

# world of wheels

m a g a z i n e

## Lamborghini LIVICIOUS

New Breed on the Block

Lamborghini

### hot news

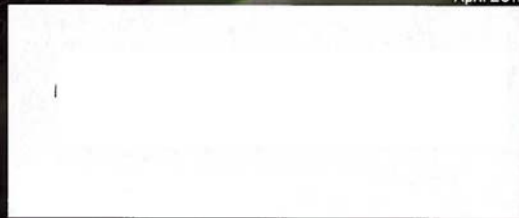
Corvette Engine Build Experience  
Design Analysis: Scion iQ


April 2011

**Spy Shots:** Mercedes-Benz SLS  
AMG Convertible

**Nostalgia:** Ice Pilots Joe McBryan's Collection  
Designer Chuck Jordan

**REVIEWS:** 2011 Lamborghini Gallardo  
LP 570-4 Superleggera | 2012 Fiat 500 |  
2012 Nissan GT-R | 2012 Kia Rio





# Green with Envy

By Michael Pistol

Eco-friendly tires are not only better for the environment, they can save you money with increased fuel efficiency

**R**emember the global financial crisis? Since then, the main issue in the automobile industry has been lowering fuel consumption – as a reaction to the current ever-increasing prices of fuels. With the new increased Corporate Average Fuel Economy (CAFE) requirements, low rolling resistance (LRR) tires are fast becoming an important tool in achieving these goals. According to the U.S. Department of Energy, about five to 15 per cent of fuel economy is used for overcoming rolling resistance – and that is not a negligible number.

For decades, tire manufacturers have been working on decreasing rolling resistance. Suddenly, consumers are starting to be aware that power is actually translated into movement by tires, and tire selection is becoming important as an alternative way to improve fuel economy.

Thanks to the development of new materials such as new forms of silica (sand micro-particles), nanogels and nano-materials, there has been an improvement of abrasion resistance, grip and rolling resistance. As well, there's a newly developed resin that helps tires retain air longer.

LRR tires (a.k.a. green tires) are now seeing a massive adoption by virtually all auto manufacturers as they generate about five per cent less friction than regular tires. And the highly competitive tire manufacturing industry is taking no chances, hence, a plethora of new products are hitting the market.

With oil prices skyrocketing, manufacturers are also starting to rework their tires to contain fewer petroleum-based ingredients. Currently, some 15 to

38 litres of oil are used to develop a single standard tire. So there has been development of vegetable-based processed oils and fibres made of plant cellulose that are beginning to replace some of the petroleum in the newer low-oil green tires.

Here are a few of the latest developments with direct implications for the Canadian automotive consumer.

#### Bridgestone

Bridgestone's is best known for its Ecopia green tire series – available in Canada. The company recently introduced the Ecopia EP422, an all-season, low rolling resistance tire for fuel-efficient vehicles. It utilizes post-consumer recycled rubber and incorporates Bridgestone's cutting-edge NanoPro Tech Technology. This technology contributes to fuel efficiency by controlling the interaction between polymer filler materials and other rubber materials. As the deforming of tires accounts for 90 per cent of rolling resistance, both Ecopia EP422 and the new Dueler H/L 422 Ecopia (422 refers to Earth Day on April 22), are built with a new Fuel Saver Sidewall compound that lowers rolling resistance more than a conventional sidewall. Recently, Bridgestone expanded Ecopia range to tires for commercial trucks, which, according to the company, provides an improvement of about 12 per cent rolling resistance compared to the previous company's models. Ecopia truck tires are available across Europe from September 2010 and hopefully soon enough in North America.

Additionally, Bridgestone Korea recently released its eco-friendly tire, the Ecopia EX10. The

new Ecopia tire reduces 25 per cent of the tire's rolling resistance while getting five per cent better fuel efficiency. And Leonardo DiCaprio, the perennial bachelor and fierce environmentalist, agreed to support, via a video commercial, Bridgestone's green Ecopia EX10 (specifically designed to complement Toyota RAV4 EV plug-in) tires for the Japanese market.

It is interesting to note here, that after eight decades since its establishment as an independent company, Bridgestone activities are still based upon the words of its founder, Shojiro Ishibashi: "Serving Society with Superior Quality."

#### Continental

When it comes to tires, the ProContact line (with EcoPlus Technology) is perhaps the most recognizable product from this leading European company. Continental is also well known for its innovative approach and applied technology. Currently, Continental is working on a tire prototype virtually free of fossil raw materials, and is also working on a substantial reduction in the chemical content of tires. Yet, there is new Continental app for smartphones that may revolutionize the way we look at tires and fuel efficiency in a symbiotic relationship: The Filling Assistant App.

In essence, the vehicle electronic will be connected wirelessly with the driver's smart phone, therefore making inflation data exchange possible. The Filling Assistant specifies the exact inflation pressure of each tire, and a brief honk or a blink signal can be given to confirm when the tire has been inflated to the correct pressure level. The first series production of the Filling Assistant in new vehicles is expected in 2013.



#### Toyo

The brand-new Versado ECO will be available in Canada this spring. The ECO is a combination of advanced design technology and environmentally conscious construction. Being partially made with recycled and naturally derived materials the Versado ECO is a tire that not only improves your vehicle's ride, but also reduces rolling resistance to

## TECHNOLOGY

improve fuel economy. The Toyo Versado ECO is the ideal tire for hybrids or any environmentally friendly vehicles and drivers. An optimized tread profile reduces rolling resistance and improves tread to the road contact. A special polymer connected to silica particles reduces their movement, resulting in less energy loss and lower rolling resistance.

