

FOREWORD

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In Japan, powder metallurgy (PM) accounts for approximately 70% of all applications of iron powder, and 90% of the sintered parts manufactured by PM processes are used in automobiles. During the last decade, demand for iron powder increased in response to increased unit production of automobiles. Demand had also expanded as a result of the increased weight of sintered parts now used in each automobile, for example, in applications such as variable valve systems designed to improve fuel economy and reduce weight.

However, demand for iron powder fell sharply as a result of the large drop in automobile production caused by the financial crisis in the United States in the second half of 2008. Demand increased in response to the recovery in unit production following mid-2009, but as of 2010, this has still not returned to the same level as that in the first half of 2008.

Occasioned by this global economic crisis, the trend from gasoline engine automobiles to hybrids and electric vehicles accelerated rapidly due to strengthened efforts to reduce CO₂ and heightened environmental awareness among consumers in countries around the world. At the same time, there have also been efforts to achieve further weight reductions in conventional gasoline engine automobiles. Another feature of the current environment is that the sales competition among automobile companies has become increasingly intensive in markets that have enjoyed remarkable economic growth in recent years, particularly China, India, and Brazil. And this has resulted in stronger demands for cost reduction in sintered parts.

In this environment, JFE Steel has promoted the development of iron powder during the past several years from three viewpoints: (1) Iron powders which contribute to automobile weight reduction by high density and high strength, (2) Resource-saving iron powders which can achieve high strength while remaining relatively unaffected by market conditions, and (3) Iron powders which contribute to cost reductions for the customer in press compaction, sintering, and post-processing. This special issue introduces distinctive features of the products developed from these viewpoints.

Based on the corporate vision of the JFE Group, “Contributing to society with the world’s

most innovative technology,” we will continue to grapple with the development of technologies which contribute to overall cost reductions for our customers and market expansion in the fields of powder metallurgy, chemical reaction applications, and other areas.

We look forward to your continuing advice and support.