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一种获得高温声疲劳S—N曲线的新方法

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NEW METHOD FOR OBTAINING SONIC FATIGUE S N CURVES AT ELEVATED TEMPERATURE

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摘要

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摘要 高温声疲劳试验应在行波管上加温装置来完成,但这种方法费时、耗资大。基于疲劳等效原理,提出在振动台上加温装置来得到高温声疲劳S—N曲线的一种新方法,其中涉及如下几个方面的问题:试件设计;声学环境模拟;温度场模拟;反射板设计;温度控制及应力、温度测量等等。用上述方法给出了GH140材料的S—N曲线,证明了本方法是简单可行的

关键词: S—N曲线 振动台 声疲劳

Abstract: Generally, sonic fatigue test at elevated temperatures is completed by using progressive wave tubes in combination with heating structures, and this method is time consuming and costly. Based on the principle of fatigue equivalence, a new method is presented which uses a shaker in combination with heating structures to obtain the sonic fatigue S N curve at elevated temperatures, and the problems involved in this method include specimen design, acoustic environment simulation, thermal environment simulation, reflector design, temperature control, sonic fatigue strain acquisition, temperature measurements, etc. The result of material GH140 using this method is presented, which indicates that this method is feasible and has the advantage of being economical of time and testing expenses.

Keywords: S-N curve shaker sonic fatigue

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