Behind the Wheels Podcast Transcription

Bonus Episode 5: Part 1
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 a 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 a 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.

KARL REMEC
Well, thanks a lot for the invitation.

MIKE YAGLEY
So I think everybody knows about Michelin, but let's go through it anyway. Tell us a little bit of Michelin and about yourselves.

KARL REMEC
Sure. Bill, I'll go ahead and start if that's cool with you.

BILL WALMSLEY
Okay.

KARL REMEC
So my name is Karl Remec. I'm a Business Model Leader for Michelin North America. I've been with Michelin for 27 years. We're often at TMC, really happy to be here and helping the education of the trucking industry, particularly as it relates to tires and solutions for our fleet customers. Happy to be here with Alcoa today. We're going to talk a little bit about the importance of low-rolling resistance and tires to help meet greenhouse gas to regulations as well as some aero-technology that we have for trailers that helps with greenhouse gas too, as well. Bill?

BILL WALMSLEY
Yeah. Thanks Karl. Bill Walmsley. I've been with Michelin for about 10 years and the trucking industry for about 20 years, and my role at Michelin is a Product Manager for the line haul tires.

CALVIN BRADLEY
And I'm Calvin Bradley. I've designed the Michelin energy guard system, which is our new aerodynamic for trailers. I've been working with Michelin again about 10 years, the whole time with an emphasis on fuel economy.

DOUG MASON
Okay. Yeah. Thank you guys very much again for being here at the show. But I guess what we would start out with, Karl, is the greenhouse gas. If you give us a little bit about that legislation and kind of a bit of the impact, and we'll roll into some of the reasons the fleets need to be aware of this.

KARL REMEC
Right.

DOUG MASON
Some of the implications and how it relates back to the tires. So, Bill and I will tag-team this, but you know, generally speaking greenhouse gas two regulations, they drive a lot of the decision making that OEMs have to make when they're developing their tractors and bringing them to their customers in the market. And then there's some implications for the fleet customers that take delivery of those vehicles. So, Bill and I will take you through a little bit of the implications of, and the advantages of low rolling resistance on tires to help meet those regulations. Bill, can you add some to that?

MIKE YAGLEY
Just real quick, I'd like to just interject one thing here, is that there's a real tendency to think that the greenhouse gas thing is just a bunch of tree huggers and there's no real value to the industry. But what we found is, at least what I'm seeing in the real world, is that greenhouse gases it equates to fuel savings a lot of the time. When you reduce fuel, you're reducing the greenhouse gases. So yeah, there's a little bit of the tree hugger thing going on here, but the fact is is that there's more to it than just that.

DOUG MASON
Yeah, absolutely. I mean, the direct benefit is to the environment. But to the fleet, if you reduce the amount of carbon output coming out of the truck, you're going to realize fuel savings directly.

MIKE YAGLEY
What's the tire have to do with greenhouse gases?

DOUG MASON
There's a lot of inputs in that the OEMs have to take into account to look at their carbon output for this greenhouse gas model that the EPA has put together. What it means to the tires is low rolling resistance tires will make a direct impact into reducing carbon emissions. So, one of the easiest things an OEM can do to improve their greenhouse gas position is to put low rolling resistance tires on the truck.

MIKE YAGLEY
When you say low rolling resistance, what does that exactly mean?

DOUG MASON
Generally people in the industry relate that to fuel-saving tires or fuel-efficient tires, right? The tires that roll easier. The other dynamic there that is in conflict with that is generally when you lower the rolling resistance, people equate that to losing traction or wear in the tires. Now they are in direct conflict, but the real win is when you can break the paradigm and improve the rolling resistance, meaning lower it, get the fuel savings and either maintain or improve your wear, and also have tread designs that provide the traction that fleet drivers need.

MIKE YAGLEY
So when I think of rolling resistance and attire, I'm thinking about the energy that it takes to compress that tread primarily.

DOUG MASON
That's right.

