

RIDE PERFORMANCE

MONROE
INTELLIGENT SUSPENSION



DUAL MODE
DRiV™
CVSAE
CVSA₂
CVSA₂/KINETIC®
ACOCAR®

THE SIXTH SENSE FOR YOUR DRIVE

THE SIXTH SENSE FOR YOUR DRIVE

With Monroe® Intelligent Suspension, your car senses the road surface and the way you're driving in real time. It uses that data to deliver exactly the response you want. This means your car is continuously in touch with both the road and you, giving you a driving experience that is more dynamic, controlled, comfortable and above all more enjoyable.

Why Intelligent Suspension?

Intelligent Suspension adjusts damper settings continuously in varying road and driving situations to provide maximum comfort and vehicle control. During dynamic maneuvers like cornering and lane changes, it automatically gives higher priority to vehicle control. It maximizes contact between the tires and changing road surfaces, making the vehicle more responsive and providing the driver with extra confidence in challenging conditions.



SOLUTIONS FOR EVERY DRIVER, EVERY CAR, EVERY ROAD.



What consumers say

In an independent survey conducted for Tenneco, 94% of sports utility vehicle drivers rated the overall driving experience with a semi-active suspension system as very good or excellent. In the compact car segment, 86% of drivers rated their overall driving experience as very good or excellent, while 88% of upper middle class segment drivers rated semi-active suspension systems as very good or excellent. Who wouldn't want a suspension that offers flexibility, control, and comfort in one, inspiring package?

What independent testing says

In road tests performed by an independent test institute, drivers rated Monroe® Intelligent Suspension highly, because of the improved wheel-to-road contact on wet and broken road surfaces, the improved controllability of the car during lane changes and the strongly reduced oscillations during obstacle avoidance maneuvers.

It all comes with the assurance of Monroe®, one of the most trusted names in the automotive industry.

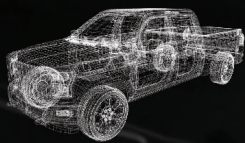
Give customers the best:

The Sixth Sense for Your Drive.



Dual Mode

Select your preferred ride experience. With the touch of a button, simply switch between comfort and a more sporty ride.



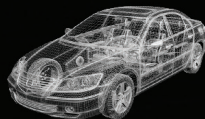
DRiV™

Digital electronic suspension solution that automatically adapts to road surfaces and provides an easy to integrate solution that mitigates packaging constraints by placing sensors, valves and electronics inside the damper which provides increased comfort and performance at a competitive cost.



CVSAe

Continuously sensing the road and driving conditions to adjust the dampers in real time for a more comfortable and controlled ride.



CVSA2

An even more refined ride with enhanced control of comfort and vehicle handling.



CVSA2/Kinetic®

Combine comfort with superior roll control for proven track performance or articulation for proven off-road performance.



ACOCAR®

Flying carpet-like control for wheel and body motion to deliver the ultimate level in ride and handling experience.



DUAL MODE

DUAL MODE SELECTIVE DAMPING

Select your preferred ride experience – go from comfort to a sportier ride and back with the touch of a button. The four electronically controlled dampers connect to a simple control unit to switch the internal on/off valve in each damper to toggle between the soft and firm valve.



DRiV™

DRiV™

DRiV is the latest addition to the Monroe Intelligent Suspension family. Tenneco's patented DRiV™ technology provides a digital electronic suspension solution that automatically adapts to roads surface using 16 discrete damping curves and mitigates packaging constraints by placing sensors, valves and intelligence inside the damper. As a result, DRiV is easy to integrate into the vehicle's suspension system, and incorporates a simplified gateway module for cyber security and vehicle CAN communication.

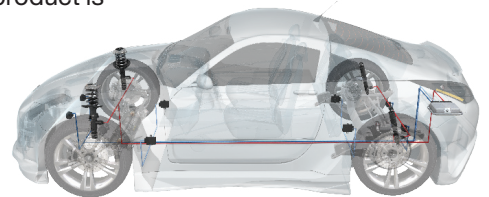
The DRiV solution helps overcome characteristics inherent in some vehicles (shake, comfort under load, braking, emergency handling) and provides increased comfort and performance at a competitive cost.



CVSAE

CVSAE

Tenneco's continuously variable semi-active suspension solution which continuously senses the road and driving conditions to adjust the four dampers in real time for a more comfortable and controlled ride. The four electronically controlled dampers connect to an Electronic Control Unit (ECU) which manages all the sensor inputs like wheel accelerations, body displacement and steering angle, and drives the damper settings every 10 milliseconds to deliver optimal ride comfort and vehicle control in all road and driving situations. It is based on a triple tube damper design which has one externally mounted active hydraulic valve to control the damping. The driver can also select a preferred driving style, e.g. more comfort or more dynamic. This product has proven itself on over 40 different vehicle models. With an evolved damper and hydraulic valve design and improved performance, this product is still market leading today.



CVSA2

CVSA2

Tenneco's lightweight semi-active damper technology features two independent externally mounted electro-hydraulic valves – unlike the one active valve per damper found in CVSAe. These two valves control rebound and compression motions independently, providing an increased tuning range to reach even higher comfort and control levels. The CVSA2 damper design is also an economic step-in technology to the more advanced suspension solutions like CVSA2/Kinetic® and ACOCAR®.



