

# Michelin's X TWEEL Turf



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Contractors first saw the Tweel at the 2013 [GIE+EXPO](#) in Louisville when Michelin unveiled its airless radial tire technology for skid-steers. The appearance of the revolutionary product prompted some visitors to the Michelin booth to ask if the technology would appear on commercial zero-turn mowers. They found out at the 2014 GIE+EXPO when [John Deere](#) demonstrated Michelin X TWEEL Turf tires as an option exclusively on its ZTrak 900 B, M and R series mowers.

Wanting to know more about the technology, we recently spoke with Jack Olney, commercial business manager of Michelin Tweel Technology.

**Mr. Olney, please provide a brief description of the Tweel.**

The Tweel is very different from other tires in that it doesn't have air in it. It is the first airless radial tire that can do everything an air-filled tire can do except go flat.

**It certainly doesn't look like a typical tire and wheel assembly. Can you share how it is constructed?**

The outer core is made of rubber and Compl0 cable, a proprietary cable developed by Michelin. The cable is laid within the rubber in a special architectural way that we invented, and that makes the shear beam, essentially the outer core, semi-rigid. This is connected on the inside to a wheel by thin, high-strength, poly-resin spokes that carry the load and absorb impacts.

**What was the thinking behind the development of the Tweel?**

Our engineers set out to mimic the key characteristics of air-filled tires and improve upon them. They identified the four characteristics that made air-filled tires the dominant technology on the planet for 100 years: low contact pressure, low vertical stiffness, low rolling resistance and pretty

light for the load they carry.

**Obviously, you feel the Tweel matches air-filled tires on those counts. Beyond being flat-free, what other advantages does the Tweel offer on zero-turns compared to pneumatic tires?**

Users comment on the ride. When an air-filled tire encounters a bump, the tire acts like a balloon. You get all the energy back right away. The Tweel is not like a balloon. Think of the difference as being like a spring and a shock on your car. The Tweel releases the energy in a measured way. For this reason, the mower deck is steadier as you operate the mower, and you get a more consistent and clean cut. Also, because the Tweel doesn't have sidewalls, it gives you better lateral stability on slopes. As the weight of a mower on a slope transfers downhill, the sidewall on an air-filled tire also tends to want to flex downhill. With the Tweel, you get better tracking on the side of hills. This improved lateral stability makes it easier to keep the machine on line and there's less chance of it crabbing.

**Mr. Olney, please speak to the durability of the Tweel on a zero-turn mower.**

The Michelin X Tweel Turf has long wear life, up to three times longer than a pneumatic tire at equal tread depth.

**We understand the Tweel was years in the making and commercial release.**

Yes, it's been over a decade in the making. It was invented right here in the U.S., and the inventors (Dr. Tim Rhyne and Steve Cron) are still over at the research center and they're still involved with the Tweel. Michelin has been in the rubber industry for more than 100 years and has made radial tires for 65 years, so this is a departure from what it has done in the past. Because it is a departure, Michelin developed a new 135,000-square-foot facility here in Piedmont, South Carolina. The Tweel is the only thing produced there along with the Compl0 cable.

**Are there plans to offer this technology in other markets?**

Yes, but we are starting with lightweight off-road machines.

COVER PHOTO: JOHN DEERE