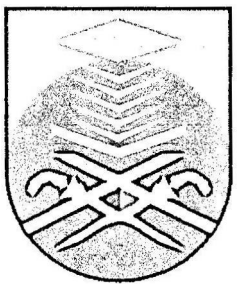

EFFECT OF FILLING TIME ON METALLURGICAL PROPERTIES OF CASTING COMPONENT

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ABSTRACT

Casting is a fabrication process whereby totally molten metal is poured into a mould cavity having the desired shape upon solidification, the metal assumes the shape of the mould, but experiences some shrinkage. Casting technique are employed when the finished shape is so large or complicated that any other method would be impractical. The method has been used is a sand casting that probably the most common method, ordinary sand is used as the material. A two piece mold is formed by packing sand around a pattern that has a shape of the intended casting. The material has been used is ductile cast iron, a family of cast iron with a wide diversity of properties and, as their name implies, there are intended to be cast into desired shape rather than being worked in the solid state. Cast iron normally contains from about 2 to 4% Carbon and 1 to 3% Silicon. Other alloying metallic and nonmetallic element are added in order to control and vary specific properties. Besides chemical composition, other important factors which affect their properties are the solidification process, solidification rate and subsequence heat treatments. Cast iron makes excellent casting alloys have a wide range of strength and hardness, and in most cases easily to machine. In this study, for three different filling times was investigated. Mechanical characteristic have been carried out in order to correlate the effect of the filling time. It shows that from the study the mechanical properties will decrease due to longer filling time and the microstructure shown the ferrite and pearlite element of nodules ductile cast iron.

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CHAPTER I

INTRODUCTION

1.1 Background of the Project

Ductile Iron

Ductile ıron is a very versatile engineered material because of its can performed at high temperature service limit along with its useful properties for having high melting temperature, chemical reaction, mechanical and hardness properties. Control of delivery of molten iron in continuous casting is critical in order to ensure stability of the temperature and satisfactory mould flow patterns, which in turn are determinants of cleanness and surface quality of casting. Considerable effort has been expended over the previous years on optimizing the design of the metal delivery system, particularly the pouring process, in order to allow the consistent production of high quality iron at a high throughput. This study looks forward to possible systems that are capable of observation imaging the distribution of molten metal flows in these applications. From this study also will concentrate on the feasibility of using microstructure, mechanical properties and chemical composition. Furthermore will present some initial results; an overview of the applied image reconstruction process will also be included. This study will conclude with a discussion of possible future developments, such as the use of a microstructure approach, future research on the reconstruction image procedures and the potential