



POWDER METALLURGY PROCESS OF THE LOWER BEARING BLANK

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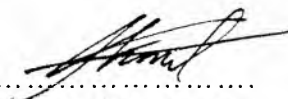
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AUTHORS' DECLARATION

“ We declared that this thesis is the result of our own works except the ideas and summaries which we have clarified their sources. The thesis has not been accepted for any diploma / degree and is not concurrently submitted in candidature of any diploma / degree.”

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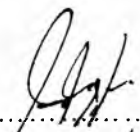
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ABSTRACT

This thesis is clearly discussed on the powder metallurgy process. A product named “Lower Bearing Blank” is chosen to make this thesis more specific. This product is widely used in the air compressor. We select this product because it is the major part produced by Sumitomo Electronic Sintered Components (SESC). For this purpose, we met the manufacturer of this product, SESC, to study and investigate the powder metallurgy process practically. A couple of months was spent and reserved to accumulate the complete data. Several tests and experiments were conducted for that reason. The powder metallurgy process consists of preparing metal powders, compacting them into shapes and sintering them to impart strength, hardness, and toughness. Although size and weight are limited, the process is capable of producing relative complex parts economically, in net shape form to close tolerance, from a wide variety of metal and alloy powders. Control of powders shape and quality, process variables, and sintering atmospheres are important consideration in product quality. Parts may be subjected to additional metalworking, machining and finishing operation to impart certain geometric features and to improve properties and dimensional accuracy. Density and mechanical and physical properties can be controlled by tooling design and compacting pressure. Some critical parts, such as jet–engines component, are now being made by powder metallurgy technique. By controlling porosity product such as filters and oil impregnated bearing can be made. The powder metallurgy process is suitable for medium to high volume production runs, and has competitive advantages over other methods of production, such as casting, forging, and machining.

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