摘　要

本次铸造工艺为C件—吸阀壳体的铸造工艺。吸入阀壳体由ZL114制成，是保护油箱安全的重要附件。它安装在油箱的顶部。它具有结构紧凑、通风量大、泄漏量小、密封性好、耐腐蚀性好的特点。属于小型铸件。

吸阀壳体结构较为简单，由两个柱体连接而成，最大壁厚为29mm，最小壁厚为10mm，主要壁厚为10mm,外轮廓尺寸最大处为平面，使用平面分型，砂芯外轮廓尺寸最大处尺寸是平面，在芯盒制作砂芯时，使用平面分型。

利用Anycasting仿真软件分别进行初步仿真。分析了模拟结果的填充过程、缺陷分布和工艺改进，最终浇注系统选择吸阀壳体法兰底部上设置2个内浇口的底注式浇注系统，从而保证了铝液均分，使铝液流动平稳，飞溅较小，避免冲击砂型，充分保证铸件重要的工作部位，提高铸件质量。在工艺改进时，设计了8个冒口进行补缩，通过多次调整冒口位置，铸件产生同步凝固模式，有利于最终铸件的整体性能，消除铸件中的缺陷，保证铸件较高的工艺成品率，符合工厂生产的经济性原则。本次工艺采用树脂砂造型，底雨淋注入开放式浇注系统。

合金熔炼时，采用中频感应炉，出炉温度在760℃，使用变质剂进行变质处理，变质剂为Sr-Al中间合金，炉前检验合格后，快速浇注，控制浇注时间在10min以内。

关键词：C件-吸阀壳体. 底雨淋注入开放式浇注系统 .铸造工艺优化 .变质处理

Abstract

Casting process for C parts - suction valve shell casting process. ZL114, material of suction valve shell is an important accessory to protect the safety of oil tank, which is installed on the roof of oil tank. It has the characteristics of compact structure, large ventilation volume, small leakage, good sealing performance and good corrosion resistance. Small castings.

The structure of the suction valve shell is relatively simple, which is connected by two columns, the biggest inside is 29 mm, the smallset inside is 10 mm, the main wall is 10, the maximum outer contour size is plane, using plane parting, the maximum outer contour size of sand core is plane, when making sand core in core box, use plane parting.

After the Anycasting simulation software is used to analyse the stuffing process, the distribution of defects and the improvement of the process, the bottom gating system with two inner gating ports is selected on the bottom of the flange of the suction valve shell. In the process improvement ,8 risers are designed to make up the shrinkage. By adjusting the position of the risers many times, the casting can produce the solidification mode which is beneficial to the comprehensive properties of the final casting. In the defects, and ensure that the casting has a high production rate, in line with the production in the factory. This process adopts the resin sand modelling, the bottom rain is poured into the open pouring system.

When the alloy is melted, the intermediate frequency induction furnace is used, the temperature of the furnace is 760℃, and the metamorphic agent is Sr-Al intermediate alloy. After passing the inspection before the furnace, the casting time is controlled within 10 min.

Keywords： C piece - suction valve housing, Open pouring system with rain shower, Optimization of casting process, Metamorphic treatment