Behind the Wheels Podcast Transcription

BONUS Episode 8 with Seth Clevenger from Transport Topics
The Future of Autonomous Trucks Is Now

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
Welcome to another episode of Behind the Wheels. I'm Mike Yagley-

DOUG MASON
And I'm Doug Mason.

MIKE YAGLEY
Today we have as a guest, Seth Clevenger, he's the managing editor of features at Transport Topics and a producer of the RoadSigns Podcast.

MIKE YAGLEY
Seth, we're going to be talking a little bit about electric powered trucks and automated or autonomous trucks, I should say. And some of the impacts, but before we get started, why don't you introduce yourself to our listeners?

SETH CLEVENGER
Sure. Well, it's a great to be on the podcast. I appreciate the invite and looking forward to the conversation. So, I've been at Transport Topics now for about nine years and all that time has been spent covering the trucking industry. I always had a particular interest in technology and emerging technologies and especially. So, it's been a really exciting time to be a part of this industry because we see electrification and automation on the horizon. A lot of that's developed just in the past several years.

SETH CLEVENGER
Transport Topics, we're the largest newspaper covering the trucking industry, but you can also find us online at ttnews.com. And for the past two plus years, I've, as you mentioned, also been the host of our RoadSigns Podcast. And of course, you can find that through all the usual channels, Spotify, Apple podcasts, and you can also find a landing page at ttnews.com. I'll just mention that I have yet to have a boring day of work covering the transportation industry. There's so much happening and a lot of excitement, especially on the technology side.

MIKE YAGLEY
I've been in the transportation business for over 30 years and heavy trucks for about 20 of that almost. I'll tell you, like you said, things are always, always changing. Well, why don't we just get a lay of the land where we are right now, because I don't know that everybody is aware of everything that's happening right now in those spaces, when you're talking about electric powered vehicles and autonomous vehicles. I'm sure your listeners might be familiar with everything that's going on, but I don't know that ours are. Why don't you bring us up to speed with what's going on today?

SETH CLEVENGER
Absolutely. It would just take it from the top. I'd say over the last handful of years, there's just been an explosion of conversation and development and investment in electrification. If you go back five years ago, it just wasn't there. So this is something that's still pretty new and it is something that went from seeming very futuristic to now being right in front of us. And these vehicles are really, at least the prototypes are on the road now and it's not just a few players. It's really everyone on the manufacturing side and in many of the tier one suppliers are starting electric truck divisions and investing in this technology. We've seen all the OEMs are investing in electric trucks in one shape or form, all of them across the board.

SETH CLEVENGER
And you also have industry newcomers like Tesla, Nikola that are developing electric trucks and looking to jump into this emerging market. It's still early. We're still in the, I'd say the fleet trial and the testing and learning phase. You have some large fleet operations that have had these trucks in their operations and in small numbers for some time now. Lots of trials and tests, and it's really ramping up toward commercialization and production that all the OEMs will tell you they see coming. So it is real. It's coming in the years ahead.

SETH CLEVENGER
Obviously, there's going to be a lot of question marks and a lot of challenges with vehicle range and vehicle weight of course, is a huge issue with payload capacity. At least in class eight and a charging infrastructure is another huge question mark, but we're in the earliest stages of this. I think what we're seeing before our very eyes is the emergence of a new segment of the commercial vehicle market happening right now. Now is the beginning. We even see some early regulations that are going to start pushing the industry, at least parts of the industry in that direction.

DOUG MASON
Just on that note, I've seen and maybe you can comment on this as well. The regulatory side and the, I guess the governmental side, what Carb is doing in California, how they're pushing so strong there. And then I just saw recently that there were 15 different states, including the district of Columbia that signed a memorandum where they wanted to target zero emission, medium and heavy-duty vehicles. And the percentage is really quite large, 30% of sales by 2030. Do you think that's a reasonable timeframe?

SETH CLEVENGER
It feels aggressive, and there's definitely some mixed feelings about some of the early regulatory efforts within our industry. I guess maybe that's even a diplomatic way of saying it, but certainly we'll see a push in certain areas. California in particular, I think is positioned to be the incubation zone for electrification. And some of it's well-suited, some of the applications are well suited for electrification like port drayage, for example. In a relatively short hauls, consistent point to point types of transportation and that's going to be important. One because vehicle range, like I said, is going to be a key issue for electric trucks.

SETH CLEVENGER
The day of electric trucks handling coast to coast, long haul, a regular route truck load, that will probably be the last piece of the industry where that will make sense and we'll have a business case. But something that's short haul, local distribution, medium duty, certain vocational applications like refuse trucks are a good example, but port drayage is one where it may make sense also because in the beginning, any sort of electric truck operation is going to have to rely on its own charging infrastructure.

