



BENDIX CONTINUES ONGOING COMMITMENT TO THE IMPROVEMENT OF HIGHWAY SAFETY

For nearly nine decades, Bendix Commercial Vehicle Systems LLC and Bendix Spicer Foundation Brake LLC (Bendix) have been setting the industry standard for commercial vehicle air brake charging and control systems. Today, the companies are applying that leadership and momentum to advanced technologies that contribute to vehicle safety.

While accounting for only about 4 percent of the total vehicles involved in crashes, the Federal Motor Carrier Safety Administration (FMCSA) notes that in 2015 (the numbers most recently reported by the agency), more than 430,000 large trucks were involved in crashes. Large trucks involved in fatalities were up 8 percent, while large truck involvement in injury and property-damage-only crashes dropped slightly – down about 1percent each. Of most concern, however, is that as miles traveled have increased since 2011, the per-mile rate of large truck crashes increased each year from 2011 through 2014.

To help stem this tide, Bendix urges the industry to actively participate in five key areas it has identified as vital to improved highway safety.

- **Expand incentives, support, and education about advanced safety technologies for crash mitigation/avoidance and to prepare the way for future autonomy.**

Bendix supports legislative, regulatory, and business or insurance initiatives that offer tax incentives, grants, rebates, lower costs, or other opportunities to fleets and owner-operators for acquiring safety technologies. These incentives help fleets and owner-operators of all sizes equip their vehicles with technologies, such as stability control, forward collision warning and mitigation, lane departure warning, blindspot warnings, and others. These are proven technologies that can help drivers mitigate some of the most common commercial vehicle crash scenarios, such as rollovers, loss-of-control, and rear and side collisions.

- **Future legislation, regulations, and policies – as necessary – should support advancing automated/autonomous crash mitigation technologies being developed with industry insight, and be delivered in a timely fashion.**

- ***At Bendix, we believe motor carriers – not solely mandates – should be the catalyst to drive safety technology adoption.*** That said, we also acknowledge that regulation is a reality for every member of the commercial vehicle industry. Delivering the right regulations – future-oriented and based on balanced research involving key stakeholders – along with timely implementation and relevant compliance testing methodologies are critical to help reduce crashes, injuries, and loss of life on our nation's roadways. In the decision between crash worthiness and crash mitigation/avoidance, while both approaches are important, Bendix feels that, based on the advances in commercial vehicle safety technologies, a crash mitigation/avoidance focus will yield much greater benefits in terms of reducing crashes, injuries, and fatalities on our nation's roadways. Avoiding – or reducing the severity of – the crash in the first place is a better strategy than hoping to survive a crash.
- ***Establishing policies that enable creative development while avoiding a rush of unproven, untested technologies to market is critical for getting to future autonomy in a timely and safe manner.*** Bendix supports a flexible approach to regulatory action and supports the thinking behind the Federal Automated Vehicles Policy introduced in November 2016 to facilitate the advancement of technologies. Getting these technologies to market quickly is important, but more critical is ensuring that the technology development and commercialization is done with a high level of regard for safety. Too often, rushing a technology to market without proper testing, evaluation, and training can result in unintended consequences, ranging from failure to perform as expected to incorrect usage, which may result in crashes, injuries, or even fatalities. The future is bright and exciting, but

can be deadly if not approached with the proper development. Companies, such as Bendix, that have been pioneering technologies for decades, and who understand the proper way to commercialize new technologies, should not be left behind because they do what's right vs. those that push the envelope to get to market too quickly, often without the proper safeguards to protect users. Policy prescriptions and approaches, with the threat of regulatory process, help facilitate the development of advanced technologies in a controlled but not inhibiting approach. **Flexibility with responsibility is the best approach to ensuring technology development moves quickly and, most importantly, safely and effectively.**

➤ **Support of driver education, technician training, and proactive brake and tire maintenance.**

According to Christopher Hart, chairman of the National Transportation Safety Board in a February 5, 2015, exclusive interview with trucking publication *Transport Topics*, "Trucking companies with poor safety records should redouble their maintenance efforts and pay particular attention to brake systems. We see issues regarding vehicles that aren't well-maintained. The use of automatic slack adjusters in brakes has been a big help, but there are too many brake problems found on roadside truck inspections," he said.

