

Dear Prof. Tomohiro Hase,

Please find the following my review for the IEEE Milestone 2022-19.

Best regards,

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Expert Reviewer's Report required for application of IEEE Milestone #2022-19

1. Is suggested wording of the Plaque Citation accurate?

Yes, the suggested wording of the Plaque Citation is accurate. It is a fact that Toyota's Prius introduced the first mass-produced hybrid car to the market in 1997. The electric motor-driven propulsion method has become one of the choices for fuel-efficient and low CO2 emission vehicles, and it has since sparked intense competition in technological development.

2. Is evidence presented in the proposal of sufficient substance and accuracy to support the Plaque Citation?

Yes, it is evident from the proposed wording and the accompanying literature that Toyota developed and introduced a significantly fuel-efficient system by adopting a series-parallel hybrid compared to conventional internal combustion engines.

3. Does proposed milestone represent a significant technical achievement?

Yes, the practical application of the series-parallel hybrid was a significant breakthrough for automobiles at that time. Being a full hybrid (strong hybrid), it could run on electric motor power alone and also efficiently utilize the engine at optimal rpm, while recovering and reusing energy that would otherwise be wasted during surplus or deceleration. In other words, it was designed to achieve the most efficient energy balance for the entire vehicle, inspiring

the current trend of high-efficiency cars.

Furthermore, Toyota continued to improve the hybrid system, equipping it in many vehicles and introducing them in large numbers to the market. This allowed them to establish the technology for motors, batteries, and inverters, which are now commonly found in modern electric vehicles.

4. Were there similar or competing achievements? If so, have the proposers adequately described these and their relationship to the achievement being proposed?

Yes, at that time, many other companies had parallel-type hybrids or ones with the same transmission as conventional cars. There were no other series-parallel hybrids that used a planetary gear system like Toyota's hybrid system. Toyota has continued to adopt a similar principle for its hybrid system, with improvements in the performance of each component. This suggests that the system developed at that time was superior.

Finally, the proposal of "Toyota Prius, the world's first mass-produced hybrid vehicle" is well written and clearly shows the superior technical impact to all over the world brought by Toyota Prius. As a reviewer I strongly recommend this proposal to IEEE Milestone.

February 13, 2024

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