

## Biogas low NOx burner



### **Introduction of pulverized coal low NOx burner**

During combustion for pulverized coal, there are a large amount of pollutants, of which Sox accounts for 87%, NOx for 67%, CO for 67%, and soot for 60%. There are widespread problems of low combustion efficiency and serious pollution in industrial coal burning, and its average thermal efficiency is only 60%~65%. Therefore, it is necessary to upgrade the industrial coal-fired boilers and push forward transformation of low NOx, especially the research and development of low NOx burners. There are two main directions of NOx control: terminal control and source control. The terminal control is to remove NOx from the flue gas using various removal technologies. The removal technologies mainly include SCR and SNCR which cost are expensive. Therefore, source control (namely low NOx combustion) is generally adopted to reduce the production of NOx in the combustion. Via optimization of the burner and system, the formation of NOx can be greatly reduced at low investment, low operating costs, it is applicable for industrial boilers.

There are mainly three types of NOx produced in pulverized coal combustion: thermal type, fuel type and rapid type. From these three factors, it comes below low NOx burning technologies:

1. Low excess air burning technology: the generation of NOx can be reduced by controlling excess air coefficient and reducing oxygen concentration. The disadvantage is that the reduction range is limited and it is easy to cause insufficient burning.
2. Exhaust gas recycling technology: exhaust gas recycling in the tail can reduce the burning temperature and oxygen concentration, so as to reduce the generation of NOx. Its disadvantage is easy to cause insufficient burning;
3. Dense and sparse burning technology: fuel can be divided into dense and sparse through separator. The burning of the dense fuel in the oxygen-deficient state leads to insufficient combustion, forming a strong reducing atmosphere and inhibiting the generation of NOx. The burning of the sparse fuel in the oxygen-rich state leads to low burning temperature, thus reducing the generation of NOx.
4. Graded burning technology: firstly, the fuel is burnt in a state of poor oxygen, and the combustion is not sufficient, forming a reducing atmosphere to inhibit the generation of NOx. Then, inject air into the flue gas of insufficient combustion, to make it sufficient burning. It is difficult to generate NOx due to low smoke temperature.

