■ 论文摘要

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# 大型超静定回转窑机械运行状态优化

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摘　要：结合中国长城铝业公司氧化铝厂2号回转窑, 分析了大型超静定变截面回转窑的力学特征; 通过调整窑运行轴线, 以回转窑各托轮受力均衡为优化目标, 考虑窑轴线单次调整量、轴线偏差、传动系统、窑头窑尾密封、滚圈变形、筒体应力等窑体调整制约条件, 建立了回转窑机械运行状态优化模型, 用复合形法求解了2号窑的优化模型, 对2号窑在优化调窑前、后及常规调窑后的机械运行状态进行了对比. 研究结果表明, 2号窑在优化调窑后的机械运行状态远优于调窑前及常规调窑后的机械运行状态, 运转率显著提高.

关键字：回转窑; 机械运行状态; 优化

# The optimization research of mechanical running condition of statically indeterminate large-scale rotary kiln

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**Abstract:**Combined with the second kiln rotary of Alumina Factory in Great Wall Aluminum Company, the mechanical characteristic of statically indeterminate large-scale rotary kiln with variable cross-sections is analyzed.For adjusting the operative axes of rotary kiln, taking the equilibrium of the force of the supporting annulus as the optimizing goal, considering the restricting factors of axes adjustment such as the single adjustment quantity of axes, the curvature of axes, transmission system, the seal of the head and the end of rotary kiln, the deformation of tyre and the stress of the shell, the optimization model of mechanical running condition of kiln rotary are set up. The optimizing model of the second rotary kiln is solved with complex method. The mechanical running condition of the second rotary kiln after optimal adjustment is compared with those before adjustment and after routine adjustment. The results show that the mechanical running condition of the second rotary kiln after optimal adjustment is much better than those before adjustment and after routine adjustment. The mechanical running condition and the operative rate of rotary kiln can be improved greatly by optimal adjustment method.

**Key words:**rotary kiln; mechanical running condition; optimization