

# Advanced Hub motor for rear tire

## IPM structure

Permanent magnets are placed inside the iron core for using reluctance torque in high revolve range. This structure can make motor torque power-up.

## High reduction Gear

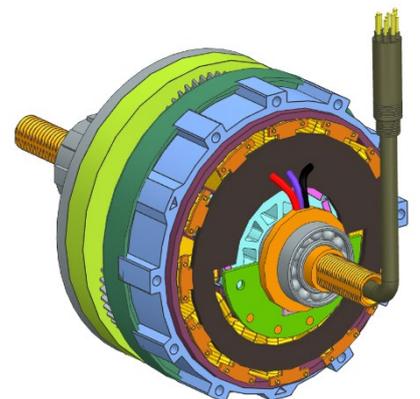
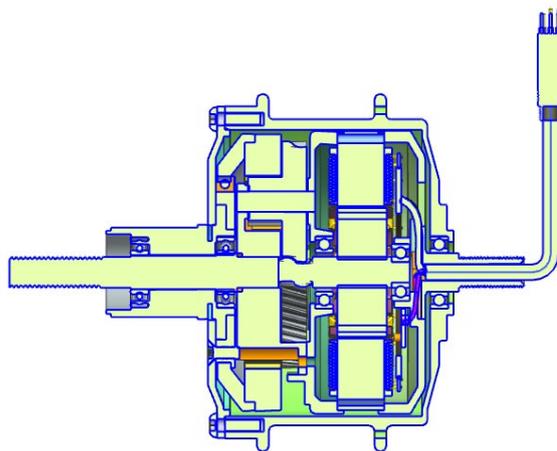
For ably using IPM structure, motor revolve should be higher. High revolve is fine, but isn't good for tire. Therefore, we have to reduce the revolve and also have to make torque up. We took in planetary gear unit with high reduction-ratio.

## Fields Oriented Control

FOC is developed for 3-phase induction motor. We use this FOC for rear hub motor control. Therefore, the efficiency of our hub motor has been improved dramatically.



- Winding techniques are a key point of the manufacturer of Hub motors. As not only the concentrated winding but the tightly aligned winding can reduce copper loss. We are using the alining method.
- Our techniques not only improve performance up to about double the efficiency of conventional motors of same size but enable development of highly efficient stator structure.
- The shape varies depending on the motor types. We have accumulated the winding techniques for various electromagnetic motors.



Tsugawa S.W. Co., Ltd.

## Our Philosophy

### Uniqueness

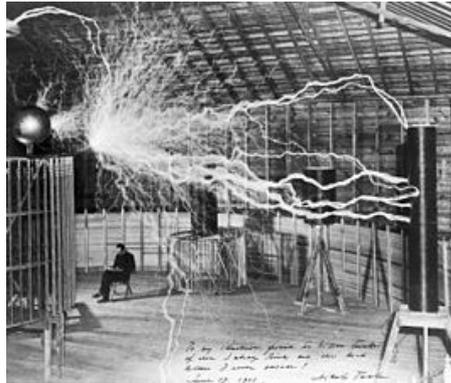
Our strength is that we can design and manufacture the motors optimized for the relevant applications as we design and manufacture the reduction gears etc... and have a reputation for our power electronics related technologies. Many of the motors that we manufacture are unique. Even the other motor manufacturers ask us for designing.

### High efficiency

We always would like to contribute customers for energy save. For many years, we have made an effort to develop some high efficiency motors. We believe that our high efficiency motors are very useful for carbon-free society.

For detail:

<https://www.tsugawa.co.jp>



Tsugawa Electric Works Company Limited intends to contribute to social progress through development and manufacture of motors.

We have confidence in our manufacture of high quality AC/DC motors and actuators. In recent years we have concentrated to develop some new types of rear hub motor. Now, we are ready to supply these motors to potential customers.

We are pleased to push the realization of carbon-free society through the supply of rear hub motors.



## Specification

- Output power : 250W~350W  
(out figure is different, depend on the power)
- Rated voltage : DC24V~48V  
(in case of 350W, DC36V~48V)
- Rated revolve : 210~350 rpm
- Rated torque : 55 N·m (max)
- Efficiency : 40%  
( in case of rated revolve)
- Weight : 2.8 kg

### Our service

R&D  
Technical support  
Assembly support  
Maintenance  
Parts supply  
Guarantee



Honey Hope Honesty Enterprise Co.,Ltd.  
8F, No.316, Neihu Rd., Sec. 1, Taipei, Taiwan, R.O.C  
TEL : +886-2-8751-1779 FAX : +886-2-2797-9259