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Title: Study on Soft Measurement of Oxygen Content in Asphalt Mixing Plant Based on PSO-LSSVM Gorithm

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关键词: 粒子群-最小二乘支持向量机; 沥青拌和站; 含氧量; 燃烧状态; 燃烧器

Keywords: PSO-LSSVM; asphalt mixing plant; oxygen content; burning condition; burner

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摘要: 为了及时诊断热再生沥青搅拌站的燃烧、干燥状态,干燥滚筒的烟气含氧量检测具有重要的意义.首先通过沥青搅拌站组成和燃烧原理分析了影响烟气含氧量的相关过程参数,然后基于粒子群-最小二乘支持向量机算法(PSO-LSSVM)构建了干燥滚筒烟气含氧量软测量模型.通过4种不同的工况进行对比实验研究,实验结果表明:干燥滚筒烟气PSO-LSSVM含氧量软测量结果和氧传感器实测结果基本一致,最大测量误差为0.8%,能满足燃烧器的反馈控制要求.烟气含氧量的软测量为热再生沥青拌和站智能燃烧器的开发奠定基础.

Abstract: In order to get burning and drying state of asphalt mixing plant timely,it is very important to measurement of oxygen content in drying drum.Firstly,the oxygen content of flue gas effecting on related process parameters was analyzed by burning and composition principle of asphalt mixing plant.Second,a novel soft measurement model of oxygen content in flue gas of drying drum was constructed by least square support vector machine and particle swarm optimize algorithm.Contrast experiment in four kinds of different condition proved that soft measurement results based on least square support vector machine and particle swarm optimize algorithm is basically identical to those of oxygen

sensor. The maximum measurement error is about percent 0.6. The measuring accuracy of Soft measurement can meet feedback control requirement of burner. The soft measurement of oxygen content in flue gas is development basis of intelligent burner for recycle asphalt mixing plant.

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