SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Solutions for Human Flights in China (9-D6.2)

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LONGITUDINAL SEAM WELDING SYSTEM FOR LARGE LAUNCH VEHICLE

Abstract

A special-purpose automatic welding system was designed and developed according to the requirement of five meter tank bottom of large Launch Vehicle. The tank bottom was one of the most important parts of large Launch Vehicle which was composed of eight sector workpiece. The welding quality requirement is very high. Single face welding and double face shaping system was designed based on tank bottom requests. The project was adopted that the workpiece was moved and the welding tractor made circular moving along the portal frame. According to the project, it confirmed design scheme of the working platform feeding system, the location and compaction assembly and the portal frame running assembly. In order to ensure the welding quality and the reliability of the whole system, it was preceding static and dynamic analysis to the key parts of the longitudinal seam welding system, such as basement, working platform feeding system, the location and compaction assembly and portal frame running assembly. The results indicated that the basement, working platform feeding system, locating mould, piano keyboard compacting assembly and the portal frame running assembly were stable and reliable. It can meet the requests of the milling and welding. Through analyzing driving system of the longitudinal seam welding system, it determined the driving scheme of the working platform feeding system, servo-drive system and position controlling system.