



The United States military has standardized central tire system from CM Automotive on their Hummers—ECV manufactured by AM General. Explorer technology is a part of this system.

## Air On the Run

■ How a New System Extends Tire Life, Gets Better Fuel Economy, and Improves Driving Safety

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Fires of the technological revolution are beginning to engulf the trucking industry also. The Explorer, a unique microprocessor-based central tire inflation system (CTIS) by CM Automotive Systems, Inc. (Walnut, CA), promises to extend tire life, add to driving safety, and improve fuel economy.

In moments of crises the system helps drivers to respond to common emergencies quickly and reliably. Some of these everyday road hazards may occur as sudden changes in road surface, single or multiple flat tires, defective tires, defective wheels, and even loss of brakes. These present great harm to drivers, vehicles, and most likely,

to others on the road. This innovative and rugged system prevents, or reduces these dangers.

It accomplishes this right where the rubber hits the road—literally. The system monitors and manages how tires interact with the road by correcting tire pressure depending on the driving conditions, the terrain, and emergencies. For example, when a flat occurs while the vehicle is moving, the system senses it, and jumps into action. The system begins an *Emergency* corrective sequence to restore pressure to the damaged leaking tire also prevents further damage to the tire itself, preserves vehicle integrity, and protects against loss of property.

The intelligence inherent in the Explorer provides a reliable *set and forget* approach,

freeing drivers to pay more attention to the road and deliver the cargo on time. The Explorer comes preset with tire manufacturers' pressure recommendations. So, the driver has nothing to figure out, and does not have to do anything to activate the system. Essentially, the system operates in the background from the time it starts up automatically when the driver turns on the ignition, to the time when it goes to sleep when the driver turns off the engine. However, you can still turn off the system completely when you take the vehicle out of service—for maintenance, for instance.

During a typical haul you will experience continually changing driving conditions. Especially, during winter months, you may go from totally dry roads to 55 mile an hour gusts in heavy snow and icy roads within a matter of hours. To help keep the vehicle sunny side up and moving Explorer offers critical options.

*Mud/Sand/Snow* setting improves tire traction by correcting tire pressures to grab and hold on to the road better. As the vehicle leaves the adverse conditions behind and speeds up, Explorer corrects tire pres-

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**Chander Mittal**  
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sures, again automatically, to accommodate the higher vehicle speeds. Depending on the tires you have on the vehicle, you can drive at about 10 mph without damaging your tires. This capability minimizes loss of time, and prevents loss of property.

*Cross-Country* position has proven effective when the vehicle encounters marginal pavement, or no pavement at all. This setting protects you, your vehicle, and your load when you encounter unexpectedly unsafe

flooded, or washed-out roads, that are otherwise safe, open and adequately paved. You can drive in this mode up to 30 mph.

You can also get optional equipment to extend the system's functionality. *Independent Front and Rear Tire Pressure Control* provides added system flexibility where you have

control over multiple groups of axles. *Load versus Tire* allows you to select and adjust tire pressures to suit particular loading and terrain conditions. This improves vehicle safety, mobility, and reduces tire wear. *Multiple Tire Selection* option results in reducing ownership costs by allowing you to use the same system components interchangeably on different trucks in the fleet.

What gives the system its uniqueness lies in its precision, and how it helps drivers out of trouble. Better precision means better road safety, and better fuel economy. It also means less tire wear and damage. The system continually monitors individual wheels and communicates the data to the microprocessor-based controller in the cab.

This microprocessor-based controller packs the technology needed to run this sophisticated system. The controller gets its intelligence from its own on-board computer. This computer stores the operating smarts, and all the necessary data, including the manufacturers specifications for particular tire sets. This prevents inadvertent field settings, and contributes to the overall safety integrity of the vehicle.

At the heart of the system is the patented CM Automotive air modulating unit that detects emergencies, and manages tire pressures. It does this with such a great precision that it can detect and act on pressure changes of less than one PSI. This results in earlier emergency detection, therefore, earlier remedial action, that in turn results in better safety, and less tire damage and wear.

Connected to this unit and installed on the wheel is the wheel valve. It acts as the gate keeper to let air in and out of the tire. The communication between the valve and the air modulating units that operates it involves no electrical signals. The patented design provides faster response by its ability to pass through a lot of air on a short notice.

According to Mr. Chander Mittal, CM Automotive's President, systems for commercial trucks come with the same battlefield ruggedness as their military versions. For example, CM Automotive builds and tests all systems and their components for commercial trucks to survive hard shocks, continuous vibrations, full humidity, and extreme temperatures—minus 50 to plus 140 degrees Fahrenheit.

"To make sure each system survives the enormous stresses of the road, and proves road-worthy for a long time, we put each system through a rigorous testing regime in accordance with tough military and industry specifications before we let it out of our doors," Mr. Mittal said. He also added, these systems have already established confidence in the military because of superior ruggedness, reliability, and precision.

As a result of this confidence, the military has specified the Explorer and other CM systems for its next-generation battlefield support trucks and combat vehicles. Recently, the company won contracts to manufacture systems for military's much publicized Heavy Equipment Transport (HET) and the new Palletized Loading Systems (PLS) programs as a subcontractor to Oshkosh Truck Corporation.

In the technological revolution that promises million-mile tire life, higher fuel economy, and better road safety, CM Automotive is certainly a flag carrier.

Already the company's Explorer provides one of the important pieces of the puzzle that will someday make the million-mile tire a reality, improve fuel economy, and provide safer driving, ■



## Comfort Zone

Explorer does more than just save tires, improve fuel economy, and enhance road safety. Comfort ride is a new emerging phenomena developing out of the Explorer technology. An exclusive Explorer benefit targets the physical well being of the driver. The humps and bumps of the road for long distance drivers result in fatigue, impaired judgement, back problems, and physical injuries.

A new sensor placed under the driver seat transmits road bump signals to the Explorer to reduce tire pressures in response to changing road roughness. This smoothens out the ride and reduces back injury problems.

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