The ECO is the natural extension of the already available Toyo Versado CUV. Designed for SUVs and light pickup trucks, the Versado CUV has all of Toyo's latest technology into one single tire. Remixing the traditional rubber compound and a new carcass design contributes to giving this tire one of the best fuel economy of any Toyo tire in its class.



### Hankook

Hankook Tire's recipe for lower rolling resistance design for less tire deformity rests heavily on advanced technology. Hankook Tire uses something called SCCT (Secure Control Contour Theory) design, and Compound Mixing Technology – a technology that disperses nano-scale reinforcement additives such as silica. An Intelligent Mixing Control System controls the processes from material input to mixing. To implement a superior and uniform performance with rubber, silica and additives, the Mixer is controlled to operate at a strictly optimal temperature.

Yet, here are the results: Optimo H426 – which is still under development, is destined for GT and luxury sedans and will have plenty of environmentally friendly features (Fuel Saving Compound Technology) without compromising grip and traction performance. The main groove edges of Optimo H426 are more smoothly rounded compared with existing tire products in an effective attempt to minimize noise arising from the vibration of the block edges. It is to be launched in 2011/12 in the U.S. and Canada.

Hankook Enfren: Although the company insists that it is not going to be available in North America, there is hope. Several tire magazines are suggesting that Hankook may alter its current policy. By its energy loss minimization technology and silica mixture, Enfren's (17 variations) tire line managed

to reduce the rolling resistance by 21 per cent. And, according to Hankook Tire, a vehicle running at 110 km/h (68 miles) achieved 16 per cent better fuel efficiency. No wonder that for the first time in the history of the tire industry, a butterfly has been characterized on the sidewall of a tire. The Enfren butterfly signifies comfort, luxury, harmony and eco-friendliness.

But, under the surface, we are dealing with hard-core technology. Kontrol Technology is Hankook Tire's technology philosophy that reflects how the tire should perfectly control the interaction between the driver, the car and the road while in motion. The Eco Enfren was introduced in South Korea in 2008, in Japan and Australia in 2009, and in China in 2010.

In March 2011, Hankook Tire announced that it will return to New York City's Times Square with a re-launch of its tire-shaped billboard – a 31-by-98-foot image that replicates the tread of Hankook. With more than 1.5 million consumers passing through Times Square every day, watch for Enfren's tread that may signal the much awaited introduction of this exceptional tire in North America.

### Yokohama

Yokohama Tire have developed a line of tires which are composed of 80 per cent less petroleum products than a traditional tire. While the various advanced technologies included in the tire design and manufacture do result in a more expensive product, with rolling resistance that is 22 per cent lower than a leading competitor's, there are substantial cost savings on fuel usage. One of the most interesting technologies is the use of orange oil – derived from the by-product of fruit juice processing – which increases traction while still allowing for lower rolling resistance. Yokohama's Advanced Liner (an alloy of natural rubber and a plastic polymer) also helps reduce fuel-use by maintaining inflation pressure.

### Other developments

Other tire manufacturers use sunflower oil in the rubber compound, while some manufacturers are looking toward exotic compounds based on natural latex and even Russian dandelions. Others are experimenting with renewable synthetic rubbers made of chemicals that are grown in vats by biotech-modified microorganisms. Such efforts are important for saving energy since more than 30 per cent of the energy is used by electric vehicles is consumed through tires.

In 2009, researchers at Oregon State University (OSU) have developed a tire made from plant



Continental Tire Filling Assistant

materials combined with rubber that offers several benefits over conventionally manufactured tires. The rubber composite contains micro-crystalline cellulose as an additive, a material that can be made from a wide variety of plant materials, instead of the usual carbon black or silica typically used. Manufacturing tires from a renewable plant source could change the entire industry and it may eliminate silica (which takes a lot of energy to produce).

A new technology is also being developed in a research partnership between Goodyear Tire and Rubber Company and California-based biotechnology company Genencor. This specific technology aims to eliminate the oil currently used to make isoprene, a key tire ingredient, by creating a more environmentally friendly alternative using plants such as sugar cane, corn or switch grass.

In 2010 Goodyear launched its new Assurance Fuel Max – a tire that features a proprietary fuel-saving tread compound that helps reduce energy loss as the tire rolls. This tire is now standard for the 2011 Chevrolet Volt.

### New distributor

The main reason for the lower penetration of green tires in Canada is pricing, as LRRs/eco-friendly tires are priced at least five per cent more than regular tires. However in March, an on-line discount tire company opened its virtual offices in Canada – and the best part of it is that it offers you the possibility to save up to 50 per cent on tires you purchase. [Tires and Co.](http://www.tiresandco.ca), of Montreal, assures that delivery will be made within 24 to 72 hours, at your home or at any of the 144 tire installers partners in Canada. [Tires and Co.](http://www.tiresandco.ca) currently offers 33 brands of tires (including Bridgestone, Continental, Dunlop, Goodyear, Michelin and Pirelli) in Canada and 3,500 models including green tires. As well as attractive prices, this site has a large stock, even during periods of high demand. Visit [www.tiresandco.ca](http://www.tiresandco.ca). **W**