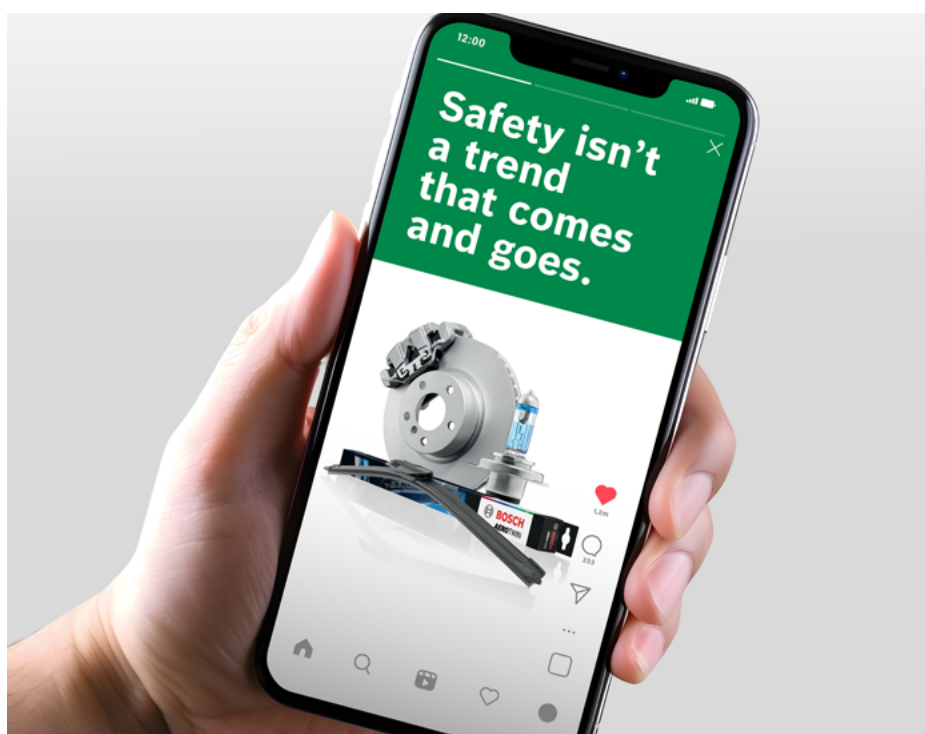


Automotive Insiders: Stop reliably time after time with Bosch brakes



In a world of ‘influencers’ – people who use social media to appear as if they’re knowledgeable on a certain subject – Bosch are the real deal.

We’re genuine automotive influencers because our in-depth automotive knowledge has been built over 100 years, our innovations have changed the automotive landscape, and our products and services are trusted by millions of customers around the world today.

In our new *Automotive Insider* series, we find out more about Bosch’s best-known products, by talking to the people behind them. From high-performance wiper blades to bulbs and brakes, our experts lift the bonnet to share how these parts work – their history, how they’ve developed over the years, and how

they’re equipping vehicle mechanics and owners to face the future with confidence.

Today we’re talking to Holger Fuchs and Kay Langrock – the experts behind Bosch’s top-quality brake discs and pads.

Can you tell us a little about the history of Bosch brakes?

Whatever vehicle you drive, brakes are fundamental to its safety. Bosch has been committed to technical progress for more than 95 years, providing drivers with improved braking safety and comfort with each decade.

Since we introduced the first servo brake (which reduces the force applied to the pedal) in 1927, our continuous innovations have been keeping drivers safe on the roads. In 1978 we unveiled the antilock braking system and in 1995 we launched the Electronic stability program (ESP®) to support the driver in critical driving situations. In 2010 we released the predictive emergency braking system which initiates emergency braking if there is an impending collision.

Nowadays, drivers can rely on Bosch braking components from the pedal to the wheel. Our expertise covers the whole braking system in one complete portfolio, including about 11,000 part numbers over 27 braking sub-families.

How does Bosch ensure brake pad safety?

Braking safety can’t be achieved with a single formula, due to extreme strains that vary from vehicle to vehicle. Our brake pad friction material is manufactured in our production facilities, after Bosch engineers have created new pad mixtures matched to the specific requirements of different vehicle models. These mixtures are chosen from a various range of available brake pad mixtures and only the ones with optimum characteristics – that perfect balance between coefficient of friction, comfort and

“Some influencers claim to be experts. We’re genuine ones, with over 90 years’ experience in brake technology.”

wear behaviour – are selected. The development process is long – sometimes up to 3 years – and involves high-intensity testing.

