

# The Future of the Automotive Society and Tires

How will the automotive society, the performance required of tires and their roles change due to the widespread adoption of electric vehicles (EVs)? We invited Mr. Tadashi Tateuchi, who has been dedicated to the development of EVs in Japan for around three decades, as a guest to speak with YOKOHAMA's chief tire technical officer.

## YOKOHAMA's Initiatives Related to the Environmental Performance of Tires

**Tateuchi** I think YOKOHAMA began pursuing environmental initiatives quite early on compared with tire manufacturers in Japan and abroad. The Japan EV Club was established in 1994. We have received support for many years up to this point for annual events such as the Japan EV Festival, a major EV racing event, since 1995, and the Japan EV Rally Hakuba in Hakuba village in Nagano Prefecture since 2014.



20th Japan EV Festival (2014)  
(Photo courtesy of Japan Electric Vehicle Club, Photographer: Yasushi Miura)



## Mr. Tadashi Tateuchi

Managing Director of Japan Electric Vehicle Club and Motor Journalist



**Seimiya** At YOKOHAMA, we have embraced the idea of pursuing environmental performance ahead of the times as a key concept and launched the DNA Project in 1996 to develop a new core tire that would lead to improved fuel efficiency and reduce CO<sub>2</sub> emissions. This was right about when the Japan Electric Vehicle Club was beginning its activities.

At the time, we had long been focused on reducing tires' roll resistance without compromising their gripping force. The year 1998 saw the release of the DNA series, Japan's first fuel-efficient tire which brought those two conflicting properties into balance.

**Tateuchi** What particularly impressed me was the 2001 Electric Charging Journey made using an EV-A class. For around half a year, we charged 621 times and managed to drive around Japan. We also received support from YOKOHAMA engineers and achieved the feat after a process of trial and error.



3rd Japan EV Really 2016 Hakuba - Norikura - Takayama (Norikura Skyline)  
(Photo courtesy of Japan Electric Vehicle Club, Photographer: Yasushi Miura)

**Seimiya** It was the DNA dB tires that were fitted on the EV-A class. YOKOHAMA has continued to promote technological development for EVs based on the themes of harmony between the joy of driving and the environment, and R&D into tires for EVs.

## Shinji Seimiya

Member of the Board and Officer, Chief Technical Officer, in charge of Corporate Quality Assurance Div., Head of Tire Development Div.



In 2013, we developed the AERO-Y EV concept car and unveiled it at Tokyo Auto Salon 2013 with NAPAC. It was produced out of a desire to employ eco-friendly technologies in every aspect while offering the joy of intuitive driving to advance the growth of EV motorization. During the development process, we concentrated on reducing air resistance and adopted tire and body designs based on aerodynamics. We also combined the latest technologies from various departments that had been cultivated through the development of aerospace components and other products.

**Tateuchi** That year we took on the challenge of driving an EV around Japan only using rapid charging. It had been said that EVs will never take off because there is not a rapid charging infrastructure in place, but over the course of around two months, we covered a distance of 8,160 km with a cruising range of 80 km. This time we once again embarked on the journey with a vehicle fitted with YOKOHAMA's eco tires.

**Seimiya** Up until around 20 years ago, the major development themes concerning the environmental performance of tires were roll resistance and lighter weight, but now all kinds of performance metrics need to be met. The features offered by a tire don't change dramatically just because it is equipped on an EV, but the level of requirements connected with fuel economy (cruising range) have gotten very high. Also, since EVs characteristically generate a lot of torque, the tires need to exhibit sufficient abrasion resistance to withstand those forces. There are also requirements for quietness so that the quiet running sound of an EV is not disturbed.

**Tateuchi** Generally speaking, the issue of global warming gained attention in Japan following COP3 (Third Conference of the Parties to the UN Framework Convention on Climate Change) held in Kyoto in 1998, but around this time YOKOHAMA was already pursuing

R&D into improved fuel economic and low CO<sub>2</sub> emissions, including the structure of the tires and the materials used in them. The insights accumulated during that time are connected with the products we have today.

**Seimiya** Now DNA has been inherited by the BluEarth brand, and we are achieving even more improved environmental performance. Recently, we have also been promoting tire development in cooperation with raw material manufacturers to increase the percentage of renewable or recycled raw materials used in our products.

### The Bond of Motorsports Bringing Us Together

**Seimiya** I think the reason we have had such a good cooperative relationship over many years is because motorsports is rooted in our efforts. I of course love to drive, and I always wanted to learn about EVs while test driving them around a circuit. I think those things are what made us a good match.

