



WABCO Innovation Roundup 2011

Vehicle Efficiency and Environmental Sustainability

[c-comp™ Air Compressor with Integrated Clutch](#) – This technology breakthrough is a highly efficient air compressor with integrated multi-disc clutch. It optimally disengages a truck or bus compressor from the engine when the vehicle's air system reaches full pressure, saving up to 1,000 liters (264 gallons) of fuel in long haul operation annually while reducing carbon dioxide emissions by as much as 2,600 kilograms (5,700 pounds). In addition, it provides up to 8 kilowatt additional engine power during compressor idling. Lower overall noise emissions mean enhanced driver comfort.

[h-comp™ High Output Air Compressor](#) – This innovation is WABCO's high output single- and twin-cylinder air compressor technology. A single-cylinder high output compressor weighs 20 percent less than twin-cylinder models with equivalent performance. It can feature a newly developed aluminum crankcase that weighs 40 percent less than conventional grey iron crankcases. It combines higher performance with reduced weight and size.

[OptiDrive™ Modular Automated Manual Transmission System](#) – This fuel-saving modular automated manual transmission system improves vehicle control while enhancing the driver's effectiveness. It can save up to 5 percent on fuel consumption for medium and heavy duty commercial vehicles by optimizing gear shifting. Recipient of the 2010 Automotive News PACE™ Award, the automotive industry's benchmark for innovation, OptiDrive continues the company's track record of more than 25 years of technology leadership in transmission automation.

[NG22MAX™ Single Piston Air Disc Brake](#) – The single piston NG22MAX combines an innovative compact design with high performance braking. Weighing only 39 kilograms (86 pounds) including brake pads, it is the lightest air disc brake for heavy truck and bus applications of its kind. As a result, vehicles can increase payload and improve fuel economy. NG22MAX also reduces maintenance and service costs due to increased brake pad thickness and exchangeable wear sensors.

[Clutch Control System](#) – The company's clutch control applications such as clutch servo and integrated pedal unit contribute to a quieter drive train as hydraulic technology decouples the cabin from the transmission. This also allows for a smoother pedal use with pneumatic assistance where needed as well as safer and better gear shifting. WABCO's Clutch Control System significantly reduces installation costs as no mechanic linkages or adjustments are needed. The maintenance-free hydraulic system also reduces maintenance costs due to proven endurance and reliability.

[Air System Protector^{PLUS} Air Dryer Cartridge with Coalescing Filters](#) – The double filter technology of Air System Protector^{PLUS} uniquely combines oil coalescing filters before and

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after the desiccant and, therefore, offers maximum protection of the air brake system against oil, water and aerosols. The innovative air dryer extends the cartridge exchange interval to three years under normal conditions, which represents an improvement of 50 percent. The use of two different desiccants ensures maximum drying performance preventing freezing or corrosion.

[Compact Air Processing Unit \(APU\)](#) – The new Compact APU can be used for standard truck and bus applications requiring up to two pressure levels. The integration of air dryer and multi circuit protection valve in one compact body simplifies the piping which reduces assembly costs and increases reliability of the entire system. The Compact APU also features an innovative upstream oil pre-separation. Making use of centrifugal forces and impact effects, it filters bigger oil and water droplets out before compressed air reaches the air drying cartridge, resulting in improved efficiency.

[Trailer Immobilizer](#) – This innovation is an electronic system with high security that blocks the wheels of a parked trailer to help prevent theft or unauthorized use. It safeguards against manipulation and also increases security and safety when the trailer is parked on a slope. The truck driver activates Trailer Immobilizer by entering a PIN code via [SmartBoard](#). Trailer Immobilizer helps logistics operators to protect against theft of trailers, loss of loaded cargo, unauthorized usage of trailers and unauthorized or accidental release of the trailer parking brakes.

