

April 8, 2003

Aichi Steel Corporation

## **50 % Lighter DC Motor Prototype Developed**

Aichi Steel Corporation (head office: Tokai city, Aichi prefecture / President: Yuji Shibata) has succeeded in using the world's strongest bond magnet, called MAGFINE, to prototype a 50 % lighter DC motor, named MF Motor. The company will deliver samples in May.

In April 2002, Aichi Steel succeeded in mass production of the world's strongest bond magnet for automobiles, MAGFINE, and currently has an annual supply capacity of 700 tons of magnetic particle. The bond magnet is more than six times as strong in magnetic force compared to conventional ferrite magnets. In addition, it can take the shape of a thin ring magnet. Designing the DC motor with the MAGFINE enables a weight reduction of 50 % compared to any conventional DC motor using ferrite magnet. Mass production can hold down the motor price to be equal to or less than that of the conventional type.

In 2002, Aichi steel exhibited a prototype of the DC motor using the MAGFINE to realize a 50 % of weight reduction at "Automotive Engineering Exposition 2002" hosted by the Society of Automotive Engineering of Japan, Inc. from July 23 to 25 in Pacifico Yokohama, when the motor evoked a wide range of responses among the automotive and electrical appliance industries both at home and abroad. In consideration of the responses, the company has resolved various problems concerning quality for commercial use, such as efficiency, noise and endurance, as well as production engineering for a motor assembly to succeed in prototyping the 50 % lighter motor for market.

As a milestone technology, this lightweight DC motor has grabbed the attention of the automotive and electrical appliance industries, where they have been involved with environmental issues and energy saving efforts. Weight reduction and efficiency improvement of DC motors are important challenges especially in the automotive industry, because even one vehicle uses more than 50 units of DC motors: for wipers, fuel pumps, seats, windows, mirrors, etc. The lightweight DC motor can also meet the expectations of the electric appliance and power tool industries requiring energy saving.

Aichi Steel is getting ready to efficiently work in cooperation with automobile, electric appliance and motor manufacturers to prototype and evaluate the motor. It plans to deliver samples in May.

Outline

- 1 . Trade Name : MF Motor
- 2 . Use : Various automobile motors for wipers, fuel pumps, seats, windows, mirrors, etc. and various motors for electrical appliances
- 3 . Sample Delivery : Starts May 5, 2003
- 4 . Manufacturer : Aichi Steel Corporation
- 5 . Patent : Pending in Japan, the United States, EU and China
- 6 . Contact : Electronic and Magnetic Components Division, Aichi Steel Corporation

Address : 1 Wanowari, Arao-machi, Tokai city, Aichi prefecture 476-8666, Japan  
 Tel:+81-52-603-9286 Fax:+81-52-603-9831

<http://www.aichi-steel.co.jp/>

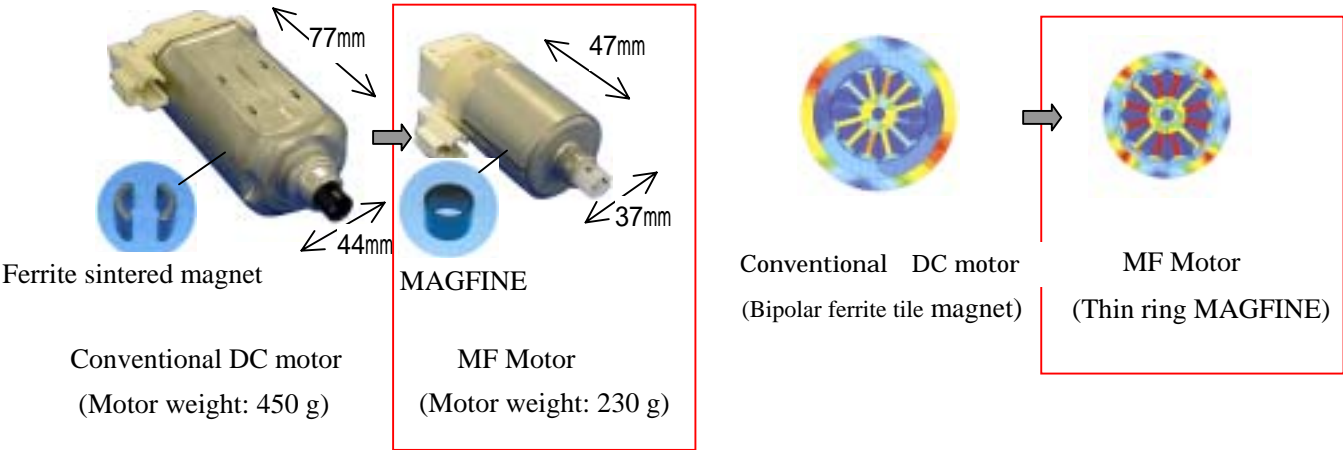
7 . Mechanical Descriptions

(1) Appearance

50 % less than conventional motors  
 in weight and volume

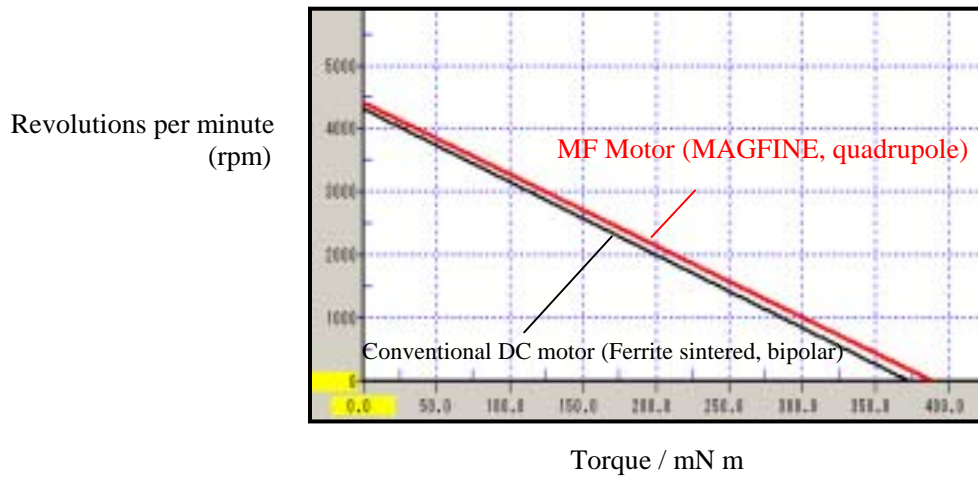
(2) Structure

The number of poles increased to four, in contrast  
 to conventional DC motors with two poles.



(3) Key Performance

Revolutions per minute – Torque property is equal to that of DC motor.



(4) Noise Property

Noise level is equal to that of conventional DC motor.