SETH CLEVENGER
This was going to be kind of back to home at night for recharging. Before we see a full-fledged charging network, either across the country or even on a regional basis.

MIKE YAGLEY
One of the things that when you talk about distances, you talk about even the weight of batteries, Alcoa Wheels of course makes aluminum wheels. And so we're always thinking in terms of light-weighting. And one of the things that I think about here is that any light weighting technologies are going to be enabling technologies for electrification. The weight of batteries, and also the distance on the charge. A quote from Trevor Milton, from Nikola saying that every pound is worth 50 cents per load. That's a crazy high number and maybe that's true for bulk haulers today, but as we move into electrification, I think that's going to be more common, that focus on light weighting seems like to me. And I guess I'd love to hear your thoughts on that, but that's going to be a big part of all of this.

SETH CLEVENGER
I think that's spot on. I mean, one of the key items is payload capacity and every amount of weight that you add to a truck or remove from a tractor trailer creates more capacity and that just goes to the bottom line because unfortunately right now the batteries, the battery technology has come a long way, but it's still very expensive and it's still very heavy. They're heavy batteries and they really do eat into vehicle weight, so any opportunity to offset that does go a long way toward making the business case, make a little bit more sense for a class eight type of application. So that's certainly something to watch. I know that that's been a key focal point for vehicle design as the OEMs and suppliers look at ways to make this work.

MIKE YAGLEY
So now we're talking about long-term. Doug brought up what's going to happen with Carb. Where do you see the industry growing organically without regulation? Can you differentiate that? Can you see-

SETH CLEVENGER
Sure. Yeah, so, I mean, I think that business cases will make the most sense in the short haul. I mean, there's, again, just tied to the need for infrastructure in the beginning. Maybe this is tied into a little bit to regulations, but there's also a benefit. I can see cities start to promote electric vehicles. We've seen that in Europe where city centers have pushed for zero emissions or lower emissions as you get in toward a city center, more highly populated zones. I'm wondering if we might see that in North America in the future. I mean, right now it's more regional based. The business case of course, you no longer need to purchase diesel. I mean, you eliminate that cost. And one piece of it, though, of course, is electricity is not free. So managing your charging cycles.

SETH CLEVENGER
And when you actually charge the vehicles will be really important to getting that to an ROI to a return on investment. And that means avoiding peak demand hours for charging. So from a fleet management standpoint, there's a lot there. I mean, there's a lot that needs to be managed to make it profitable. I think that with time, with volumes, and also, I think there'll be some benefits as well with the electric passenger car market continues to expand some of those savings. And they also appear in commercial trucking because of just the scale of operations. And it's going to take some time and it'll make the most sense in those applications that are shorter distance and especially, I would say that lighter freight. So if it's freight, that's a little bit where you maybe a cube out before you weigh out would make the most sense in the short term.

MIKE YAGLEY
Right and that's actually most of the freight out there is cubing out before they weigh out. So there's a lot of opportunity there. We talked a little bit about light weighting being the soft spot in my heart, but light weighting as an enabling technology, what other critical technologies do you see out there that really are going to make the difference to making electric vehicles our future?

SETH CLEVENGER
Well, I do think that that fleet management side of it can't be overstated. So some of that may be as simple as telematics and understanding exactly what your charge is like, and also understanding what the demand is like. Partnering in some cases with local utilities. A fleet working with utility company to define the way to keep electricity costs down. If that's an element. And we also see a lot of tier-one suppliers that are looking to supply some of the components. Cummins and interestingly in that, of course, you immediately associate with diesel engines that they have an electrification business. Companies like Meritor just go on down the line of all the tier ones. And many of them are investing in various components that will be needed.

SETH CLEVENGER
And the core configuration for especially class A is electric axles, E axles. And that's actually moving to electric motors at the wheel ends. So it actually is a very different kind of vehicle, right? I mean, we've redesigned what a truck is here. You've completely removed the internal combustion engine altogether, and now you've added batteries. You've added these wheel end electric motors. You also need a bunch of cooling systems to deal with some of the heat. So another thing that fleet maintenance directors are, I think very excited to hear when they talk about electric trucks is you're not just getting rid of the diesel engine. You're also getting rid of all the after-treatment systems that cause so many headaches at times. So it's really a very different animal, a very different kind of vehicle that we're going to see all kinds of different components.

SETH CLEVENGER
Of course, we still have wheels and brakes and the chassis is still... Mostly, we're going to be at least in the near term that the chassis will be shared with diesel models over time as the vehicle's volumes go up. You can see redesigning the chassis to account for the fact that you no longer have this big diesel engine. And you can start to think about that, but in the near term, at least it's going to be buying do you want your battery electric version of this model? Or do you want your traditional diesel version of this model, is the way that I see that developing, at least from the established OEMs.