Advanced Safety and Driver Effectiveness

[TailGUARD™](#) – This innovation increases safety during reversing by detecting small, large, static and moving objects in the blind spot behind the trailer. Integrating with latest WABCO braking technology, the system provides unique functions such as automatic stopping, forced slow down, distance programmability and truck-trailer communication via Power Line (PLC). TailGUARD features a [Trailer Remote Control](#), which is a unique display and control unit mounted in the truck's cabin that shows the distance to objects behind the trailer. TailGUARD increase driver comfort and vehicle efficiency.

[Trailer Remote Control](#) – This innovative display-and-control unit for trailers is mounted in the truck cabin and displays the distance to detected objects behind the trailer when [TailGUARD™](#) is activated during reversing operations. It also shows the status of configured functions and allows control of configured [Electronic Braking System \(EBS\)](#) and suspension functions. Via Power Line Communication (PLC) the Trailer Remote Control communicates between the electronic extension module and the truck. It increases driver comfort and driver safety by allowing to control EBS and suspension functions from within the truck cabin. Furthermore Trailer Remote Control reduces the turnaround time and eliminates dashboard switches.

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[Trailer Air Suspension Control \(TASC\)](#) – This innovative technology improves trailer and load safety while driving, maneuvering, loading or unloading. The system also allows manual lifting and lowering. After loading or unloading, the Return-to-Ride function will automatically adjust the trailer chassis to the safe driving level as soon as the vehicle starts driving. It is the only Return-to-Ride valve in the market that is operated by simply turning the handle left or right. For easy mounting, TASC is available in different variants, including integrated fittings, test connection and deadman control.

[TrailerGUARD™](#) – This award-winning trailer telematics system uniquely combines the diagnosis of the braking system with other vehicle operating data. It allows fleet managers to monitor and track status of brake wear, mileage, trailer temperature, doors, tire pressure, axle load and the trailer's electronic braking system, among other operating functions. By continuously informing drivers and fleet owners in real time on the vehicle status, TrailerGUARD further improves vehicle safety and reduces maintenance costs. Fleet operators can access all information about their trailer from any location via a simple and easy-to-use internet portal, and such information can also be integrated with various truck telematics systems. TrailerGUARD's functions include: [EBS Advanced](#) which tracks EBS warning lamps in the vehicle's cabin; [Roll Stability Support \(RSS\)](#) which shows when and how many times RSS has been required to stabilize the vehicle against rollover; and an [Operating Data Recorder](#) which allows analysis of the driver's performance as well as the trailer's utilization.

[Integrated Vehicle Tire Pressure Monitoring \(IVTM™\)](#) – WABCO's new IVTM system continuously monitors tire pressure and alerts the driver in case of under- or over-inflation or if slow leaks are detected. It helps to avoid tire blow-outs from flat tires and to maintain tire inflation at optimum level and, as a result, reduces fuel consumption by up to 2 percent while at the same time increasing the lifetime of tires by up to 20 percent, thus significantly reducing tire-related downtime. The system fits all wheel sizes and all types of light, medium and heavy duty commercial vehicles. It consists of external wheel-mounted sensors that constantly measure tire pressure and wirelessly transmit data to an electronic control unit, which in turn displays real-time information and appropriate alerts on the truck's dash-mounted display. Combined with [TrailerGUARD™](#) telematics, fleet managers can remotely monitor every vehicle's tire pressure in real-time via a web portal.

[Vehicle Electronic Architecture \(VEA\) / Multiplex \(MUX\) Electronic](#) – By integrating electronically controlled functions into a common architecture, WABCO provides a highly flexible and expandable base module for all vehicles (Central Vehicle Controller / Multiplex) and one central unit for OEM specific vehicle functions. WABCO has more than 550 billion kilometers field experience with VEA with more than 1 million Electronic Control Units (ECU) running.

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[Electronic Stability Control \(ESC\)](#) – This technology supports the driver in critical driving conditions. It improves direction stability, especially under dynamic maneuvers and increases protection against roll-over, skidding, spinning and jack-knifing. It is available for any [Anti-lock Braking System \(ABS\)](#) and [Electronically Controlled Braking System \(EBS\)](#). Since its introduction in 2001, the company has sold more than 100,000 ESC systems and has continued to innovate this safety technology ever since.