

双曲柄外齿环板减速传动的研究

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关键词: 双曲柄外齿环板减速器 传动 功率流 效率

摘要: 针对目前环式减速传动在使用过程中存在振动大、噪声高等问题,提出一种由一级渐开线传动和一级N型少齿差外环式传动组合而成的双曲柄外齿环板减速传动,不仅保留了现有环式传动的优点,还具有体积更小、传动比更大、刚度更高等特点。本文对双曲柄外齿环板减速传动的结构形式、传动原理进行了分析,对其传动比进行了计算,研究了该传动的功率流,推导出各构件角速度关系和力矩平衡方程,计算了该传动的传动效率可达91.9%。In view of vibration and loud noise that existed in the course of applying the current ring-reducer, a new type ring-reducer was firstly proposed, which consisted of two-stage transmission, one involute transmission and a planetary transmission of N-type with small tooth number difference. The new type reducer did not only reserve the advantages of the current ring-reducer, but also had the characteristics of smaller volume, bigger transmission ratio and higher stiffness. The principle and structural style of the new reducer have been analyzed, and the power flow has been studied. The relation of angular velocity and the balance equation of torque was deduced, and the transmission efficiency of the new reducer was calculated.

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