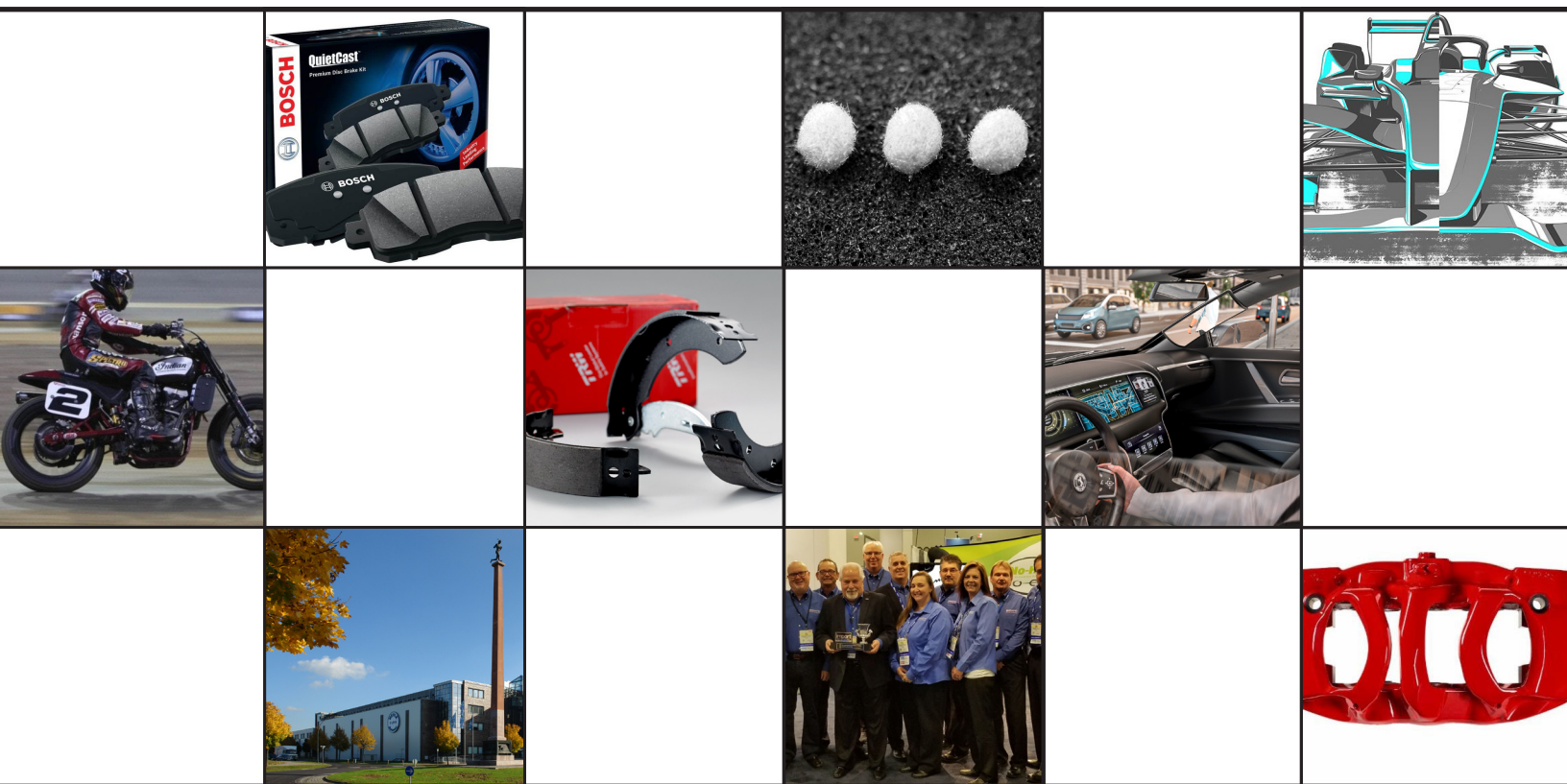


The BRAKE Report

YEAR IN BRAKES

2018



2018 was a busy year for the brake industry and a great year for The BRAKE Report! With more readers than ever, we've created more original content and shared more industry-generated news than ever before. We saw tons of new product launches, recalls, and organizational changes, along with many other headlines making the news.

The brake industry continues to evolve and change, with new technologies, new mandates, new priorities, new companies, and new faces. I expect a great 2019, with the aftermarket thriving and new technologies and innovations creating new opportunities for brake organizations.

I look forward to seeing everyone in 2019!

Brian Hagman

Handwritten signature of Brian Hagman.

Recalls and Mistakes

The **European Commission** announced in February that brake companies participated in **two separate cartels** to artificially boost prices. The first lasted from 2007 to 2011, involved TRW, Bosch, and Continental, and involved hydraulic braking systems.

The second cartel occurred in July 2011 when Bosch and Continental conspired to boost the price of an EBS system delivered to BMW. The Commission imposed a total fine of €75 million.



GM could be facing a huge recall of trucks and SUVs from the 2014-2016 model years. About 2.7 million vehicles are potentially impacted. The problem is a weak brake vacuum pump. The **investigation** is ongoing.

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Hyundai recalled 88,000 vehicles due to fire risk caused by the possibility of water entering the antilock brake module and causing a short.

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The **Changan Ford** joint venture recalled more than 500,000 vehicles in China. The problem was brake hoses that had a tendency to fail.



A gas issue kept bubbling up, with vehicles across brands recalled due to gas bubbles in the brake fluid. Starting in the summer, manufacturer ZF notified customers about the problem, caused by a hydrogen gas being embedded in the brake caliper piston material during the electrocoating process. **Mercedes-Benz** (9,000 vehicles), **FCA** (209,000), and **GM** (230,000) are among the companies impacted. Honda (65,000) and VW (5,500) are also impacted by what appears to be the same problem.