**Tateuchi** I'm happy to hear that. Only your company would say something like that. In fact, my first encounter with YOKOHAMA dates back to the 1970s. At the time I was involved with the design of racing cars, and since our team was going to enter F2, YOKOHAMA provided the racing tires. That was the beginning of my relationship with YOKOHAMA. This was around the time that ADVAN was coming on the scene with a lot of momentum.

It's no exaggeration to say that motorsports are the lifeblood of cars. It was my starting point. In addition, there is huge potential in cars that can be charged with electricity to drive. By organizing races with EVs, we can improve EV recognition and communicate their potential to even more people. Driving, competing and having fun are at the heart of motorsports, and I believe they fulfill an important role in people's lives.

**Seimiya** In the world of formula car racing, we have launched the SUPER FORMULA NEXT50 project to build a sustainable motorsports industry. Toward the goal of increasing the percentage of renewable raw materials used, YOKOHAMA is also taking on various challenges as it goes through these steps. Demonstration testing in the world of speeds exceeding 300 km/h is extremely valuable, and I think it plays a big part in moving technological development forward.

In the future, rather than testing existing things to take them to the next level, I feel that we need to discover entirely new things through motorsports. Of course, there is the problem of cost barriers to feeding those technologies back into commercial tires, but I hope the different teams can share their wisdom with each other.

**Tateuchi** I'm very glad that the people developing tires understand the essence of motorsports. I'm certain the tires YOKOHAMA has developed will save the world.



BluEarth brand



## How Autonomous Driving and Car Sharing May Change the Role of Tires

**Tateuchi** In future society, I don't think the phenomenon of vehicles driving through town will change that much, but due to autonomous driving, I think the concept of operating a vehicle may change. I also think the concept of owning a car may change due to car sharing. The terms "driving" and "family car" could become things of the past. Under such circumstances, can you imagine how tires may change?

**Seimiya** If autonomous driving and car sharing become widely adopted, I think tires for passenger vehicles will shift to being used like commercial tires in a sense. The elements of enjoyment with respect to tires would be reduced, but on the other hand, there would be needs for maintenance-free operation and sensing technologies, and that could lead to the development of tires based on data that has never been available until now. However, I still think there will continue to be users who own cars and who want to savor the joy of driving.

**Tateuchi** Those who operate vehicles in the future may be part of a privileged class. Those who drive on circuits could be a class of particularly lucky people. My personal view is that a society that loses the desire to move around will end in ruin. I think we must not lose the sense of excitement that comes from moving around.

Even so, tires will continue to be an integral component of vehicles. I believe that no matter how much cars change, shock absorbers, brakes and tires will be the three aspects that survive.

**Seimiya** In terms of commercial tires, even in the world of trucks and buses, the shift to EVs has advanced, and commercial tires will continue to change to respond to needs for improved fuel economy and environmental performance.

## Expectations of YOKOHAMA

**Seimiya** Due to the COVID-19 pandemic, YOKOHAMA has also introduced remote work practices, but when it comes to manufacturing, it is important to see, touch and experience things in the field, and I think it is important to find a balance in working styles.

**Tateuchi** There's nothing like touching a car or tires. In the Let's Drive Electric Formula Cars!, EV classes for junior high school students run by the Japan Electric Vehicle Club, we disassemble and assemble two-passenger electric formula cars and test drive them on a circuit as part of hands-on classes. There are high barriers to doing this with an engine-powered car, but motor-driven cars are comparatively simple. How does YOKOHAMA feel about creating a sports EV?



EV SIDE by SIDE, two-passenger electric formula car (2007 / Vehicle created in EV class for junior high school students)  
(Photo courtesy of Japan Electric Vehicle Club, Photographer: Yasushi Miura)

**Seimiya** You mean creating a production car rather than a concept car?

**Tateuchi** The only manufacturer I know that is this passionate about energy and environmental issues related to cars is YOKOHAMA. In the future, it will be possible to create EVs without a factory, even for companies that are not traditional auto makers. By developing a sports EV equipped with ultra-high performance eco tires, you could challenge the eco-car category at the 24 Hours of Le Mans. I think it could spark dreams and courage in many children.

**Seimiya** So you're saying we should be looking that far ahead in our work. As someone involved with cars, I feel that there is a great deal of potential in EVs, so that prospect is something I want to think positively about.

