

*Ride Performance innovation, accelerated<sup>SM</sup>*

# *Forward thinking. Forward moving.*

## *Where transportation goes for innovation*

Tenneco's focus on comfort, safety, customer satisfaction and innovation goes beyond light vehicle suspension systems. It extends to trucks and commercial vehicles, where Tenneco's wealth of suspension experience helps its CVS customers deliver a smooth, comfortable ride.



Tenneco produces a broad range of axle dampers that fit light commercial vehicles as well as medium and heavy duty vehicles and are equipped with either passive or electronic technologies.

The portfolio of conventional valving systems includes blow-off technology, which is a perfect solution to achieve high damping forces and cope with large vibrations. Blow-off technology also extends the life cycle of the damper and the vehicle structure by limiting the loads at high damper velocities.

Another technology is the Position Sensitive Twin (PST). This is a simple and robust solution that allows differentiating the damping force according to the vehicle loading condition. It is appreciated in Light Vehicle applications for which comfort is important, but also vehicle stability especially in fully loaded conditions is crucial.

The Air Pressure Proportional Damping (APPD) technology provides a similar benefit, allowing a higher degree of tuneability for vehicles already equipped with air suspension and automatic height adjustment. A simple air line connection with the air spring allows the damper to automatically adapt its characteristic depending on the vehicle load.

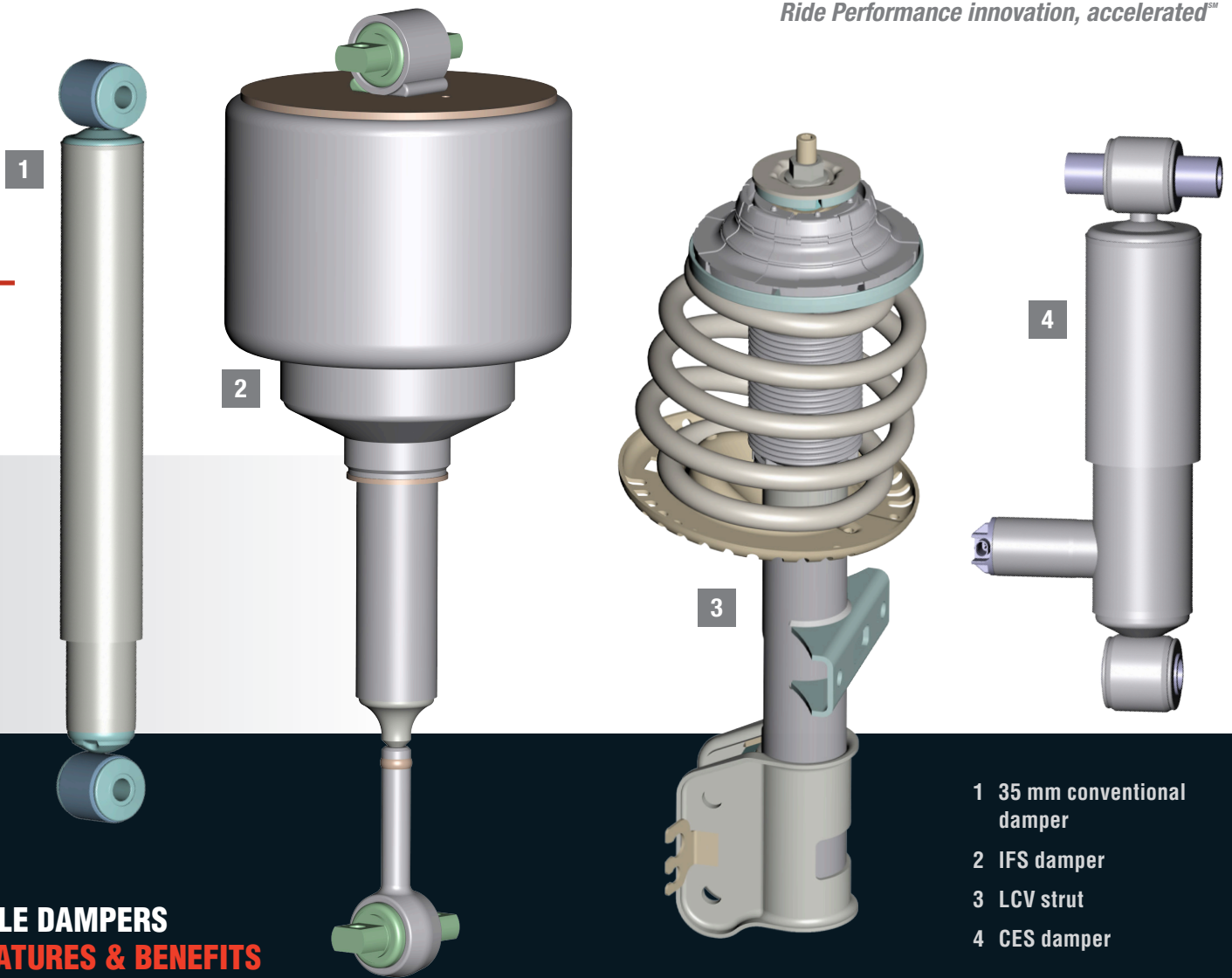
Vehicles fitted with Tenneco's electronic damping technology benefit from improved ride motions. In any road situation, the goods are preserved, transport is done in the best safety conditions and drivers' fatigue is reduced. In addition, the electronic damping technology enables heavy vehicles – especially when unloaded – to

