State of the art technology for the abatement of nitrogen oxides from coal, oil and gas fired boilers is Selective Catalytic Reduction (SCR). SCR technology is capable of reducing nitrogen oxides with an efficiency of up to 95%. The high availability of the SCR system is achieved by an optimum SCR reactor design together with a tailor-made catalyst.

The design of the SINOx® catalysts is customized for the chemical and physical conditions of service. If necessary, Johnson Matthey may perform additional studies to find the ideal catalyst for each application.

Since 1987, SINOx® catalysts have decomposed millions of tons of nitrogen oxides. Johnson Matthey has a leading position worldwide as a catalyst supplier for power plants with a total order volume of more than one million cubic meters of SINOx® catalysts.
Depending on plant requirements (new plant, retrofit or space availability), NOx reduction can be performed in a variety of configurations.

**High Dust Configuration**
In a high dust configuration, the SCR reactor is installed directly downstream of the economizer and upstream of the air preheater. The main advantage of this arrangement is that preheating of the flue gas is not necessary. The flue gas temperature normally varies between 300°C and 430°C (570°F and 810°F). The principal advantages of the high dust system are lower capital investment and operating costs.

**Low Dust Configuration**
In this arrangement, the catalyst is situated downstream of the electrostatic precipitator. The flue gases entering the SCR reactor therefore contain very little dust, but are rich in SO₂. The flue gas temperatures are usually sufficient without further heating.

**Tail End Arrangement**
This configuration is widely employed in western Europe. In particular, this method is popular for retrofits of existing power plants. In this arrangement, the SCR unit is placed after the precipitator and the flue gas desulfurization (FGD) unit. This means that the flue gas contains very little dust, SO₂, and catalyst poisons when entering the catalyst. Preheating of the flue gas is necessary thereby increasing installation and operation costs.