MIKE YAGLEY
It's the compression of the tread over and over and over. And all that energy that it takes to compress that tread is what's burning … that's burning a hell of a lot of energy.

DOUG MASON
Right.

MIKE YAGLEY
And so what low-rolling resistance does is that you're actually reducing that tread compression, right?

DOUG MASON
That's right.

MIKE YAGLEY
Okay.

DOUG MASON
So like a perfect tire and rolling resistance terms might be like a steel wheel rolling down a train track for instance.

MIKE YAGLEY
Right? Not a whole lot of market for steel wheels.

DOUG MASON
Exactly.

MIKE YAGLEY
Completely 100% steel product outright.

DOUG MASON
Right. Yeah, the ride would be rough and you wouldn't have any traction.

MIKE YAGLEY
Right.

DOUG MASON
And Mike, if I could add an explanation that I often use when I'm talking to customers is, the natural correlation that people have in their minds is if I'm reducing rolling resistance, I'm somehow sacrificing traction, right? Because I'm making a more slippery tire.

MIKE YAGLEY
Right.

DOUG MASON
And I like what you said about energy, because that's where you have to focus. Every revolution of the tire requires energy. So you can make that tire more energy efficient, not only by reducing the coefficient of friction between the tread surface and the ground it's rolling on, but imagine the spring rate of a tire as it rolls, it's flexing, right?

MIKE YAGLEY
Right.

DOUG MASON
So if you can manage an efficiency gain in changing the spring rate that deflection of the tire with every revolution, you can actually reduce rolling resistance and you haven't touched any type of friction resistance between the tire and the ground. So when we work with our technical team, they look at all aspects of managing or reducing the amount of energy required to complete a tire rotation.

MIKE YAGLEY
Okay.

DOUG MASON
And that's how you can actually get better fuel efficiency without making the compromises on traction and tread wear. They are in conflict, like Bill said, but they're not in complete conflict. You don't have to rob Peter to pay Paul.

MIKE YAGLEY
Right. Right.

KARL REMEC
Now are these material changes that are going on to do that? Obviously to change the spring rate you're looking at-

DOUG MASON
Right. You're looking at architecture, you're looking at materials, rubber compounding, and you're also looking at tread designs.

KARL REMEC
Okay.

DOUG MASON
So they work with those three things primarily. Bill might have some more details, but it's primarily in those three elements that the designers can reduce rolling resistance, make a more energy-efficient tire, which helps reduce carbon emissions and helps the OEMs.

BILL WALMSLEY
Yeah. Another area that doesn't have as much of an impact on tread wear or on traction would be to take rolling resistance out of the casing itself. So, we've been making some advancements there that it won't sacrifice those other performances that fleets expect and drivers need, like tracts and casing.

DOUG MASON
So when you're saying you're taking the ... go into that a little more.

BILL WALMSLEY
So that could be either in your belt packages, you could reduce mass in the belt packages. You can use more fuel-efficient rubber itself in the sidewall, so you're basically reducing mass in the sidewall or in the belts. Generally you can reduce a certain percentage growing resistance varies by tire. But you're not impacting your tread wear performance by doing those things.

DOUG MASON
Okay. Yeah. And that's a little different than … and I really appreciate you going into that because I guess I was always under the impression that when you're burning energy in a tire due to rolling resistance, that flex was minimal-

BILL WALMSLEY
Yeah, you get deflections.

DOUG MASON
… but the contribution of the flex was minimal and the majority of the energy burn was actually in that tread compression. But what I'm hearing now is that-

BILL WALMSLEY
It's the whole tire itself.

DOUG MASON
… it's the whole thing. Okay.

KARL REMEC
It brings up a question for me. I was just sitting in some retreading meetings earlier this week. And the question that comes to mind is when, for a fleet obviously they have that casing and they're going to want to reuse it a number of times, what is the impact on rolling resistance as you start getting into a retreading process? Is it once you used it initially, it really doesn't matter after that, or do you still same that gain advantage because of the casing?

