

April 23, 2003
Aichi Steel Corporation

Aichi Steel to sell MAGFINE technology

Aichi Steel Corporation (Head office: Tokai-city, Aichi prefecture / President: Yuji Shibata) will make available the press-forming technology of the world's strongest bond magnet MAGFINE™ in May 2003.

Currently, only Aichi Steel has the technology to press-form bond magnets in magnetic fields. The company will sell the original press-forming technology including its dedicated press-line in one package to magnet or motor manufactures at home and abroad to popularize the MAGFINE.

In April 2003, Aichi Steel used the MAGFINE to design and prototype a DC motor, which is 50 % lighter yet equal in cost compared with conventional models. The DC motor was exhibited at the Motor Technology Show hosted by the Japan Management Association from April 16 to 18 at Makuhari Messe, to publicize the breakthrough.

The MAGFINE is a neodymium-base anisotropic bond magnet with a magnetic property 25 MGOe of the maximum energy product, which means its performance is over six times higher than ferrite magnets; in addition, it is a thin-ring type, which is easy to design motors. However, magnetic particles of the MAGFINE are able to include only about 15 percent of resins at the time of press forming to secure high magnetic force. They also need to be formed in magnetic fields to align their crystal orientation. Besides, they require a high-level know-how mainly concerning forming techniques and mold design. For example, magnetic molds with certain durability must be used. Aichi Steel has developed this press-forming technology before anyone else in the world and has produced more than 100,000 units of MAGFINE per month.

The MAGFINE is expected to replace ferrite magnets and neodymium-base isotropic bond magnets as a magnet for motors, with about 30,000 tons of the potential demand estimation. Making this technology available will promote the establishment of MAGFINE's supply sites all over the world, leading to market cultivation.

Outline

- 1 . Technology to be sold : Press-forming technology of the MAGFINE
- 2 . Description of the technology
 - Selling the dedicated fully automatic press-line.
 - Permitting to execute the patent:
14 patents (9 process related ones, 3 facility related, 2 mold related)
 - Disclosing know-how:
Technical reports, technical standards, mold drawings,
facility drawings, etc.
 - Training to probationers
- 3 . Features of the dedicated fully automatic press-line
 - Forming with electromagnets and magnetic mold in magnetic fields.
 - Establishing technologies of a continuous line and high-speed conveyance to quadruple productivity with 200,000 pieces of the monthly capacity.
 - Motorizing a hydraulic press to compactify and reduce costs.



Press line to be offered

4 . Start to sell the technology: May 1, 2003

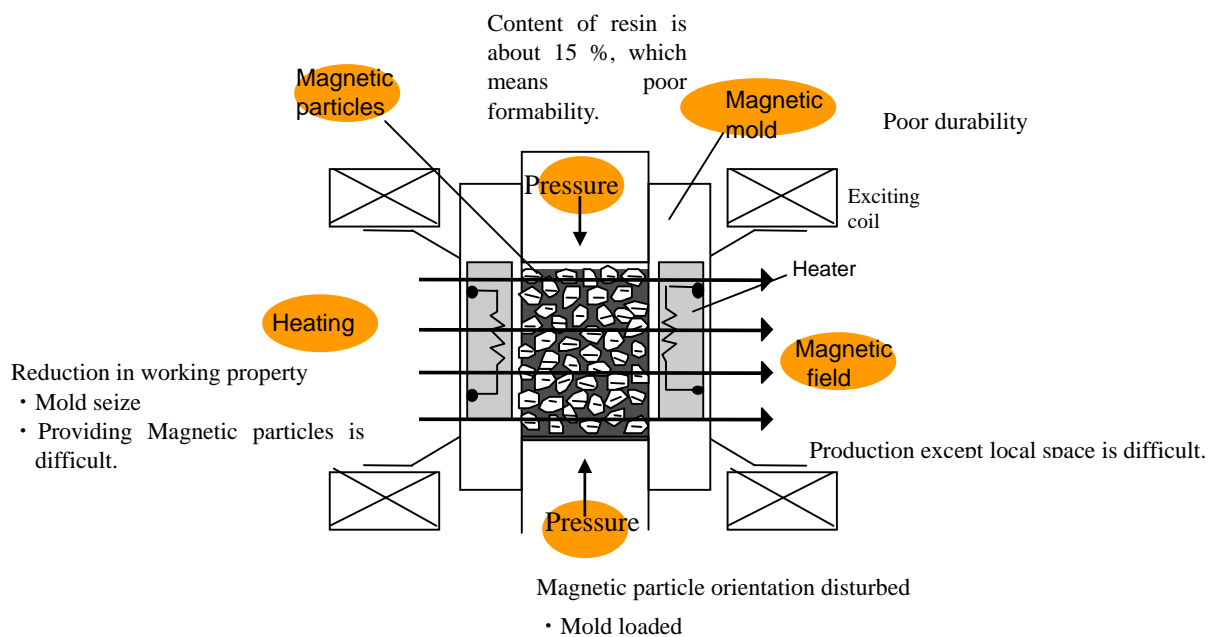
5 . Contact: Aichi Steel Corporation, Electromagnetic Products Business Department
Address: Wanowari 1, Arao-machi, Tokai city, Aichi prefecture, Japan, 476-8666
Tel: +81-52-603-9286 Fax: +81-52-603-9831
<http://www.aichi-steel.co.jp/>

