20000m³/h 家居喷漆废气治理工艺设计

摘　要：本工艺设计处理江苏南通市某家居公司某号漆房涂装工序中产生的挥发性有机废气，总风量约为 20000m³/h。分为喷漆房废气、调漆废气和烘道废气，采用一套废气处理设施进行处理。主要的喷漆房废气 VOCS 约为 140mg/m³，粉尘漆雾 5g/m³。污染物主要是苯，甲苯、二甲苯、乙酸乙酯等。废气处理后要达标排放，排放需符合标准《江苏省表面涂装（家具制造业）挥发性有机物排放标准（DB32-3152-2016 ）》和《家具制造业挥发性有机化合物排放标准（DB44/814-2010）》要求。

该废气包括油漆清除和喷涂过程中产生的粉尘漆雾和有机溶剂的挥发。喷漆配套车间采用干式过滤器+活性炭吸附+催化氧化床的方案。废气以 VOCS 处理后的排放浓度要低于 20mg/m³。

本设计的主要内容是根据不同气质气量的废气选择经济技术可行的处理技术，对主要的催化氧化床等设备、风管尺寸的计算和设计、风机的选型、设备投资成本和运行成本的计算。设计图纸由主要处理设备图、尾气处理流程图、装配图等组成。该设计催化氧化后剩余的热气再用于活性炭的脱附，提高了能源的利用效率。

关键词：挥发性有机化合物；活性炭吸附；催化氧化

Design of comprehensive treatment project for 20000 m^3/h painting waste gas

Abstract: The process is designed to deal with the volatile organic waste gas produced in the painting process of a certain paint house of a furniture company in nantong, jiangsu Province. The total air volume is about 20000m^3/h. It is divided into three parts: the exhaust gas from the spray room and the exhaust gas from the painting hall and drying road, all of them are treated by a set of exhaust gas treatment facilities. The exhaust VOCs in the painting hall are about 140mg/m^3, the dust mist is about 5g/m^3. The main pollutants are benzene toluene, xylene, ethyl acetate and so on. In order to meet the emission standards after the treatment of exhaust gas, the emission must meet the requirements of the standard "Emission standard of volatile organic compounds for surface coating(furniture manufacturing)in jiangsu province" (DB32-3152-2016) and "Emission standard for volatile organic compounds(VOCS)in furniture manufacturing"（DB44/814-2010）.

The exhaust gas includes dust, paint mist and volatilization of organic solvents during paint cleaning and spraying. Paint matching workshop adopts Dry filter pretreatment + honeycomb activated carbon adsorption concentration + catalytic combustion process.The VOCs concentration in the waste gas after treatment shall be less than 20mg/m^3.

The main content of this design is to select the economic and technological feasible treatment technology according to the waste gas with different gas qualities and gas volumes.I need to calculate and design the main catalytic oxidation bed equipment,air duct size,fan selection,equipment investment cost and operation cost.The design drawing is composed of main treatment equipment drawing,tail gas treatment flow chart,assembly drawing,etc.

The residual hot gas after catalytic oxidation is used for desorption of activated carbon,which improves the energy utilization efficiency.

Key words: Volatile organic compounds; activated carbon adsorption, catalytic oxidation