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冲击刮削法评价封严涂层的可磨耗性

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ABRADABILITY EVALUATION OF SEAL COATING BY IMPACT SCRAPING TEST MACHINE

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摘要

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摘要

利用研制成功的新型电子冲击刮削试验机可较好地模拟航空发动机叶片刮削封严涂层的工况, 测试涂层冲击刮削载荷一位移曲线及刮削功等。用刮削单位体积涂层所消耗的功评价涂层的可磨耗性。对某类涂层随涂层硬度增加, 刮削功上升并有一阈值, 以此值可确定生产中检验硬度范围的上限。对于相近硬度的涂层在相同条件下, 313类涂层的刮削功小, 可磨耗性较好, 601类次之, 307类较差。300℃试验时, 刮削功下降, 但不同类型的涂层下降幅度不同。

关键词: 封严涂层 冲击刮削试验机 可磨耗性

Abstract:

A new impact scraping test machine has been developed successfully. The machine is simpler and closer to application condition that the blades scrape the seal coating in the aircraft turbine engine than other methods used in abrasability evaluation. The impact scraping load displacement curve and scraping work can be measured by the machine. The specific scraping work has been proposed to evaluate the abrasability. The specific scraping work increases with the increase of hardness and exhibits a threshold. The upper limit of the range of the coating hardness used in the quality control in production can be determined according to the threshold in the specific work hardness curve. The abrasability of 313 type of coating is the best, 601 is fairly good, and 307 is the worst. The specific work at 300℃ decreases slightly, but the decrease extent is different in different kinds of coatings.

Keywords: seal coating impact-scraping test machine abrasability

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