

Environmental Protection of Machinery Manufacturing Industry Based on Environmental Protection Concept

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Abstract. A The environmental problems brought by the development of machinery industry in our country are now neglected. With the proposal of green environmental protection and energy saving, people's awareness of environmental protection has been continuously strengthened. It is urgent to solve the waste of resources and environmental pollution in the field of machinery and manufacturing. Practicing the concept of green environmental protection and common development is in line with the current trend of the times, and also conforms to the actual needs of people. The mechanical manufacturing industry and environmental pollution caused by the "three wastes" and the prevention measures for noise pollution is more serious in machinery manufacturing industry, the more necessary in the design and manufacturing process and application of green concept, the environmental consciousness into the manufacturing process, which not only saves natural resources, but also protect the environment. The environmental problems brought by the development of machinery industry in our country are neglected now. With the proposal of green environmental protection and energy saving, people's awareness of environmental protection has been continuously strengthened. It is urgent to solve the waste of resources and environmental pollution in the field of machinery and manufacturing.

1. Prevention and control of industrial waste gases

The solid pollutants into the atmosphere in which particles can be removed through a variety of precipitator, such as mechanical dust collector, electrostatic precipitator, wet dust collector and filter type dust collector, collection of liquid can be used in a variety of pollutants, in addition to a variety of mist trapping suspended droplets suspended in the exhaust gases, separation of gaseous pollutants the capture equipment has a variety of desulfurization and denitrification equipment, can also purify industrial harmful gases by absorption, adsorption, incineration, condensation and chemical reaction method[1-5].

1.1. Dust removal of industrial waste gases:

Equipment for separating and capturing particles from exhaust gas is called dust collector. According to the dust removal mechanism, the dust collector can be divided into the following four categories: mechanical dust collector, electric dust collector, washing dust collector and filter dust collector. In recent years, in order to improve the trapping efficiency of particles, a variety of new dust removal mechanisms, such as charged droplets wet scrubber and charge bag dust collectors, have been developed[6].



1.2. The purification technology of industrial harmful gases:

There are five basic methods for purifying harmful gases in industry, namely absorption, adsorption, incineration, condensation and chemical reaction. The selection of gas purification methods depends mainly on the gas flow rate and the concentration of pollutants. As much as possible, the gas flow rate and the concentration of pollutants and the treatment cost should be reduced. The gas concentration is high, may be the first pretreatment, but with no large-scale purification system to pre-process the economic comparison, unless there are other considerations, such as the recovery of precious material, or need to be pre cooling hot exhaust gas purification system, a general a total investment ratio of two or more of several purification system cheap[7]. Therefore, before selecting the treatment methods and processes, we should take full account of the types of industrial harmful waste gases, concentration, flow, and the presence of valuable substances in the exhaust gas, and make a comprehensive comparison to decide[8-9].

1.3. Defogging techniques

Liquid pollutants in exhaust emissions of pollutants demisting equipment mainly includes four parts: one is the inertia force of the demisting device, including folded plate demister, gravity type dehydrator, elbow dehydrator, cyclone dehydrator, cyclone dewaterer; two is wet mist eliminator, almost all the wet gaseous pollutants treatment device and dust remover can all be used as wet demister; three is filter type demister, including mesh demister and filler demister; four is the electrostatic precipitator, a tube type and plate type.

2. Prevention and control of industrial wastewater

The mechanical industrial wastewater mainly consists of two categories: one is relatively clean wastewater, such as air conditioning units, high-frequency furnace cooling water, etc., this industrial wastewater can be discharged directly into the waterway. But it is better to use cooling or stabilizing measures for recycling. Another kind of waste water containing toxic and harmful substances, such as electroplating, electrolysis, bluing and cleaning wastewater, the industrial wastewater must be treated to meet the state emission standard after it can be discharged into waterways, but shall not be used to reach the national standard dilution method.

Selection of wastewater treatment methods: the overall plan for wastewater treatment is a complex problem that needs to be considered comprehensively and should be in line with the basic principles of effective governance. For the wastewater that must be discharged, the selection of treatment methods should take into account the water quality and treatment requirements.

3. Prevention and control of industrial solid waste pollution

Mechanical industrial wastes including ash, sludge, waste oil, waste acid, waste, scrap metal, dust and other waste, containing seven kinds of harmful substances, namely, mercury, arsenic, cadmium, lead, chromium 6, organic phosphorus and cyanide. The whole process management from production to disposal should be implemented, including pollution control, transportation management, treatment and utilization, storage and disposal.

4. Prevention and control of industrial noise and measures taken for sound sources

On a solid noise measures because of force in machinery and equipment inside periodically repeated use, has become the excitation wave spread in a part of the machinery in most cases with natural frequency resonance makes a loud noise. This is called a solid noise, should take the following measures:

Measures for the two solid noise, noise within the machinery, sound waves make the wall vibration, and emit a transmission sound, which is called the two solid noise. This situation is also many, the following measures need to be taken.

Measures of air sound, such as noise emitted by an opening (an air inlet, a vent, or another), have no solid vibratory noise called air sound. In this regard, the following measures should be taken.

5. Protective measures in the machinery manufacturing industry

Reasonable layout: in workshop layout, we should consider reducing occupational hazards, cross pollution problems. Such as casting smelting furnace in the process should be placed away from public places where people gather in the outdoor or electric welding, and riveting; (painting) painting process should be arranged separately.

Dust prevention: casting should use low free silica content molding sand, and reduce manual molding and sand cleaning operations. Sand cleaning is the highest concentration of dust in foundry production, and should be protected mainly, such as installing high-power ventilation and dust removal system, spraying wet operation, so as to reduce dust concentration in the air of workplace. And do personal protection, wear in line with national standards of dust masks.

Gas protection and emergency rescue: equipment that may produce chemical poison during heat treatment and metal smelting should be sealed or installed with local ventilation and detoxification device. To produce high concentrations of carbon monoxide, hydrogen cyanide, formaldehyde and benzene and other toxic gases in the workplace, such as quenching, coating and adhesive using special post, should develop acute occupation poisoning accident emergency rescue plan, set up warning signs, equipped with gas masks or protective masks.

Noise control: noise is one of the most important occupational hazards in the machinery manufacturing industry. Noise control mainly includes the casting, forging the hammer, air compressor, machining, grinding and polishing, punching, shearing, cutting and other high noise equipment management. The high intensity noise source can be centrally arranged and provided with sound insulation shielding. Aerodynamic noise sources shall be disposed of at intake or exhaust ports. Sound insulation and sound absorption should be adopted in the centralized control room and the post operation room. Enter the noise intensity more than 85dB (A) in the workplace should wear anti noise earplugs or earmuffs.

Vibration control: vibration is one of the most common occupational hazards in the machinery manufacturing industry. Vibration reduction measures or rotation operation shall be adopted for vibration equipment such as riveting machine, forging press, molding sand tamping machine, sand falling and sand cleaning equipment.

Radio frequency protection: suitable shielding materials should be chosen to screen or isolate the radio frequency radiation such as high frequency, microwave and so on.

Sunstroke: summer heat do heatstroke casting, forging and heat treatment of high temperature cooling work personnel. It is necessary to adopt comprehensive measures of engineering technology, health care and labor organization management, such as reasonable arrangement of heat sources, supply of cool and salty beverages, rotation operation, air conditioning for centralized control room and operation room, etc.

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