Green tires: Where the rubber meets the road

September 30 2012, by Jim Motavalli

Most of us don't think about tires much until we either get a flat or they wear out, and then the bite of up to $1,000 or more for all four corners sure gets our attention. Most of all, we don't think of tires as having anything at all to do with fuel economy, when in fact they make a big difference.

The feds recently finalized the Corporate Average Fuel Economy (CAFE) standards, which will require automakers to achieve a fleet average of 54.5 mpg by 2025. It's safe to say automakers are looking for fuel economy wherever they can find it, and tires are now a big focus. Up to 15 percent of the gas in your tank goes to overcoming your tires' resistance to the road, the Department of Energy says, so it's not surprising that you can improve fuel economy up to 4.5 percent with low rolling-resistance tires.

Remember all that political nonsense in 2008 when Obama mentioned the importance of maintaining good tire pressure and McCain said it proved he was a nerd and fruitcake? Well, if your tire pressure is supposed to be 35 psi and the actual inflation is 28 psi, you've just increased rolling resistance by 12.5 percent and are paying the cost at the pump.

I went to South Carolina to see eco-tires in action. Major tiremaker Bridgestone/Firestone, our hosts, built these very odd-looking tricycles with car tires on them and then rolled them down ramps (right) with us aboard. The point was that the company's Ecopia tires rolled farther than conventional tires. I think they proved their point.

I realize this is a somewhat silly video, but it amply demonstrates the point that green tires roll more easily. Don't ask me how it's done:

Bridgestone says that Ecopia tires (as seen on the Nissan Leaf) improve rolling resistance 36 percent, which means a 4 percent fuel economy improvement (5 percent for Dueler truck tires). Automakers are hoping to get another 20 percent fuel economy improvement from tires.

Ecopia tires are still only five to 10 percent of company sales. I asked Mike Martini, who heads Bridgestone's consumer tire business, why eco treads aren't already taking over, since there's no significant cost penalty. Some people just don't like them, of course, but Martini pointed out that it takes time for new technology to reach the four corners of the world. Besides, many of the fuel-saving advantages of green-branded tires are now built into standard tires, he said.

We donned safety glasses for a tour of the Aiken plant. Watching tires get built is a lot of fun. They're made in layers, with cool-looking machines that lay on steel belts and tread, and build sidewalls. Unfinished "green" tires are then cured with steam in a process that finally gets them looking like the rubber on our cars.

Bridgestone goes to great lengths to promote its eco-friendly work, some of which saves the company money. Lights in the warehouse are now green fluorescents, scraps and rainwater runoff are reused, and the LEED-certified factory is aiming for zero waste. Since 2005, the company has reduced its waste to landfills 32 percent per ton of product. Carbon dioxide is down 5.4 percent per ton of product. According to Tim Bent, Bridgestone's director of environmental affairs, the goal for 2020 is a 35 percent reduction (50 percent by 2050). For each tire produced, one goes to recycling. "We want to use less materials while maintaining or improving performance," Bent said.

The company, which currently gets most of its rubber from a plantation in Liberia, is also exploring other natural materials for producing the raw material for tires, including Russian dandelions and a native Southeast bush called guayule.

We sat on park benches at one of Bridgestone's wildlife habitat centers. At the Aiken County truck plant, 400 of the 560 acres are given up to mixed-pine forests, and the company has planted tens of thousands of native and threatened longleaf pines (right), which can grow to 90 feet. Our van got bogged down in South Carolina's sandy soil while trying to get a closer look at those trees.

There are solar-powered shelters, and the Girl Scouts helped set up 21 bluebird boxes. The company maintains protected wetlands (with snapping turtles), Monarch butterfly habitat and flower meadows. The company has 10 programs certified by the Wildlife Habitat Council.

We also visited the nearby site of Bridgestone's $900 million off-road radial tire plant, currently a work in progress. This plant, which will create 330 new jobs and be in full production by 2015, makes really big tires. Can you conceive of a 63-inch tire? It's almost as tall as me, and can cost $100,000.

What do you do with tires that big? They're for humongous trucks that, among other things, are used in both mountaintop removal mining and Canadian tar sands production. According to Bridgestone, "Demand for off-road radial tires is steadily increasing as the need for mineral resources grows due to rapid economic expansion around the globe."

There's some irony here, because as clean and green as Bridgestone is, its efforts to supply new markets means outfitting some very dirty industries. According to DirtyOilSands.org, put together by a coalition of environmental groups:

- Oil sands projects are the fastest-growing source of greenhouse gas pollution in Canada.

- Production of oil from tar sands bitumen produces between three and five times the greenhouse gas pollution of conventional oil production.

- By 2015, the oil sands could emit more greenhouse gases than the nation of Denmark (pop. 5.4 million).

The issues with mountaintop removal mining are well known. It's like strip mining on steroids. Forests are clear-cut, streams polluted. Obviously, Bridgestone - trying hard to do the right thing environmentally - isn't to blame for the hard facts of North American resource extraction. Jimmy Vaughn, an environmental engineer at Bridgestone responsible for much of the company's preservation efforts, pointed out that oil demand is growing and we have to get it from somewhere. I see a certain logic to that. Tire companies can't ignore new markets - it would be like asking Detroit to stop making SUVs. (Come to think of it, I have asked Detroit to stop making SUVs).

All this aside, I came away from South Carolina knowing a lot more about tires, how they're made and how they can help carmakers build more fuel-efficient cars.

More information: