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Imaginative Design Development for Turbine Blade Abrasive Molding

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Abstract: *Aerospace firms that design and construct jet engines frequently contract with investment casting foundries to manufacture turbine blades. Aerospace firms have discovered that casting flaws significantly affect the price they pay foundries for turbine blades. Porosity, tension, grain, fill, and mold-related flaws are among the different forms of defects. Aerospace industries have implemented a design for production strategy to reduce the cost of turbine blades in order to address the defect issue. This thesis' main goal was to determine how the turbine blade's important part features affect the quantity of manufacturing flaws observed throughout the casting process. imperfections.*

A shorter holding period will result in a more precise design, but because it is too soft, it will distort when taken out of the mold. More shrinkage will result from an excessively long holding period. The sole factor affecting the silicone mold's wax pattern proportions is the injection temperature. Measurements of the dimensional inaccuracies that occur during dipping reveal that, on average, the dimension is reduced by 0.2 to 0.4%. The investment caster will be better able to predict the allowance needed in the original CAD drawings to create a final casting with the least amount of dimensional inaccuracy thanks to these studies.

Keywords: Aerospace

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