

Technologies for Control of NOx Emission

Foreword

The oxides of nitrogen (NOx) constitute an important component of the air-fed combustion processes. The major contributors of NOx include the thermal power plants, industrial boilers, nitric acid plants, metallurgical plants and automobiles. When fossil fuel is burnt in the presence of excess air at high temperatures, oxides of nitrogen are formed in two ways viz. fuel NOx formed due to nitrogen present in the fuel and thermal NOx formed due to high temperature reaction of nitrogen and oxygen present in combustion air. Research has been carried out by several research organisations & industries for reduction of NOx emission by pre-combustion control techniques, combustion modifications and post-combustion measures. Japan, United States and some countries in Europe have made significant developments in NOx control and reduction technologies. Low NOx burners, staged combustion, selective catalytic reduction, & flue gas recirculation system etc. have been developed and used for NOx reduction. In India, however, not much work has been done with regard to control of NOx emissions. Hence, it was necessary to prepare a document on the various technologies present in the country and abroad for effective control of NOx emissions.

The document has been prepared on the basis of a study conducted by M/s Development Consultants Ltd., Calcutta, under the overall supervision of Dr. B. Sengupta, Senior Scientist. The document has been edited in the present form by Shri Lalit Kapur, Environmental Engineer, Shri Sandeep Shrivastava, Assistant Environmental Engineer and Dr. J. Moitra, Senior Scientific Assistant.

I hope, the document will serve as useful reference to the industry, the regulatory agencies, research organisations, academic institutions and consultants.



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