DOUG MASON
You mentioned a wheel and motors, and I know there's been some discussion going on about that back and forth, the benefits or non-benefits of that. From what you've been seeing, have you seen a lot of the development moving towards wheel and motors, you think about the additional un-sprung mass that would be there? Is there a way to offset that?

SETH CLEVENGER
There are different approaches. There are more traditional electric drive lines that are maybe a little bit more recognizable, more in the medium duty side, but one thing that I've heard from the manufacturers is that they're generally aiming for a diesel like experience. So, I mean, it's not like... Well typically with an electric vehicle, passenger car or truck, you can expect faster acceleration. Just because again, you have access to that. You don't need the internal combustion to weed through that process. So the electric vehicle was always the first one off the starting line, right? I mean, if you see a drag race between a Tesla car and pick your high-end internal combustion sports car, for the first maybe quarter mile, maybe a little bit less than that, the Tesla is in the lead before it eventually gets smoked, but you want to control that, right?

SETH CLEVENGER
I mean, you want it to harness what you can do with an electric vehicle and make it applicable to hauling freight. And it's the challenge that the manufacturers have is to take this power source and make it familiar. If you're used to driving a diesel truck, you get in this vehicle and it's recognizable. It's not completely a different- feels like you're in a spaceship or something like that. So those are considerations. I think that for the most part, the strategy is to make it seem familiar to drivers.

MIKE YAGLEY
It's interesting that OEMs are moving toward a diesel like experience. I mean, I remember, and it wasn't that long ago, two, three years ago, every electric vehicle looked like it was out of Star Wars-

SETH CLEVENGER
To interject a little bit. Yeah. I mean the first one out of the gate, the first manufacturer to really show, I would say that really sparked the conversation was Nikola. Again, that's a little bit more like the bullet train design. The Tesla semi as much the same. It's very aggressively aerodynamic and does look like, all right, it went to the point where Tesla even has gone to a single seat inside. And it's actually center position. So it's kind of like a formula one race car where you're sitting right in the center of the cab. And that was a really unique design choice. It's one of those things where I can see a lot of traditional truck drivers, just get stepping in and saying, "What is this?"

SETH CLEVENGER
I can also see a lot of people in their twenties who are maybe considering a job in trucking, seeing that as like, "Wow, this is so exciting. I can't wait to drive this. I'll be a truck driver if I can get behind the wheel of this." I mean that's the balance here. I mean, the startups, the newcomers are kind of redesigning the truck more wholesale. And the more traditional OEMs that we, the name plates that we see out there today and on diesel models are generally adapting those chassis in those models to a battery electric version.

DOUG MASON
Another question to go back to we are all about wheel here obviously is what we're doing, but the whole wheel end, regenerative braking, obviously there's significant benefits to that. And obviously depends on the size of the vehicle and how the design's all put together. What do you see that in terms of how it will be implemented and the true benefits it may give relative to range improvements?

SETH CLEVENGER
Yeah, certainly part of the conversation, especially because range is so important in trucking. You'll get that more in the stop and go urban distribution. You're thinking like beverage trucks and vehicles that are more about local distribution. You can get more of those benefits. That I think will absolutely be a huge part of the consideration. For longer distances more over the road. I think that the range issue will be addressed in other ways. For the most part. One of the popular approaches from the developers so far has been a hydrogen fuel cells. So that's actually one of the paths that Nikola's pursuing, some of the more traditional OEMs are also investing in fuel cell or partnering on fuel cell.

SETH CLEVENGER
Kenworth has a partnership with Toyota using the same fuel cell technology they use on the passenger car side. Again, limited volumes, but there's definitely a lot of exploration as to how a hydrogen fuel cell in conjunction with an electric powertrain can extend the range. Of course, then you also need the hydrogen fueling infrastructure to support that as well. So that is a lot of new technology to put together and make it all work. But that's probably one of the leading options to try to get zero emissions in long haul trucking.

MIKE YAGLEY
One of the things that when you start getting into long haul trucking, especially here in the U.S. that flexibility of design is absolutely critical. I can foresee that that is also going to be a factor in electric vehicles, just like it is with the diesel, the diesel solution we have out there today. Now looking at the market, I would say that the medium duty segment, it seems to be a little bit better. I'm going to say it seems like it might have a little better for that last mile, like you were saying earlier. There's a lot of UPS trucks out there. There's a lot of that going on. When you speak with the OEMs, it seems like they're focusing on one package or a limited number of packages just to get this thing going. And then what is that, that you see them leaning toward?

