



Behind the Wheels Podcast Transcription

Bonus Episode 6: Part 2

Michelin Increasing fuel efficiency and reducing Greenhouse Gas emissions.

ANNOUNCER

You're listening to Behind the Wheels with Doug Mason, Dave Walters, and Mike Yagley. This is a show where we talk about heavy truck and medium duty axle ends. Doug, Dave, and Mike bring close to 100 years of experience and expertise in the transportation business.

Join us once a month to learn new things about axle ends. Sponsored by Alcoa® Wheels, the global leader in aluminum wheel innovation.

MIKE YAGLEY

Okay, welcome to another episode of Behind the Wheels. I'm Mike Yagley.

DOUG MASON

And I'm Doug Mason.

MIKE YAGLEY

And today, we have three folks from Michelin here to join us in the discussion. We got Karl Remec, Business Model Leader, Bill Walmsley, Product Category Manager for tires, and Calvin Bradley, Product Category Manager for Aero. Hey, thank you guys for joining us.

KARL REMEC

Thank you, Mike. Thank you, Doug. Glad to be here.

DOUG MASON

Glad to have you guys here again. Just to remind you, we're live from TMC 2020, and so we're enjoying the show. And you guys obviously are showing what you've got here, and we're, again, very thankful that you guys are coming along to tell us more about truck tires and other things. [crosstalk 00:01:03].

KARL REMEC

Well, thanks a lot for the invitation.

DOUG MASON

So continue on. You were talking about the trailer specifically. What are some of the aspects of a trailer that one should look at?

MIKE YAGLEY

What's Michelin contribute to all this?

CALVIN BRADLEY

So the Energy Guard system is a full solution for the trailer, and we sell all the components you need in order to meeting the greenhouse gas regulations. So a big element to the greenhouse gas regulations on the trailer side is the aerodynamic packages that you can have.



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CALVIN BRADLEY

The skirt is the first part. Every skirt is going to help shield the bogie tires from having air hitting them hard.

MIKE YAGLEY

When you say, "Bogie tires," what does that mean?

CALVIN BRADLEY

So the tandem tires, the tires on the trailer, the tire and assembly. Almost every skirt's going to do that about the same. It also will affect how the air travels around the tires, and affect the back of the trailer.

CALVIN BRADLEY

We also have some aerodynamic mudflaps, and mudflaps are sometimes forgotten for aerodynamics because aerodynamic and mudflaps are typically going to be more expensive than a very inexpensive mudflap. But they pay for themselves very quickly. They're definitely worth the cost, because they allow air to pass through.

MIKE YAGLEY

Are they cross-hatched or something? Is that the-

CALVIN BRADLEY

Yes, so most of them in the industry will have slots so the air can pass through easily. Ours are a little bit different, in they have slots that have variable spacing and they're angled down, so not only do they reduce the energy of spray going through them, but they also knock everything down toward the ground. So it reduces the spray and you prevent having water shooting off the side of the mudflap, which can affect the vehicles around the truck and trailer.

DOUG MASON

Never fun for anybody going by a truck.

CALVIN BRADLEY

It is not fun.

MIKE YAGLEY

No, no. I always have to put my windshield wipers on high when I go out behind a truck. Well, thank you. That was very helpful. Anything else with aerodynamics?

CALVIN BRADLEY

Yeah. There's three more parts. We have some airfoils, so half airfoils on the top and sides of the trailer. And that helps wrap the flow around the back, and mainly, it's there for stabilizing that air at the back of the trailer. So it's doing similar function to what a boat tail does, but it does it with a lot less intrusion. So there's no moving parts, there's nothing to deploy, so the drivers can forget that it's even there.

CALVIN BRADLEY

And then, the last one, we have a unique innovation, which is a nontraditional spoiler. It's a little V-shape on the back doors, and that helps trip the airflow that's flowing down the back of the trailer and keep it from interfering with the air flow coming underneath. A lot of complexity, but all of those pieces together become greater than the individual sums.

MIKE YAGLEY

So let me make sure I understand here. Number one is what your system is doing. Sounds like you're really focusing, first and foremost, on that air that gets trapped behind the trailer, and then you're also looking at the air that is traveling underneath the trailer. Those are the two big areas that you're addressing with this aerodynamic system that you've got out there. And mostly, it's about maintaining that laminar flow where it needs to be, and keeping the dead air where it's trapped in place.

CALVIN BRADLEY

Exactly, yes.

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MIKE YAGLEY

Okay. It's very similar to what was found a few years ago on pickup trucks. They said, "Everybody was taking the tailgate off and putting the-

DOUG MASON

[crosstalk 00:03:59].

CALVIN BRADLEY

Putting the nets on them.

MIKE YAGLEY

... putting the net on there to let the air go through." And that actually reduced aerodynamics because what was happening is, once you put the, well, solid door, then you get this dead air and it's naturally aerodynamic now the air is dead. And it's almost like a perfect teardrop that's created, and it's perfectly aerodynamic by the air. The air is actually helping.

