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Green is the new black

17 January 2020 - Shaun Smillie

In our bid to save the planet from catastrophe, we have entered “the age of green”.

Green cars and green energy are not new. Very few conversations go by without someone mentioning green variations of energy.

However, there’s a new kid on the block, one that new research has proven could drastically limit the CO₂ emissions from our cars, while saving you cash in terms of fuel consumption: green tyres.

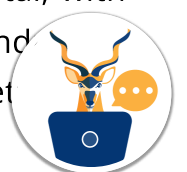
In November, two trucks did lap after lap around a track at the Gerotek Test Facilities in Pretoria. One of these trucks was driving on conventional tyres, the other was fitted with a brand-new set of “green” low rolling resistance tyres.

(Low) Rolling in the green

As each vehicle was kept to a steady speed of 80km/h, researchers carefully monitored several datasets – including fuel efficiency – coming from the vehicles. Every two hours, the drivers would take a 10-20-minute break.

“The problem that tyre companies have is that they have found it difficult to get the green truck tyre accepted in the industry because fuel consumption is dependent on so many variables,” says Professor Frank Kienhöfer in the Wits School of Mechanical, Industrial and Aeronautical Engineering. “You look at the driver, the wind speed, and the vehicle. All of this means that tyre companies are struggling to pinpoint that tyres can make a fuel saving difference.”

Working under the umbrella of the Centre for Sustainable Road Freight South Africa, the research team, which included members from Michelin, Iveco, Afrit, Lafarge, and Total, with research institutions Wits, Cambridge University, and the Centre for Scientific and Industrial Research, set out to establish whether green tyres actually make a difference, by setting up a highly controlled test environment.



Tyres on trial

The trials, over a year in the making, were set up by Wits researchers, who oversaw everything from booking the test track, to setting up the test protocols.

“What makes the low rolling resistance tyres different is the materials are slightly different, they have silica instead of carbon black and the tread is different,” says Kienhöfer.

“There is less energy being wasted in terms of turning the tyre and that manifests in low temperature.” They are considered as safe as conventional tyres.

Once the team started looking at the results, they were pleasantly surprised. They found that, at 80 km/h, the long-haul truck burnt eight percent less fuel on green tyres than on ordinary tyres. This means eight percent less CO₂ was emitted into the atmosphere from a single truck. Multiply that by all the trucks on our roads, it could make a significant difference.

“We were thinking the difference would be more in the ballpark of 5 to 6%,” says Rehaan Abdulla, a Wits MSc student involved in the study. “So, there appears to be massive advantages of using the rolling low resistance tyres.”

Even though green tyres have a 25% shorter lifespan than their traditional counterparts, they still hold the edge when it comes to financial benefits to transport companies. Kienhöfer points out that such savings on fuel could increase profits by 40%, even when calculating in the tyres' shorter lifespan.

- *Shaun Smillie is a freelance journalist.*
- *This article first appeared in Curiosity, a research magazine produced by Wits Communications and the Research Office.*
- *Read more in the ninth issue, themed: #ClimateEmergency how our researchers investigate the impact and implications of global change and climate change on people, places, and politics.*



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