CVSA2/KINETIC®

CVSA2/KINETIC®

Tenneco's CVSA2 semi-active damping system upgraded with a unique roll-control system. The solution delivers high comfort in combination with superb vehicle handling performance in roll, traction and wheel grip. The roll-control system consists of hydraulic lines between the CVSA2 dampers, replacing the mechanical anti-roll bars. The roll stiffness is progressive and, with an APMU installed, the driver can also adjust the roll stiffness. Its system weight, cost and energy consumption are most competitive to alternative solutions in the market.

ACOCAR®

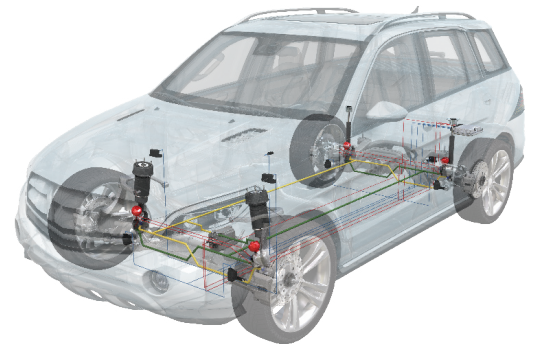
A fully active suspension solution featuring “flying carpet” control of wheel and body motion to deliver the ultimate in ride comfort and handling experience, on bumpy and curvy roads. It also improves articulation giving higher traction to SUV type vehicles leading to a better off-road performance. The corner actuators are based on the light weight CVSA2 damper design. With the addition of external hydraulic power packs, these units can now also create forces to control roll, pitch and heave, resulting in superior handling, safety and comfort. The ACOCAR® system does not require mechanical anti-roll bars, making it a weight competitive system.

ACOCAR®



SCALABLE ARCHITECTURE

Each of Tenneco’s three advanced suspension solutions, CVSA2, CVSA2/Kinetic® and ACOCAR®, share the same lightweight damper design, main components, vehicle interfaces, electronics, control strategies and production processes. This architecture allows OEs to offer different functionality for different car models built on a single vehicle platform in the most economic way. It also reduces the engineering effort compared to individual system development.



CVSA



CVSA2/KINETIC®



ACOCAR®



IT READS THE ROAD
500 TIMES PER SECOND.
IT READS THE WAY YOU DRIVE.
IT ADAPTS IN REAL TIME.

THE SIXTH SENSE
FOR YOUR DRIVE

PARTNERSHIP BUILT ON PERFORMANCE

At Tenneco, we don't simply provide a product. We provide a partnership – taking into account customers' entire systems, their unique needs and applications, technology requirements, market challenges and goals. With MONROE® Intelligent Suspension and our complete line of ride performance solutions, we offer the partnership that drives the innovation that maximizes performance and enables true ride control.

PIONEERS IN RIDE PERFORMANCE

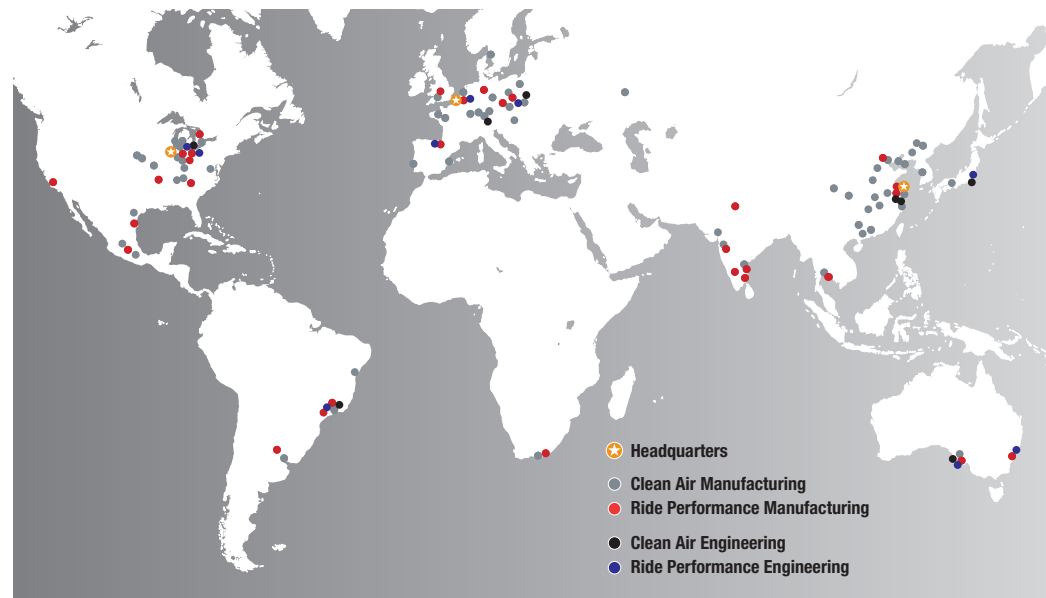
At Tenneco, innovation is a hallmark of everything we do. In our advanced ride performance technologies and solutions. In our unique, total-system integration expertise and approach. In our commitment to partnership and collaboration. We're always looking beyond the technology horizon to anticipate and develop the next-generation ride performance solutions that accelerate our customers' success and keep them moving toward the future.

From development through delivery and beyond – we help our partners drive transportation innovation, full speed ahead.

TENNECO IS EVERYWHERE OUR CUSTOMERS NEED US

Our reach is global, but our focus is local, helping customers in each region adapt our global capabilities and technologies for local applications.

- 31,000 employees worldwide
- 91 manufacturing facilities on six continents
- 15 state-of-the-art research and development centers
- 7 globally-linked research and development centers for ride performance engineering



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