■ 论文摘要

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氧化铝熟料窑窑皮厚度的数值研究

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摘　要：以一直径为4.5 m、高为90 m熟料窑的烧成带为研究对象,应用数值计算的方法,对烧成带有窑皮存在和没有窑皮存在时耐火层内的温度分布进行对比分析,同时对窑皮在不同厚度时耐火层内的温度分布进行数值计算. 计算结果表明:烧成带无窑皮时,窑外壁温度较高,在232~270℃之间;当窑皮厚度从200 mm增大到300 mm时,窑外壁温度从215℃降低至161℃;在熟料窑操作中,窑皮过薄将缩短耐火内衬的使用寿命,并限制加煤提产;窑皮过厚则缩小了烧结带的有效截面积,也限制了熟料窑的提产;对直径为4.5 m左右的大型回转窑,窑皮厚度可根据生料浆成份和窑况在200~300 mm内调节.

关键字：氧化铝熟料窑;窑皮;耐火内衬;温度分布;数值计算

Numerical study on the thickness of the clinker attached onto the alumina clinker rotary kiln refractories

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Abstract:A 3-Dnumerical studyon the effects of attached clinkeron temperature profile forrefractory in sintering zone of an alumina rotary kiln (4.5 m in diameter, 90 m in height) is presented. The results showthat, without attached clinker, the temperature of kiln shell is 232~270℃higher. The temperature of kiln shell decreases from about 215℃ to161℃with the thickness of the attached clinker increasing from 200 mm to 300 mm. The service life of the refractory
will be shortened when the attached clinker is too thin, whereas the output of clinker is limited when the attached clinker is too thick. For a large rotary kiln, the thickness of the attached clinker should be regulated between 200 to 300 mm according to the components of raw slurry and work conditions of kiln.

Key words:alumina rotary kiln; attached clinker; refractories; temperature profile; numerical simulation