A STUDY ON THE SINTERED COMPONENTS USAGE IN MALAYSIAN INDUSTRIES

MAZHAIRI BIN MOHAMAD
DIPLOMA IN MECHANICAL ENGINEERING

FACULTY OF MECHANICAL ENGINEERING DEPARTMENT
MARA INSTITUTE OF TECHNOLOGY
SHAH ALAM
1998

CHAPTER 1

INTRODUCTION

Powder metallurgy (P/M) has the distinction of being at the same time one of the oldest and one of the most modern methods know for the fabrication of the metal articles. In prehistoric times, powder metallurgy techniques were used to process metals with melting point above those attainable (or, in some instances, practical) by means of the technology which then exited. Development of these techniques probably began with iron in the from of sponge produced by reduction of iron oxide in charcoal furnaces. This material was subsequently forged into solid iron or steel. The ancients produced some rather extraordinary materials by utilizing these methods.

Powder materials were first press-bonded in the early 1800's in a manner similar to that employed today. It was in the 1920's that the process was really first used commercially with the development of the porous bronze bushing and the related techniques for mass production.

Powder metallurgy, as it is practiced today, has expanded to become a very pervasive technology. While not large in the sense of tons of materials processed when compared with casting or forging, for instance, P/M is nonetheless an extremely important industrial technique. An automobile, for instance, may employ upward of 50 P/M components can be found in washing machines, bicycles and lawnmower. Farm machinery and industrial hydraulic equipment are large users. Data processing equipment, office copiers, postage meters and similar machines may actually have more that a hundred P/M parts designed into them.

For the outdoorsman, the fishing reel and the firearm both are possible applications of powder metallurgy. The watch you wear may have a P/M case. Tape deck and phonograph turntables, as well as TV sets also utilize components made by powder metallurgy.

In addition, air crafty engines depend on P/M for several of the high-performance alloys which allow them to operate safely and more efficiently. Tool steels have also seen significant improvements made possible though P/M. we could continue to extend this catalog of usage, but the point has been made: P/M has become an important technology to a large segment of industry.

TABLE OF CONTENTS