

## The Recent Trend of Heat Treatment on the Powder Metallurgy

S.W. Kim, F. Hoffmann, J.-F. Peyre, and M. Okumiya

Recently, sintering materials have been increased in use for automobile and machinery parts. As a result, the surface hardening process has been come into frequent use as post sintering process. Sintering materials generally include some pores and its relative density affect on diffusion process. Thus, the surface hardening process should be controlled depending on the relative density. In this study, it is looked into the recent surface hardening processes such as carburizing, nitriding, induction hardening that are applicable to the powder metallurgy and their important instances. Also, it is examined on the possibility of some hot issue of heat treatment such as vacuum carburizing and contour hardening on the powder metallurgy. In additions, it is reviewed on the trends and the problems for practical use of super hard coating and nano-coating and the present state of nano shot peeing technique that are recently applied to tungsten carbide tool parts. The case studies are present on the recent trends and common interests of heat and surface treatments as the post sintering process in France, Germany, Japan, and Korea.

**Key words:** heat treatment, post sintering, surface hardening, nano-coating, nano shot peeing