limit potential damage to road surfaces. Tenneco offers a range of electronic damping technologies, from computer controlled semi-active suspension to dual mode technology. In all cases the driver can select his preference through a switch on the dashboard.

Especially for off-road vehicles Kinetic<sup>®</sup> technology ensures an outstanding articulation and traction on all wheels, combined with high roll stiffness when driving in corners. In this system the actuators are hydraulically interconnected.

As is often the case, most of the above described technologies have first been introduced in the passenger car and light commercial vehicle market. They can however be tailored to meet the specific requirements for medium and heavy duty trucks and trailers.

Independent Front Suspension (IFS) is a concept that Tenneco has developed to suit recent Heavy Duty market developments. IFS combines the air spring and the damper into one module.



## AXLE DAMPERS FEATURES & BENEFITS

### Conventional strut or dampers

- Covers full range of requirement of light, medium, and heavy commercial vehicle market and trailer market
- With bore size of 25.4 mm, 30 mm, 35 mm, 38 mm, or 45 mm
- Linear or blow-off valving systems

### Position Sensitive Twin System (PST)

- Position dependent damping
- A passive and robust technology ideal for light commercial vehicles

### Air Pressure Proportional Damper (APPD)

- Passive system for vehicle equipped with height leveling

### Electronic damping

- From dual mode Semi-Active technology to Dual Mode damping

### Integrated Front Suspension (IFS)

- 45 mm Air Spring and damper module
- For heavy trucks Independent Front Suspension

- 1 35 mm conventional damper
- 2 IFS damper
- 3 LCV strut
- 4 CES damper



Air Pressure Proportional Damper (APPD)



## 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 our lightweight components 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 foresee and develop the next-generation ride control 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.

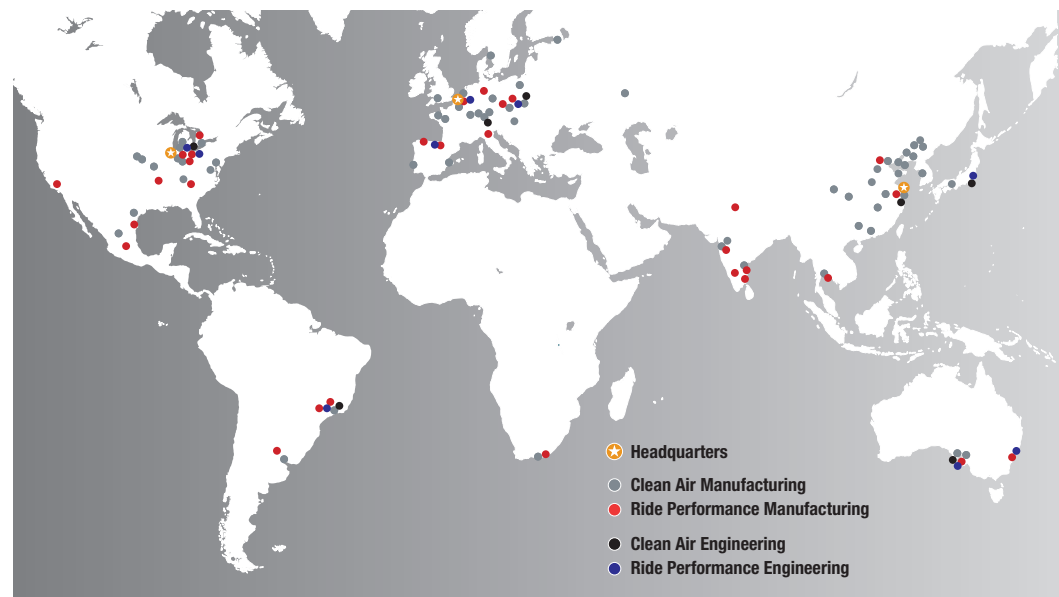
### TENNECO IS EVERYWHERE OUR CUSTOMERS NEED US

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

- Nearly 25,000 employees worldwide
- 89 manufacturing facilities on six continents
- 14 state-of-the-art research and development centers
- 3 dedicated research and development centers for ride performance engineering

#### Markets served:

- Heavy duty truck
- Agriculture
- Construction
- Passenger car
- Bus
- Specialty
- Military



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