**Aluminum Casting: Prototype Process Comparisons**

**Pentz Cast Solutions**

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| **Aluminum Casting: Prototype Process Comparisons** |
| **Prototype Method** | Description | Application |  Lead Time |
| **Rapid Tooling/Casting** | Utilizes rapid tooling made from 3D Printed Molds & Cores, CNC Machine, SLA, prototyping methods to build patterns for sand cast molds. The parts are molded using automated precision green sand molding process. Highly accurate, inexpensive, and easy to modify through iterative design changes. | Excellent for almost any size or shape or part. Since parts are cast form an actual aluminum alloy they are fully functional and can be used as prototypes or short rum production parts | 5 days - 2 weeks |
| **SLA** **Stereolithography** | Utilizes UV laser to cure a thin layer of liquid plastic into a solid model of parts. Highly accurate and creates excellent surface finish. | Excellent for complex or intricate shapes. Ideal to test form and fit or for use as a visual aid. It is also very good for use as a pattern for Rapid Tooling/Casting |  3 - 7 days |
| **3D Printed Molds Cores** | 3D Print molds & cores from CAD designed parts to build aluminum castings | One off or low production aluminum casting prototypes or production parts | 7 - 14 days |
| **CNC Machining****Computer Numerical****Controlled Machining** | A computer controls the motion of a milling machine as it cuts the surrounding metal or plastic to form the part. Produces very accurate parts. | Can be used as a “one-off” production part, a functional prototype, or to build patterns for Rapid Tooling/Casting | 1 - 2 weeks |
| **Reverse Engineering of product or casting** | Digitally Laser Scan exterior and CT- Scan interior hidden passages for geometric data collection. Use data to create 3D CAD files to be used to make prototype parts and or production tooling. | Used when no 3D CAD data is available. | 1 - 2 weeks for DATA |
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