



# Jets in limestone

## Application in forced oxidation treatment of desulfurization slurry by gypsum method

In the wet limestone - gypsum method of flue gas desulphurization system, desulphurization slurry has a very corrosive, abrasive, and in order to obtain qualified by-products, the requirement of desulphurization products (such as calcium sulphite, ammonium sulphite, etc.) of the oxidation rate of more than 99%, and therefore, the aeration device structural form and the choice of materials have special requirements.

Jet aeration oxidation device is powered by the slurry circulation pump, through the jet to generate negative pressure, the air (or oxygen) pumped into the mixing chamber. In the mixing chamber, gas-liquid close contact, oxidation efficiency is much higher than conventional oxidation device, no oxidation fan, no rotating parts, and do not need any other mechanical mixing device (with secondary efficiency device).

It has the following characteristics:

- 1) Smaller bubbles are one of the main features of jet aeration. Microporous or mesoporous bubble diffuser bubbles can only reach a minimum of millimeters.
- 2) Liquid-air jet aeration has a much greater mixing intensity than air injection and does not require a separate mixing device.
- 3) Longer residence and contact time. The air is pumped into the mixing chamber of the injector, and under the effect of powerful jet, the air bubbles are broken and gas-liquid mixing is realized. Oxygen and slurry in the jet has begun the contact reaction, and then through the pipeline into the secondary efficiency device, volume suction mixing more slurry, liquid-gas mixture and liquid in the limited space again mixed contact reaction, and finally released from the bottom into the oxidation tank, greatly extending the contact time of oxygen and slurry, thus ensuring a much higher mass transfer efficiency than the air jet device.
- 4) Jet aeration has the best reliability. Since the jet aeration device has no running parts, it greatly overcomes the shortcomings of the air



jet device, which is prone to clogging and damage in complex slurries with strong corrosion and abrasion (high solids content), and it is also more stable and more reliable than the mechanical mixing device. Compared with other aeration devices, jet aeration device can achieve the longest period of stable performance and minimum failure and maintenance.

- 5) Jet aeration, can not need oxidation fan, also do not need the corresponding humidification and cooling measures.
- 6) In general, the circulation pump required for jet aeration does not require a very high head, basically can be used with the same head of the slurry circulation pump for flue gas spray washing, at the same time, the high liquid to gas ratio required for spray washing makes the circulation of the slurry required for aeration does not require a separate circulation pump.
- 7) When conditions are favorable, pure oxygen or enriched oxygen can also be used for jet aeration, which is not only more efficient, but also has less investment, a wide range of load adaptability, stable performance and high reliability.

From domestic and foreign experience, jet aeration in all types of oxygen-demanding aeration of sewage treatment, due to its efficient mass transfer and simple and reliable, non-clogging, trouble-free, stable performance without attenuation, gradually replaced a variety of air blower aeration, more and more users in the upgrading and transformation, more willing to use this simple way of installing the pool without the need to drain the vacated. It can be predicted that the application of jet aeration in the oxidation treatment of desulfurization slurry will usher in a period of rapid development.

The design of jet aeration system and equipment layout, and suction capacity, residence time, mixing intensity and energy consumption have a close relationship. Therefore, in order to ensure the aeration effect, our company will provide the design and construction drawings of the aeration system, including the installation position of the liquid circulation pump, the jet and the secondary efficiency device, the determination of the performance parameters of all the equipment in the system, as well as the design of the system piping. Among them, the jet and the secondary efficiency device are developed, designed and manufactured by our company.

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