2019 KEY DATES

Asia Brake / Feb 24-26 / New Delhi, India
EuroBrake / May 21-23 / Dresden, Germany
SAE Brake Colloquium / Sept. 22-25 / Orlando, FL, USA
AAPEX / Nov. 5-7 / Las Vegas, NV, USA
PRI / Dec. 12-14 / Indianapolis, IN, USA



Cool Calipers



The most viewed **story** of the year on The BRAKE Report was about Bugatti's 3-D printed titanium caliper. The exceptionally impractical but incredibly cool caliper takes 45 hours to print.

In March, Brembo announced a caliper with what Brembo called an innovative, weight-saving design. According to Brembo: "As a technological pioneer in braking systems, it has been possible to deploy, for the first time, the use of topology optimization for a cast aluminum caliper used on road cars. Topology optimization is a software tool that allows Brembo engineers to simulate the stiffness of a component and identifying the excess material. The result of this software, used for some time in the design of racing braking systems made from billet aluminum, is a new geometry that optimizes performance, stiffness and weight of the caliper."



In June, Akebono unveiled a light-weight caliper for electric vehicles. It expects to go into production in 2019.



SSBC released the B8 Barbarian eight-piston caliper in June. It's designed for large Ford, GM, and Ram pick-up trucks.

New Products



“**It’s a good product.** We know there are different solutions for the brake dust problem. For example, there’s an active suction system, or there’s a possibility for coating the brake disk or using different brake pad materials, but we think our solution is quite easy to implement and very robust. From a price side, it will definitely be in the same range and not more expensive than the competitors’ solutions.”

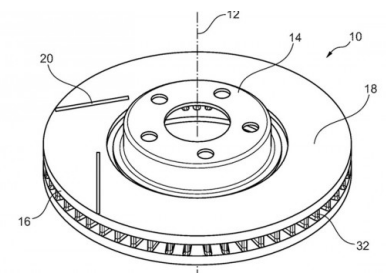
ZF’s **Integrated Brake Control (IBC)** debuted on the Chevy Silverado. The technology replaces the need for a vacuum pump and is a sort of halfway step towards fully dry brake-by-wire.



Akebono developed what it calls **the world’s first electric parking brake** for small to mid-sized trucks. According to Akebono, “Compared to existing volume-produced products from other manufacturers, this new electric parking brake generates more powerful clamping force.”



Ford applied for a patent related to a process for **3D printing brakes** using a high-silicon aluminum alloy. The material may allow printed brakes that can withstand high temperatures and extreme abrasion.



Meneta developed a tool to simulate different shim materials, promising quicker development times and less need for dynos. It calls the tool the **Meneta Black Box**.

Corporate News



WABCO launched its new **North American Headquarters** in Auburn Hills, MI. The project was announced in January. The official opening was in October. The new building was necessary because of WABCO's expansion, including its purchase of what had been a 50/50 partnership with Meritor.

Tenneco spent \$5.4 billion to acquire Federal-Mogul. The deal was announced in **April** and finalized in **October**. Carl Icahn, who owns Pep Boys and many other automotive businesses, had been the owner of Federal-Mogul. After the deal, he emerged as Tenneco's largest stakeholder, owning almost 10% of the company. Tenneco plans to split into two companies, one focused on powertrain components and one on aftermarket parts.



Fras-le acquired Fremax, capping a busy period of expansion. "We've been going through the biggest expansion of Fras-le in its history. In the past 16 months we've opened up a new factory in China, we've bought two companies in Argentina, and we've bought one company in Uruguay," **Sergio Carvalho** told The BRAKE Report.

In March, John Hudson **left TMD Friction** after six years as CEO. The company continued aggressive plans to expand internationally. ... **Lumag, ITT,** and **Nisshinbo** all announced big expansions.

TBR Highlights

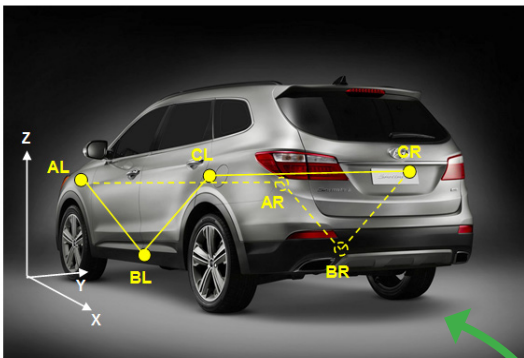
The BRAKE Report published nine Leadership Spotlights, in-depth looks at key brake industry executives. **Matthew Link**, **Eddie Wilkinson**, **Leah Burns**, **Jonathan Edwards**, **Hadrian Rori**, **Paul Johnson**, **Colin Smit**, **Borise Cota**, and **Rick Kaatz** were all profiled.



“Finding individuals who are humble and hungry, and who also possess the proper emotional intelligence, is a major key to success of an organization.”

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The BRAKE Report published original reporting on a range of topics, including looks at emerging technology, **company profiles**, and updates on hot topics and trends in the brake industry.



The BRAKE Report partnered with **Applus IDIADA** to bring exclusive technical content to the site. So far, eight TBR Technical Corner articles have been published.

Comparison of Worldwide Public Road Brake Durability Standards (Part 1 [here](#))

Operational DTV Measurements Under Brake Judder Conditions (Part 1 [here](#))

Study of Correlation Between Subjective and Objective Results in a Brake Judder DTV Sensitivity Test (Part 1 [here](#))

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the most avid members of the brake community”