Bendix agrees. Active safety systems are dependent on good brake and tire maintenance practices to ensure optimal performance. More frequent and continuous education and awareness programming can help identify and correct brake issues throughout the year, helping to prevent brake-related crashes. ***Bendix supports events such as Brake Safety Week – an annual initiative sponsored by the Commercial Vehicle Safety Alliance – as a tool to help improve highway safety by identifying potential brake performance issues and educating drivers about the importance of regular brake maintenance.***

One illustration of the importance of correct, regular brake maintenance is the Commercial Vehicle Safety Alliance's annual Brake Safety Week inspection program. In September 2016, over 2,400 commercial vehicles out of 18,385 inspected were placed out of service for brake violations.

➤ **Integrating advanced safety systems and data from within and from outside the vehicle.**

Bendix develops heavy-truck safety technologies that can dramatically enhance highway safety. Continued investment in the development of such technologies will help ensure the future safety of our roadways. ***Integrating new systems with existing systems, such as Bendix® Wingman® Fusion™ collision mitigation technology, which integrates the radar, camera, and brake system to enhance system performance, and which is also integrated with Bendix® ESP® Electronic Stability Program full-stability system, delivers improved active safety performance on the road and information to the office to help drivers and fleets operate safely and efficiently on our nation's roadways. And, pulling data from these systems through telematics and web portals, such as SafetyDirect® by Bendix CVS, can help fleets understand better what's happening on the road and deliver focused training to help drivers address specific needs.***

In the future, intelligent transportation systems (ITS), and V2X – which includes vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-pedestrian (V2P), and other connected vehicle approaches – may provide additional information for the active safety system. These inputs might reveal what other vehicles around and ahead of the truck are doing, and what roadway obstacles – such as work zones – may be ahead. This additional information can help the system deliver even more meaningful alerts (and help reduce false alerts), as well as potential additional interventions to help drivers mitigate greater numbers of potential crash scenarios. As additional information is available and utilized by the active safety system on the commercial vehicle, more opportunities to help drivers mitigate more crash situations will exist, helping reduce fatalities and injuries even further.

➤ **Eliminating counterfeit parts that may deteriorate safety system performance.**

In addition to its continued leadership in the development of advanced safety technologies, Bendix is committed to ensuring the safety of such technologies by leading the battle against counterfeit and knock-off parts. Bendix urges its industry partners to remain active and diligent in this fight. As the commercial vehicle industry experiences greater globalization, it will also continue to experience the proliferation of knock-off and counterfeit components. The appeal of these lesser

quality, lower-priced options drives some buyers to consider alternatives to genuine products, while others are unwittingly misled by distribution outlets seeking to make a greater profit.

Such parts can threaten the safety of our highways – they do not undergo the rigorous testing and quality assurance of their genuine counterparts and do not offer the same level of performance or reliability.

A multifaceted agenda to support these five areas

Along with creative product development efforts alongside rigorous product testing and evaluation to deliver proactive customer solutions, Bendix supports and reinforces the importance of safety, performance, lower total cost of ownership, and post-sales service and support through a wide range of initiatives. The company's industry and government outreach communicates and highlights the importance of the five areas discussed earlier in this document. Some of the approaches include:

