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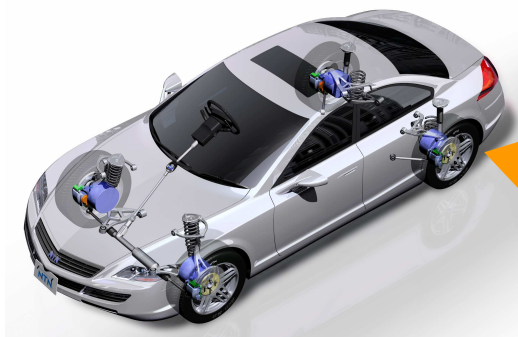
## Development of the world lightest “Intelligent in-wheel” for the next generation EV

The world lightest “intelligent in-wheel” for driving motors to be installed to electric vehicle (EV) wheels has been developed.

Number of parts was reduced by the use of air-cooling system for cooling of heat generated by driving of electric motor in stead of water-cooling system and the significant weight reduction was made possible in comparison with the conventional product. Moreover, the durability was improved by using NTN’s high precision and long life rolling bearing technologies, then prospect of the commercialization has emerged.

In-wheel motor system has advantages of improving the vehicle stability as well as transmitting driving force efficiently to drive wheel directly over the system of installing electric motors on vehicle body. Further more, since independent steering of each wheel is possible, the freedom of driving such as transverse movement or turning on sight is improved.

At present, some auto manufactures are showing their interest in our unit. By investigating the issues through the actual vehicle driving tests, we aim at the early introduction in the market.



In-wheel system car



Intelligent in-wheel developed by NTN

For further information on this new product, access the following URL:

[http://www.ntn.co.jp/english/news/news\\_files/new\\_products/news201000038.html](http://www.ntn.co.jp/english/news/news_files/new_products/news201000038.html)

### ◆ We heard from persons in charge of the development, New Product Development R&D Center.

#### Supervisor Minoru Suzuki, Automotive Module Product Development Department

In the development of in-wheel motor, it is important to secure reliability and durability as well as down sized weight reduction, and it was a difficult point in the development. Targets of durability and weight reduction for the product were achieved using a cycloid speed reduction system and making efforts on materials, heat treatment method, lubrication method, and so on.



Supervisor Suzuki (left) and Manager Makino (right) in charge of development

#### Manager Yusuke Makino, Mechatronics Research Department

The key issue of in-wheel motor was how to combine motor and speed reducer together in the most appropriate manner, and the optimum design was pursued from aspects of both magnetic engineering and strength analysis. We will strive to study further improvement of down sizing, weight reduction and high efficiency using accumulated magnetic field analysis and experimental results.