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航空发动机设计任务循环的选取

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摘要

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摘要

由某型发动机的未来使用任务推导了其设计飞行任务剖面 and 飞行任务混频, 然后根据该发动机的高度-速度特性得出了其转速剖面。在该转速剖面下对发动机的压气机盘进行了应力和疲劳寿命计算, 由计算结果得出该发动机设计任务循环的选取范围, 认为: 航空发动机的设计任务循环除 0-最大-0、慢车-最大-慢车和巡航-最大-巡航3类循环以外, 还应当包括对发动机构件疲劳寿命有较大影响的其它载荷循环, 否则将造成设计载荷估计精度大大降低。

关键词: 航空发动机 飞行载荷谱 疲劳寿命

Abstract:

The design flight mission profiles and mission mixing of an aeroengine are obtained from its future usage, and then the rotation speed profiles are derived based on its altitude airspeed performance. The compressor disc's stress and low cycle fatigue life are calculated under these rotation profiles. From the results, the choice ranges of the design duty cycles are given. Besides 0 maximum 0, idle maximum idle and cruise maximum cruise cycles, the load cycles which can create obvious fatigue damage to the engine components must be chosen into design duty cycles.

Keywords: aeroengine flight load spectrum fatigue life

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