

Hitachi Powdered Metals

Technical Report

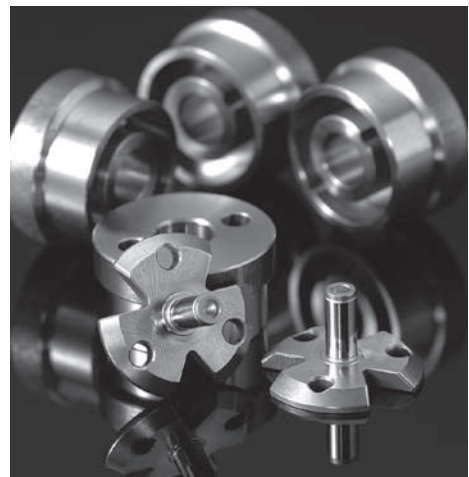


Cover Design

Magnetic Materials (Stator Core, Armature)

With heightened concern about environmental regulations, recent years have seen a remarkable increase in diesel engine automobiles, particularly in Europe. As an advantage of diesel engine automobiles, CO₂ emissions are low thanks to their good fuel economy. However, because diesel engines also tend to generate exhaust gases in the form of nitrogen oxides (NO_x) and particulate matter (PM), technical improvements aimed at minimizing these types of pollution had been considered to be a major challenge for further popularization of diesel vehicles.

This new magnetic parts, which were developed by Hitachi Powdered Metals, consists of a high performance magnetic powder core and a composite armature, and are installed as magnetic parts in injectors for common rail systems meeting the EURO V regulation. The new magnetic powder core, the stator, had achieved both high magnetic properties and outstanding machinability as a result of various improvements of the insulation property of the iron powder itself, optimization of the resin content and addition method, and optimization of the heat treatment method. On the other hand, the composite armature had achieved combined properties of good wear resistance, wrought steel, and excellent magnetic properties, sintered magnetic core, in a single device by using the sinter diffusion bonding method. Their respective properties are dramatically improved and successfully contribute toward a 35% improvement in the performance, suction force, of the injectors.



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