

# Interior Permanent Magnet Synchronous Motor for Electric Vehicle

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The outline of drive motor and evolution of the motor for the Nissan LEAF Electric Vehicle to be explained in this presentation.

## 1) Outline of a traction drive motor

Drive motor for EV/HEV are required small size, light-weight, low cost, high output, high efficiency and low noise, at the same time.

Interior permanent magnet synchronous motor with rare earth sintered magnet is used for EV/HEV because of excellence in a point as a small size and high efficiency.

## 2) Evolution of the motor for the Nissan LEAF Electric Vehicle

On the 2013 model year LEAF, the electric motor, inverter, reducer, and charging system were integrated into a single unit, thereby achieving a smaller and lighter powertrain capable of being applied to other vehicle models.

The structure and performance of the motor were optimized to issues caused by component integration. The technical details about integrating the motor and the inverter to be explained.

### About the Speaker:

Mar 1978 Graduated from Meiji University, Tokyo, Japan. Bachelor of electrical engineering

Apr 1978 Joined in Nissan Motor Co., Ltd.

Apr 1992 Assistant Manager of Production Facilities Engineering Department

Apr 1996 Manager of Advanced Technology Research and Development Department

Apr 2002 Senior Manager of Powertrain Technology and Prototype Development Department

Apr 2006 Senior Manager of EV Powertrain Engineering Department

Apr 2011 Expert Leader (concurrently Senior Manager)

Sep 2014 The retirement of Nissan Motor Co., Ltd.( By 60-year-old retired provisions)

Oct 2014 Re-employment as a Senior partner to Nissan Motor Co., Ltd. (Technical advisor)

- Work experience -

1978\_1995

Technical development about Electric, Electronics and Computer application, in production facilities. e.g. Robot, Automation equipment, Information system and FA-network.

(1984\_1986 takes charge of Nissan technical college establishment and a lecturer.)

1996\_2005

Development of traction drive motor is begun.

Built the in-house development and production system,

Developing prototype motor for test cars, and supply the Motor for Fuel cell vehicle lease in 2003.

2006\_2015

Realized a competitiveness motor for the LEAF(EV) and the FUGA HYBRID(FR-HEV) which could mass-production.