MIKE YAGLEY

And it looks like you guys are sort of doing the same thing. You're getting the air to work for you rather than work against you.

CALVIN BRADLEY

That's an excellent analogy. The trucks were designed to work with the tailgate up, and dropping them and removing them defeated the actual original intent.

MIKE YAGLEY

Right, right. Very helpful. Great, thank you.

DOUG MASON

So I guess as a general point though, just aerodynamics as a whole is something that Fleet should be looking into.

DOUG MASON

There is a lot of advantages to it from, well, greenhouse gas, going forward from that standpoint. But the practical aspect is fuel efficiency, and so it's going to be an evaluation on what that fuel efficiency and the cost of putting this all in place is. But it's something that Fleet should be looking at.

CALVIN BRADLEY

Yes, so for the aerodynamics, the Energy Guard system, which again, has no moving parts, is saving about 10 gallons per thousand miles, so it's a very large contribution to the bottom line.

DOUG MASON

And that's another thing that we were discussing just before we got on the air here, is the fact that a lot of people just add the fuel mileage. But really, what it comes down to is, in trucking, you're moving something. How much does it cost per gallon of movement of the parts that you're trying to move, as opposed to the fuel mileage of the truck overall?

MIKE YAGLEY

Well, and that gets into wide-base, right? The big thing that you want to talk about there is, you want to be talking about wide-base wheels. When you start getting into the wide-base, you're dropping the load. And once you drop the load, now you're increasing the carrying capacity of the vehicle. But that additional carrying capacity actually gives you double benefit.

KARL REMEC

That's right. Yeah, Mike, you hit it on the head. The new generation wide-base singles, they've been on the market now, approaching 20 years, but the fundamental value proposition for Fleet customers is the same. And like you said, it's reduction of weight, reduction of load, so you can carry more load.

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KARL REMEC

So we like to say, "Hey, you're reducing your weight because you're going from two tires to one tire, you're going from two wheels to one wheel." That additional weight savings, which can be about 800 total pounds for a Fleet, allows them, when they're not maxed out in terms of cubage, right, to haul more. And we've seen a lot of Fleet customers go that way.

KARL REMEC

The other reason people have gone to it, this has been true since the beginning, going to new generation wide-base singles, is the fuel savings, right? You can further your fuel savings even more with a wide-base tire on your driving trailer axles than you can with duals. Bill, am I missing anything there?

BILL WALMSLEY

No, I think the two go hand-in-hand too. So some of the Fleets, as Karl mentioned, are looking for weight savings, and some focus more on the fuel. But for every thousand pounds of weight that you save, you're saving up to 1% more in fuel as it is. So the weight savings kind of doubles up on the fuel, so you get a double benefit there. I think you hit on that right at the beginning there.

MIKE YAGLEY

So one of the things that I'm curious about, I've heard that wide-base wheels reduce rolling resistance. This is something that I've heard ever since wide-base wheels... shortly after wide-base wheels came out, right? That, hey, you get this benefit of rolling resistance.

MIKE YAGLEY

Maybe you could walk us through how that is. What is exactly going on there? Why does a wide-base wheel reduce rolling resistance versus two duals, for example?

BILL WALMSLEY

The biggest advantages there is, you have four sidewalls versus two, which minimizes the amount of deflections that you're getting when you have two sidewalls. So there's a huge inherent advantage by replacing two tires on each wheel end with one, so that's a big part of it.

MIKE YAGLEY

Does it have a same tire footprint then, as the [crosstalk 00:07:50]-

BILL WALMSLEY

It depends on which tires you're comparing, but the footprint is similar. It's not the exact same footprint. It'll depend on the tread designs.

MIKE YAGLEY

Okay, and that's where I was getting a little bit confused because I was always thinking of the tread compression as being the biggest energy loss. And if the footprint is the same, then I'm thinking just, okay, well, that's about the same tread compression that was with duals, and-

BILL WALMSLEY

Yeah, so we have some treads that are almost identical, between a wide-base and a dual. It's more than just the tread itself, it's the whole casing, it's the whole tire as a component.

MIKE YAGLEY

So I learned something, so okay, great. Thank you. One of the big things that's out there in the industry, when you talk about wide-base, people talk about wear. You hear about a lot of Fleets moving away from wide-base because of the wear problem, especially in trailer applications. Do you guys want to talk about that a little bit?

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BILL WALMSLEY

Yeah, so one of the things we have here at the show, we have a new trailer tire. Trailers has a free rolling axle position. Whether it's dual or wide-base, they're sensitive or susceptible to some degree, to irregular wear. So our job as a tire company is to fight that, to give you the same wear, whether you have dual or wide-base, that a Fleet would expect.