MIKE YAGLEY
The casing itself, actually the tire … as it's tire wears and it gets broken in, it gets more fuel efficient. One of the advantages of reducing the capability to tires rolling resistance in the casing itself is when you go to retread it, that fuel efficient casing, if you put a fuel-efficient retread on it, you're still taking advantage of that in it's second or third life.

KARL REMEC
Yeah, that's good. It's something I've wondered about that.

DOUG MASON
I've never heard that before. That's really interesting.

BILL WALMSLEY
Yeah, yeah. And you know, Michelin uses the same technology in our new tires, right? Rubber compounding, et cetera, as we use in our retreading, right? So you can buy a tread that's fuel efficient and across the industry, you can do that as well.

DOUG MASON
We've talked a little bit about the tire contribution for greenhouse gasses. Is there any other component to this that we need to be thinking about?

MIKE YAGLEY
Yeah. So tires is a contributor. I also like to use this explanation when I'm talking to fleet customers, imagine your tractor trailer, it's rolling down the road. It has forces working against it as it's rolling down the road, obviously. So you've got friction between 18 tires, generally speaking, and the road; that's one contributor. You've got drive train friction. So all the friction between the moving parts, that's powering that vehicle down the road. But the biggest contributor, by far over 50%, is the aero-friction that it has to overcome as it's rolling down the road. So Michelin has gotten into that part of helping our fleet customers save money, and Calvin can talk to that as he has been with us from step one to where we are now in offering aero solutions for trailers. Okay, Calvin.

CALVIN BRADLEY
Aerodynamics is actually a lot like designing tires in that it is, again, another whole system where you can save fuel throughout the whole length of the tractor trailer system. The tractor guys have been doing this for a long time and modern tractors are amazingly aerodynamic efficient.

DOUG MASON
So when I think of aerodynamics in a tractor trailer application, I guess I think of things as, correct me if I'm wrong, but mostly it's about reducing drag. It's about getting the air and having it slip over the surfaces and not getting caught behind things and pulling it back that way is my simple understanding.

CALVIN BRADLEY
That's right. The goal is to not work by pushing the air around. So the smallest amount you can move the air as it goes around the trailer, the better.

DOUG MASON
So you want to get to that laminar flow. Engineering school you have laminar flow, you have turbulent flow, and turbulence is actually causing all sorts of problems for everybody.

CALVIN BRADLEY
Yep. It just generates heat in the air and that does no good for anything.

DOUG MASON
And anytime you see heat, you're talking about energy.

CALVIN BRADLEY
Yep. That's right.

DOUG MASON
Okay.

CALVIN BRADLEY
And for sure, at the back at the trailer, there's always going to be air traveling with the trailer. So one of the goals for aerodynamics on the trailer side is if you have air moving with the back of the trailer, you want it to stay there. You don't want to have that slip away and be accelerated back. And then another part of air go in there; That's just extra work. You're just churning at the back. So the more you can stabilize the air that's moving with the trailer, the better.

DOUG MASON
That's why those boat tails work.

CALVIN BRADLEY
Yeah. So boat tails … and we have a system that does the same thing without actually extending off the back.

DOUG MASON
Okay.

CALVIN BRADLEY
So you can do it with intelligent design over the whole length of the trailer. Skirts are a part of that, but we found that what happens in one part of the system is going to impact what happens at the back. So a boat tail and the skirt, they may work well independently, but when you put them together, they may not work as you would expect. It's not an additive thing because it's working together as a system.

DOUG MASON
Right?

KARL REMEC
You got it get it as a complete package, the whole truck.

CALVIN BRADLEY
The complete package is how can you get it all. Exactly. Exactly.

MIKE YAGLEY
You know, I think it's probably a good time to take a break.

CALVIN BRADLEY
Okay.

MIKE YAGLEY
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. Thanks Doug.

DOUG MASON
Thanks a lot for coming, guys.

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