SETH CLEVENGER
Yeah, I do agree with you that shorter distances, more medium duty, final mile makes a lot of sense, just given the advantages and constraints of the technology. I do see those markets emerging most rapidly. You look at companies like a UPS. Pretty much any sort of alternative fuel you can imagine, UPS has been and will test it, even natural gas, propane auto gas, CNG LNG, electric, fuel cell. They're willing to try just about anything, but it does seem like there's the best opportunity in the near term is more of the return of base the home base kind of operations. And it'll wrap up more slowly for long haul. I think when you do start to see electric vehicles in regional and long haul, they're going to be in operations that are more dedicated to certain lanes. Point to point because you know you have the infrastructure.

SETH CLEVENGER
Maybe it's certain shippers that really want to move toward zero emissions as a corporate sustainability plan or a way to promote the company or meet their own targets. You would see a fleet partner with a shipper that has charging available on the other end. But yeah, the days of a regular route, owner-operator, who's going to take a load and go, who knows where the next couple of weeks. That flexibility of course is going to remain with diesel for a very long time, because the infrastructure is already built out for that. It's just going to take a long time for charging for… And not just charging, but charging for heavy and medium duty trucks to be available nationwide.

SETH CLEVENGER
So I definitely think diesel is going to have a huge part of our industry for a very, very long time. We were just seeing this this new category emerge and we'll see it catch on most quickly in those categories of applications that are best suited to it. And yeah, I think that it starts with local and then you can move into and make that a port drayage kind of operation and into regional, especially a point to point operation.

MIKE YAGLEY
Right. Well, Seth, do you have any final words for our listeners before we sign off?

SETH CLEVENGER
Oh, I'll just mention that there's also of course a lot happening in the world of automation and whether it's advanced driver assist systems, autonomous vehicles. Of course, that all eventually goes back to the wheel as well. The broadest application is a driver assist technology that builds on the collision mitigation systems that are already on the market today. And we see some startups and OEMs also investing in higher levels of automation, but in a one really interesting piece of that conversation, and I think tends to get overlooked is that breaking is really important to that. Whether it's collision mitigation, 8S truck platooning and beyond, there's a push toward disc brakes, as an important enabler for higher levels of automation in particular, but really anything that's going to automatically engage the brakes. And of course, that gets pretty close to your wheelhouse.

MIKE YAGLEY
Yeah, and we've been watching that break and it's been a freight train that's been coming for many, many years. Everybody sees it now coming to the axle end and heavy truck applications, the disc brakes. And that's something I think we're anticipating that's going to hit pretty quickly now where everybody's going to be moving to disc brakes. It's just the benefits are just so substantial for braking distance and so forth.

MIKE YAGLEY
Now, the one thing you brought up there is platooning. And before we sign off, can you give a little bit more discussion on platooning? I guess that's something that's fascinating to me.

SETH CLEVENGER
Yeah. So I mean the basic idea, I mean, I think that the industry's had some conversations about this for a number of years now, but we're still mostly in the test phase and trial phase, but the idea is you're wirelessly connecting two or more trucks. This is just using vehicle to vehicle communications and you're essentially syncing up the braking systems. So you'll have automatic emergency breaking through collision mitigation on both trucks. And as soon as the lead truck hits the brakes, the follower truck immediately brakes as well. And what you get from that is aerodynamics. You can have a significantly shorter following distance, right? So it's essentially the high-minded version of grafting where you gain a lot of fuel economy benefit there if you're in the right conditions: long stretches of open highway, not stuck in traffic, you're at highway speeds. That's an intriguing opportunity to save fuel economy, but you need to manage that.

SETH CLEVENGER
You need to have the connections and eventually there's a thought that you can add not only an automated steering component to the follower truck or trucks, but maybe you can even eventually one way to get to an unmanned operation would be a road train where you have one lead truck that's piloted by a driver and you have one, maybe two trucks, essentially drone trucks that are following a wireless in a platoon. And of course, what's very key to that is you better be able to rely on your brakes if you're going to have a platoon, whether there's a driver in the vehicle or not.

SETH CLEVENGER
Now to be clear, I think that the short term opportunity that we'll see first will be a driver in both vehicles at all times, but maybe the driver in that second vehicle over time can either go off duty. And at some point someday in the future, when the technology is proven and we're comfortable with it from a regulatory standpoint, maybe it becomes a drone truck that follows the lead truck. So that's an idea that's out there. There are a couple companies that are startup companies that are working on that Peloton, Locamation are the two that I have in mind and the OEMs also have been investing in it. That's another technology piece that we've been watching closely.

MIKE YAGLEY
Okay. Doug, any final questions from you?

DOUG MASON
I just want to say thank you, Seth, for joining. Very interesting to discuss the future of electric trucks. I agree that they are going to come and they're going to be very specific at first, like you said, very specific applications and looking forward to obviously putting our wheels on those trucks as well. Thank you very much for being on the show.

SETH CLEVENGER
I appreciate the opportunity. It's great to talk to you guys.

MIKE YAGLEY
Well, that's all we have for this episode of behind the wheels. We'll see you next time.

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