6 . Technical Description

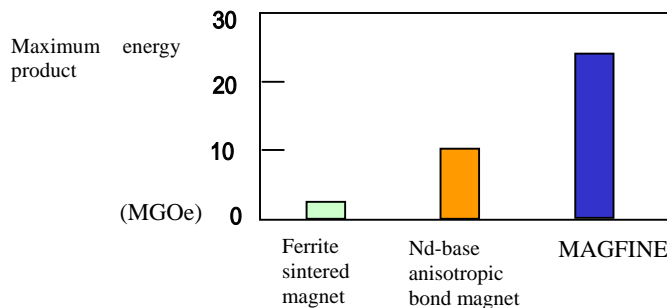
(1) Description of the press-forming technology to be sold

It is extremely difficult to press-form an anisotropic bond magnet in magnetic fields.

Having acquired 14 patents, such as warm forming in magnetic fields, to establish the press-forming technology

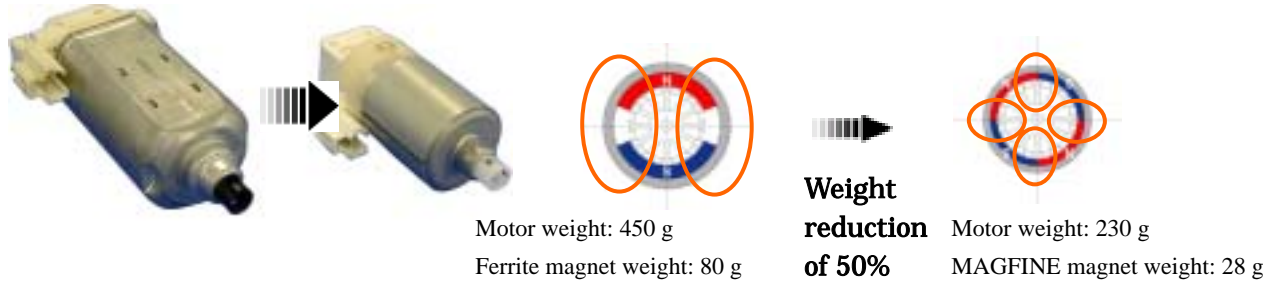


(2) Performance of typical magnets for small motors

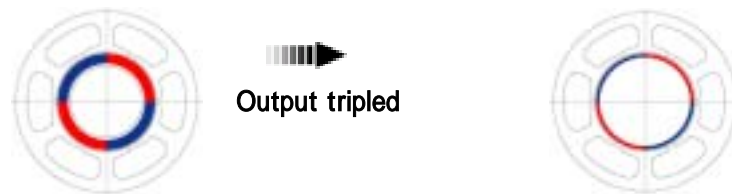


(3) A motor using the MAGFINE and its performance were exhibited at the Motor Technology Show

DC brush motor (weight reduction of 50 % compared with the use of ferrite magnets)



DC brushless motor (output tripled compared with the use of ferrite bond magnet)



Quadruple ferrite bond magnet weight: 129 g

Quadruple MAGFINE magnet weight: 43 g