

강연 IV

Recent Trends in Ferrous PM Materials in Japan

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Ferrous powder metallurgy in Japan has developed in the last four decades, where every decade is featured by certain breakthroughs in materials. The progress in PM materials is closely related to newly developed powders.

Low alloy steel powders for high strength PM components are grouped into three types: Ni and/or Mo containing completely alloyed powders, Ni containing partially alloyed powders, and Cr containing completely alloyed powders. Every type has its special characteristics.

The tensile strength of PM materials is improved up to 2 GPa. The hardness is also increased to exceed 500 HV with normal hardening methods, and 700 HV with novel surface treatment techniques. The present maximum of fatigue strength is 550 MPa, and that of impact energy is 100 J.

Novel PM materials with improved properties are applied to a variety of automobile and other components: power steering pumps, rocker arms, valve guides and inserts, bearings, torque sensors, etc.

The future outlook for the ferrous PM is quite positive, and the industry is expected to show renewed growth by applying many types of alloy steel powders and new ferrous PM materials.