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航空发动机减速器轴系零件的强度可靠性计算方法

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A METHOD FOR THE STRENGTH RELIABILITY CALCULATION OF AXIAL LMACHING PARTS OF AIRLINE ENGINE REDUCER

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摘要

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摘要 以古德曼(Goodman)应力线图和第四强度理论为基础,提出了等效高、低周复合循环应力的方法。采用蒙特卡罗(Monte Carlo)法对应力和强度进行了统计模拟,同时拟合了应力和强度的分布规律。运用应力-强度干涉模型,提出了评估轴在单一工作状态和多工作状态下,屈服、破坏和疲劳强度的可靠度计算方法,并编制了计算机程序。计算实例表明,该方法是令人满意的。

关键词: 高频-低频-应力循环 轴强度-可靠性 蒙特卡罗法

Abstract: On the basis of the Goodman stress diagram and the fourth strength theory, a method is suggested to get an equivalent stress for high-low frequency compound circulating stress. The stress and strength are simulated statistically with the Monte-Carlo method, and their distributions are fitted. The model of stress-strength interference is applied to the strength reliability calculation. A method is put forward to calculate the yield, fracture and fatigue reliability of axial machine parts under single-working and multiworking conditions. and the calculation program is compiled. The calculation results indicate that the method is satisfactory.

Keywords: high frequencies-low frequencies-cycles stress shafts (machine elements) strength-reliability Monte-Carlo method

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