

Manufacturing of M2 Tool Steel Core Insert With Thin Wall Feature By Powder Injection Moulding

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ABSTRACT

A core insert component with thin wall feature used in the fabrication of connector block and manufactured by powder injection moulding process has been investigated. This component was originally produced by conventional machining process necessitating substantial material removal due to grinding and EDM operations, which was time consuming and costly. Powder Injection Moulding (PIM) process is considered as an alternative route to produce such component. This process consists of moulding, debinding and sintering stages. M2 feedstock material is used for this process. The obtained results show that the component is feasible for its near net shape manufacture when the problems associated with the thin wall feature have been overcome. It is found that the designing of mould on the thin wall section and controlling of sintering process are key factors to determine the success of PIM process. The PIM process offers advantages on shortening the cycle time and the cost saving on mass production of this component compared to traditional manufacturing methods.