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ANALYSIS AND PREVENTION OF CRACKING OF CARBONSTEEL COMPONENTS OF AEROSPACE PRODUCT

Abstract

Abstract: Some carbonsteel components (diamond block, slide block, and upper locking ring) of an aerospace product had found cracks one by one in their process. In order to guarantee the product's quality and, especially, ensure the security of astronauts, the cause of cracking had been investigated and analyzed. Given that the parts' material are not allowed to alternate, the original process technology has been improved through adopting oil hardening, martempering, and intercritical hardening to replace the original quench process of these components respectively, and adding the stress relieving process between some original machining procedures, which has finally solved the problem and guaranteed the quality and quantity of the prduction on schedule. The failure analysis and improved process showed that during the manufacturing process of above carbonsteel components, for preventing cracking, the technology should be optimized, and the quenching stress and grinding stress should be decresed as less as possible, and so does the residual stress. In the meantime, the bad impact on the quality of parts and components of product caused by the inclusion of the raw material and the acid cleaning prior to electroplating also can not be ignored. Keyword: aerospace; carbonsteel; heat treatment; technology; failure analysis; QC