

# **If Your Hybrid is Even More Efficient in the Future, Thank This Guy**

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ANN ARBOR, Mich. (June 20, 2014) — Eric Dede has always been interested in the future. Futuristic concepts such as space and astronautics have always consumed Eric's attention. That's how he ended up as a senior engineer for the University of Michigan's Space Physics Research laboratory. It's also why he is now a Manager of the Electronics Research Department (ERD) at Toyota Technical Center (TTC), where his main responsibilities are the development of elemental technologies for future hybrid vehicle power electronic systems. TTC, Toyota's North American R&D center, is a division of Toyota Motor Engineering & Manufacturing, North America, Inc. (TEMA).

After spending considerable time working with the University of Michigan Space Physics Research Laboratory, Eric decided in 2008 to test the waters in the evolving technology of hybrid vehicles and joined Toyota to research and develop multiphysics simulation and thermal management technology for hybrid vehicle power electronic systems. While that may seem like a mouthful, it comes down to a pretty simple concept: Make Toyota's hybrid vehicles even better.

Now five years after joining Toyota, Eric's futuristic mindset has helped him invent something that has the potential to significantly improve the efficiency of hybrid vehicles. His invention is a new Micro-channel Cold Plate in EVs and Hybrids. It provides a 70% increase in heat transfer with a 50% reduction of pumping power. What that boils down to is the potential for a 10% increase in hybrid efficiency.

This invention has the potential to have such a major impact that it was recognized for an R&D 100 Award. The R&D 100 Awards, often called the "Oscars of Invention" recognize and celebrate the top 100 technology products of the year. In a highly innovative and quickly evolving field, having one of the top 100 technology products is no small feat, but it's not the first R&D 100 award Toyota engineers and scientists have won. It is, however, the first that resulted from research that was done entirely in-house at TTC. While the patent and resulting award bear Eric's name, he's certainly not one to take all the credit. "This was a great collaborative project that established useful methods for the advanced design and optimization of electromechanical systems." Dede said.

Eric and his fellow TTC scientists and engineers were recognized for their efforts that lead to 1,355 patents in 2013 at a special "Innovation Dinner" held June 19<sup>th</sup> near the TTC Ann Arbor, Mich., campus.

TEMA president Simon Nagata commended the awardees for their efforts in furthering Toyota's recognition not only as a leading automotive company, but also as a leading technology company. "The innovations developed by our TTC engineers and scientists show that we're not just keeping pace- we're helping to set the pace."

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