

CASTING PROCESS IMPROVEMENT

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Casting, an ancient and important metal working technique, has been around for thousands of years. Its basic principle is that molten metal is poured into a pre-designed mold, and when the metal cools and solidifies, the shape we want is obtained. There are various casting methods depending on the mold material and process.

Sand casting is one of the most common methods. It uses sand as the mold material, which is compacted by hand or machine into the desired shape, and then molten metal is poured into it. This method is simple, flexible and relatively inexpensive, so it is widely used in the manufacture of a variety of metal parts.

Sand casting also has its limitations, such as insufficient precision and poor surface quality. In order to overcome these shortcomings, people have developed a more advanced casting methods such as investment casting, die casting, vacuum casting. Investment casting, also known as lost wax casting, which uses meltable wax material to make molds, and then the molds are immersed in a ceramic slurry, and when the ceramic layer dries and solidifies, the heat melts the wax molds, leaving ceramic cavities into which the molten metal is finally poured.

This method produces castings with higher precision and smoother surfaces. How can casting technology be improved? In my opinion, the first step should be to optimize the casting process. By adjusting the pouring system, changing the pouring temperature, and optimizing the mold design, the quality and precision of castings can be improved. For example, in investment casting, the quality and performance of ceramic shells can be optimized by controlling the composition and concentration of ceramic slurry and adjusting the heating speed and temperature, so as to improve the precision and surface quality of castings.

The selection of high-quality raw materials is also the key to improving the quality of castings. High-quality raw materials can ensure that the chemical composition and physical properties of the castings meet the requirements, thereby improving the performance and service life of the castings. For example, in the casting of steel parts, the selection of high-purity iron ore and coke as raw materials, you can get a purer, more uniform steel organization, thereby improving the strength and toughness of the castings.

Casting technology is an ancient and dynamic discipline. By continuously optimizing the casting process, selecting high-quality raw materials and learning from advanced casting technology, we can continuously improve the quality and performance of castings, and make greater contributions to the development of the manufacturing industry.