BILL WALMSLEY

So we have a new tire here at the show, X One Line Energy T Two. The entire focus of that tire is to reduce its sensitivity to irregular wear, so I think we're kind of at the point where, whether it's dual or wide-base, they're both doing it [crosstalk 00:09:19].

Mike Yagley

Now, that tripped off your tongue pretty quickly, so you may want to say that a little more slowly, so people-

BILL WALMSLEY

I'm sorry about that.

MIKE YAGLEY

It's okay. So what was that again?

BILL WALMSLEY

The tire?

MIKE YAGLEY

The tire.

BILL WALMSLEY

The tire here is the X One Line Energy T Two, so it's our second-generation Line Energy T trailer tire.

MIKE YAGLEY

It's obvious you've said that a few times, as it just sort of pops off with no problem.

DOUG MASON

And just a-

KARL REMEC

Mike, one thing I'd add to that, and Doug, is, realize... Bill touched on it, but the trailer axle's a free rolling wheel position, right? It's often running variable loads, right? Fully loaded, sometimes empty, sometimes something in between.

KARL REMEC

There's two to three times as many trailers in the market than tractors, so by nature, they're sitting in different yards across the country, across the continent. Because of that, they're often the forgotten wheel position in terms of maintenance, right? So just by their nature alone, trailer tires are more susceptible to irregular wear. Whether it's dual or wide-base, you'll have that issue, and that's what Fleets tell us, right?

KARL REMEC

Our next generation X One Line Energy T Two takes that into consideration. So our engineering group, our designers, put into place into that tire, that specific goal, help it wear normally, because that's what the Fleet customers are saying, right?

KARL REMEC

And a trailer tire, it's not always attached to the tractor, right? So they don't actually know how many miles they're getting, but they know when they see irregular wear, that's the real pain point.

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MIKE YAGLEY

Yeah, they watch those dollars. Yeah.

KARL REMEC

And that's what we try to focus on, going forward.

DOUG MASON

Just to focus on that a little bit is, what are some of the things that create that irregular wear? You say you're designing a tire to eliminate it, but there's got to be some sources for it that are occurring. And is there something that the Fleets can be doing as well to address that from that side?

KARL REMEC

Yeah, absolutely. That's a great question, Doug.

BILL WALMSLEY

And I think Karl hit on one of the big things there, is this varying degrees of load, where you're not adjusting the pressure to carry the load. If you have a Fleet that goes out and back and they're hauling fully loaded there, that's one pressure required for the tire. If they come back empty, in order to get the optimum tire wear, you should lower the pressures to match the load that you're carrying. So that'll start to induce the sensitivity to irregular wear. Generally, you see it start on one shoulder and another, and it can spread across the tire.

MIKE YAGLEY

Maybe this is going to get a little too technical, and if it does, we can cut it out. It seemed to me that, when I think of a tire being overinflated... Let's say you have a full load on the way there, you have the inflation pressure for that full loaded application, and then you run an empty on the way back. In my simple mind, I think of the tire as being a balloon, where you're going to get wear in the middle, but what we actually see is shoulder wear.

BILL WALMSLEY

Yeah, you'll see it because those shoulders aren't coming into consistent contact with the road, so they're intermittently hitting the road, so to speak. So you're not getting an even footprint of the tread on the road, so those shoulders are kind of along for the ride, so to speak. That's where you see that cupping start, because it's intermittently contacting the road.

MIKE YAGLEY

What's happening is, you do have a little bit of a balloon effect, is what I'm hearing.

BILL WALMSLEY

It's more about the pressures in the center of the tread than in the shoulders. And in the shoulders, the pressure is intermittent, it's up and down. [Crosstalk 00:12:37].

MIKE YAGLEY

Okay, yeah. As the tire comes in, you're getting a little bit of a scrubbing-

BILL WALMSLEY

Right. In and out of the contact patch.

MIKE YAGLEY

... in and out of the contact patch. When you're at the bottom of that-

BILL WALMSLEY

[crosstalk 00:12:44] consistent.

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MIKE YAGLEY

... contact patch... Right. When you're at the bottom of that contact patch, you get a little bit, it's catching, and then it has to slowly let go as it... because you've got, basically, almost two circumferences, two diameters, the diameter in the middle of the tire, and you have a different diameter on the outside edge or the inside edge. And that's what causes that problem.

BILL WALMSLEY

Right.

MIKE YAGLEY

Okay, I understand now. Thank you.

BILL WALMSLEY

Sure.

MIKE YAGLEY

All right. Well, I think that does it. Thank you guys. I really appreciate you guys joining us. For our listeners, hope you enjoyed the discussion. We'll see you next time.

KARL REMEC

Thank you very much, Mike.

BILL WALMSLEY

Thank you guys. [crosstalk 00:13:14].

KARL REMEC

Thanks, Doug.

DOUG MASON

Thanks a lot for coming, guys.

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