and customizable environment.
- Incorporates vehicle libraries, components and standard scenarios.
- Includes a graphic interface that allows for the simple introduction of vehicle parameters and testing circuits.
- Can choose between using the 3-D driving environment (Human in the Loop) for virtual driving, or a default driving environment.



*Dynacar product*

## end-users

- Vehicle manufacturers and Tier 1 suppliers:
  - Control systems for electric, hybrid and conventional propulsion vehicles.
  - Energy management strategies for new propulsion systems.
  - Advanced suspension concepts.
- Suppliers of advanced validation systems:
  - Dynamometer benches for the development and validation of propulsion elements and systems.
  - Battery performance validation benches.
  - Suspension system test benches.

## availability

- Dynacar is sold as a **Plug-in** for National Instruments' **Veristand™** testing management and control bench.
- Commercial and after-sales support for Dynacar in the U.S. is provided by Wineman Technology Incorporated.