Talk us through the test process

At the testing stage, we go above and beyond the stringent release criteria required by European regulations. While the strength, pressure sensitivity, speed sensitivity and thermal stability are tested according to ECE R90, the requirements in Bosch tests call for much more. Temperature sensitivity, loss of braking efficiency (fading), thermal conductivity, brake vibration, noise characteristics, wear of brake pads and discs are evaluated in direct comparison with those of the original equipment manufacturers.

We also simulate extreme braking situations as part of the test program, going into far more depth and detail than the assessment criteria required by ECE R90 tests. Scrutinised in such a way, Bosch drivers can depend on their brake pads to provide them with additional safety on the road.

Sounds interesting! Now onto brake discs, how does Bosch ensure these are effective, mile after mile?

Brake discs are the central part of a braking system. When braking, most pressure is applied on the brake disc, meaning they're at risk from corrosion, wear and tear. This, combined with improved engine performance and higher vehicle weights, means the quality requirements for braking systems are increasing. Only brake discs made from high-grade materials and homogenous casting structures without trapped air and friction will meet car manufacturers' specifications.

Each year, more than 20 million high-quality Bosch brake discs, are produced from steel, cast, metal



cuttings and alloying additions. The Bosch brake range includes 26 product lines with very high quality, giving them assured stopping power over a long operating life.

How are your brake discs designed and produced?

Our ventilated brake discs are designed and produced to exacting standards. First, quartz sand, resin, hardener and water-based slurries form the core of the brake disc, which will be completely covered with molten cast iron during the casting process.

Every casting is preceded by a spectral analysis to ensuring the correct composition of the cast. After this analysis, the 1,300°C hot molten mass flows into the mold.

Next a measurement device checks the dimensional accuracy of the parts. With minimum production tolerances, the latest systems will drill and mill the brake disc into the desired shape. The brake disc is then coated and dried by induction.

Spectral and microsection analysis, tensile strength and hardness measurement, key dimensions measuring procedures and repeated visual inspections ensure consistently high quality. Not only that, but random brake disc samples are run through further tests during production.

Any brake system developments in the pipeline?

The last few years have brought about a historic increase of electric and hybrid vehicles – with EV registrations accounting for almost 38% of overall new passenger cars in the EU. This in turn will have an impact on the aftermarket, as workshops need to cater for these vehicles.

EV brake systems have different requirements compared to combustion engines, due to the fact that sometimes the electric engine brake will be applied, rather than the braking system, when the pedal is pressed. Our mission is to ensure the customer doesn't notice the difference.

The other major aspect is that EV brakes don't get used as much as combustion engine cars, therefore they last longer, but this has an impact on the levels of corrosion.

As every braking event cleans the discs/pads – brakes that aren't used as much don't get cleaned.

At Bosch, we are ready to serve the workshops with one complete and available range of brake pads and discs – offering high market coverage the car park of the future, including up to 90% coverage for the European EV and HV car park for brake pads.



Benefits of Bosch regular brake pads

- Advanced friction technology ensures excellent stopping distance
- Asbestos-free manufacturing (non-carcinogenic)
- Optimum friction co-efficiency for superior response
- Improved wear and tear resistance for long operating life
- Better NVH characteristics (OE specifications)

Benefits of Bosch brake pads

- Reliable even in extreme situations, thanks to high performance and comfort features
- Reduced braking noises and vibrations supports long-term driving comfort, through minimum manufacturing tolerances and the use of innovative alloyed and high carbon cast materials
- Efficient and swift repairs due to enclosed fixing screws, integrated wheel bearings and ABS sensor rings
- Corrosion-protected thanks to innovative brake disc coatings

Service Spotlight:

Low-noise brake pads

“This is less a product, more a USP, but we go into a huge level of detail to ensure our brake pads are low noise. As most brake noise occurs when braking gently, one objective of our braking system development is to keep these noises at a level below 70 decibel. Only a very accurate fine tuning ensures both high comfort and high performance of brake pads. By means of acoustic tests, a comfortable pad mixture for each braking system is determined.”

Kay Langrock, Product Manager for brake pads at Bosch.

About our experts:

Holger Fuchs

Holger Fuchs has over 20 years' experience in the automotive industry, 8 of those at Bosch. For nearly 6 years he has been the product manager for brake discs.



Kay Langrock

Kay Langrock has been a product manager for brake pads for 4 years. He has been at Bosch Mobility Aftermarket for 14 years, having started in supply chain management, before moving to sales.



Choose services with influence.

For more information on Bosch effective braking technology, please visit us at:
boschaftermarket.com