Quality management and Quality Control in the Powder Injection Moulding Process

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Abstract

The powder injection moulding process is widely used to produce high precision structural parts of very high complexity in shape. The variety of materials ranges from ceramics and hard materials to stainless steels and low alloyed steels. As a near net shape process the entire process is very complex and needs the full attention of all the people incorporated. The early design activities are influencing the quality of the final product as well as the tool design and fabrication, the selection of raw material and binder system, and all single production steps and the secondary operations. For that, a well designed quality management and control system is necessary to control the powder injection moulding process in all the details. Such a system should incorporate a carefully organized systematic **F**ailure **M**ode and **E**ffect **A**nalysis (FMEA). The combination of a high performance process monitoring system with the extensive application of statistical procedures creates the basis for a **S**tatistical **P**rocess **C**ontrol (SPC) system that meets all the requirements to produce multi-functional structural parts of high complexity in shape and of high performance materials. The paper will discuss such a quality management and control system in detail.

Key words: Powder Injection Moulding (PIM), Quality Management, Quality Control, FMEA, SPC,