- ***“At Your Door” ride-n-drive technology demonstrations and safety technology presentations for fleets, owner-operators, legislators, regulators, insurers, and advocates.***
 - As part of its long-standing program, in 2016 Bendix delivered 90 technology demonstrations and events in 35 states to almost 1,700 attendees, providing hands-on experiences from the driver and passenger seats of commercial vehicles, motorcoaches, and school buses.
- ***Enabling access to expert training – both in-person and online – plus access to free downloads of Bendix® ACom®, our ABS diagnostic software, supports the critical work of maintenance technicians around the globe.***
 - Bendix offers ongoing, expert technical support, as well as a variety of educational opportunities, including our long-tenured, in-person Bendix Brake Training School for the commercial vehicle industry. More than 275,000 people have successfully completed Bendix® Brake Training School education – in regional classroom trainings and on-site training sessions, logging over 350,000 student training hours over the past decade alone. The school began more than 50 years ago, making it one of the longest running training programs in the industry.
 - With more than 640,000 courses taken, brake-school.com – the exclusive Bendix training portal – currently boasts more than 50,000 registered users from more than a dozen countries. The tool, which delivers 24/7/365 access to topics in demand, is frequently updated throughout the year. Always growing, the school counts registrants from over two dozen countries around the globe.
 - During 2016 Bendix surpassed the 50,000th download of its Bendix ACom Diagnostics software. The diagnostic software helps fleets and technicians diagnose, repair, troubleshoot, and recalibrate components that form Bendix's antilock braking, stability, and tire pressure monitoring systems.
- ***Driver training, awareness, and education support through live learnings and demos, along with easily accessible driver insight tools and videos.***
 - The Bendix YouTube site (<https://www.youtube.com/bendixvideos>) features numerous videos on Bendix safety technologies, along with driver training videos, operator's manuals, and other information to help drivers better understand the full capabilities and limitations of the technologies they have on their vehicles.
- ***Advancing our expertise across a range of channels.***
 - As part of its robust thought leadership initiative, Bendix experts regularly contribute their insight, expertise, and knowledge of technologies for today and tomorrow across a variety of industry media and event outlets. Launched in early 2017, the Bendix multimedia center, knowledge-dock.com, is devoted to helping trucking professionals stay connected to the industry by keeping them updated on the latest in truck operation, maintenance, and safety – while also examining trucking trends and technology developments. Visitors to the Knowledge Dock™ will discover an ever-growing list of videos, blog posts, podcasts, and white papers from Bendix's team of respected industry authorities. Two popular Bendix series – Bendix Tech Tips and the video-based Tech Talks – are also featured.

- **“Genuine Bendix” initiative to battle counterfeit parts that can impact safety system performance.**
 - The company’s genuine Bendix® initiative employs an aggressive strategy to address the consequences associated with counterfeit and knock-off parts. The program – grounded in a three-pronged approach – includes extensive education and outreach, rigorous intellectual property protection, and the enforcement of patents and trademarks.
- **Working with government officials and advocacy groups to provide direct understanding of Bendix technologies.**
 - Bendix continues to provide government officials with information, insight, and knowledge through direct and industry participation in responding to government rulemakings, participating in government outreach efforts. We work directly with key regulatory agencies as well as with industry partners such as the Motor Equipment Manufacturers Association (MEMA), the American Trucking Associations (ATA), the Heavy Duty Manufacturers Association (HDMA), and others. Our outreach also includes investment in notable industry sponsorships such as the ATA Image Truck and Road Captains program, along with the National Truck Driving Championship Grand Champion award.
- **Developing and delivering innovative products that provide unparalleled performance while meeting or exceeding Federal Motor Vehicle Safety Standards.**
 - New product demonstrations are often eye-catching and attention-getting. They generate buzz and interest. Typically, however, there is exhaustive development, testing, and evaluation work for an extended period before a demonstrated product becomes a commercial product.

Bendix believes in the creative spirit that drives innovation, but maintains a steadfast belief in an approach steeped in understanding customer requirements – from production needs at OEMs, performance needs at fleets and regulators, the eventual availability of replacement parts designed for durability and performance in the aftermarket, extensive simulation, track and on-road testing (in all types of weather conditions and with all types of fleets), as well as a full array of individual component testing – including vibration, chemical bath, gravel bombardment, and more. Also critical is adhering to functional safety guidelines, along with meeting or exceeding applicable regulatory, SAE, and ISO standards to deliver a product that performs for all constituents – fleets, drivers, technicians, and regulators. For example, while Bendix® ESP® full stability has been on the market since 2005, we still regularly subject the system to a rigorous agenda of evaluation, refinement, and updating – having just completed our 17th winter test – and it meets or exceeds the requirements of FMVSS 136. Similarly, air disc brakes and friction are not only consistently and continuously dyno tested, but track tested as well to ensure adherence to the requirements of FMVSS 121. At the same time these wheel-end solutions undergo hundreds of thousands of miles of on-road fleet testing, in all conditions and across all vocations, as well as millions of miles of commercial use to keep improving their performance.

“Bendix has always been a leader in the commercial vehicle industry,” said Berend Bracht, Bendix president and CEO. “Our primary focus is to deliver cost-effective solutions that are meaningful for the vehicle operator and help make the roadways safer. Through continued partnership and a commitment to advancing commercial vehicle safety technology, plus supporting driver and technician training, we can truly have a significant impact on highway safety. We encourage our industry partners to join us in these efforts. Together, we can help save lives.”

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