NO Oxidation with Dry Oxidizing Agent Produced from Catalytic Process for DeNOx in the Ship

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NO_X is a typical air pollutants produced by the combustion of fossil fuels in engine. Air pollutants emitted from vessels have a negative effect on the people of the coastal waters. Many studies for the removal of NOX have been conducted with many efforts to minimize NOx emission by either the combustion control or the post-combustion treatment. The SCR(Selective Catalytic Reduction) is a powerful method to minimize NO_X emission, but its performance can be dramatically decreased with decreasing the reaction temperature condition below 350 ^oC[1-4]. In the previous studies, we designed the NO oxidation process using an oxidizing agent generated by the catalytic hydrogen peroxide decomposition for the NO removal. In this study, the reaction characteristics of the dry oxidation process with oxidizing agent were investigated under the various operation conditions (eg. reaction temperature, NO concentration and space velocity) for the NOx removal in exhaust gas. A catalytic reaction system was installed on ships capable of operating for this experiment. The removal efficiency of nitrogen oxides according to various ship operating conditions was investigated. Fig. 1 shows a schematic diagram of catalytic decomposition system for DeNOx in the ship. Fig. 2 shows a NO conversion using the dry oxidizing agent produced and depended on the catalytic reaction temperature. As a result, the performance of NO oxidation was increased with increasing the oxidation temperature.

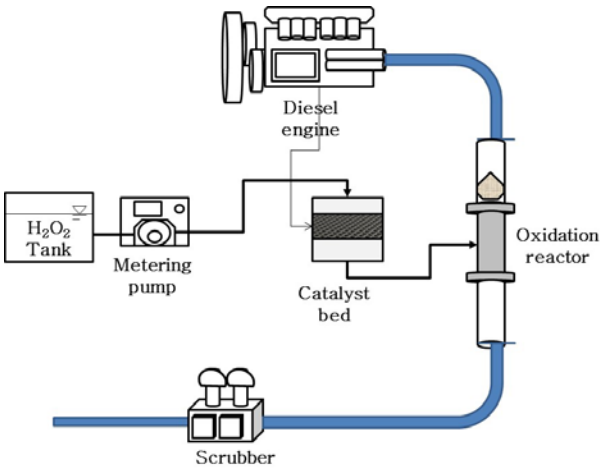

Fig. 1. Schematic diagram of NO Oxidation with Dry Oxidizing Agent Produced from Catalytic Process for DeNOx in the Ship

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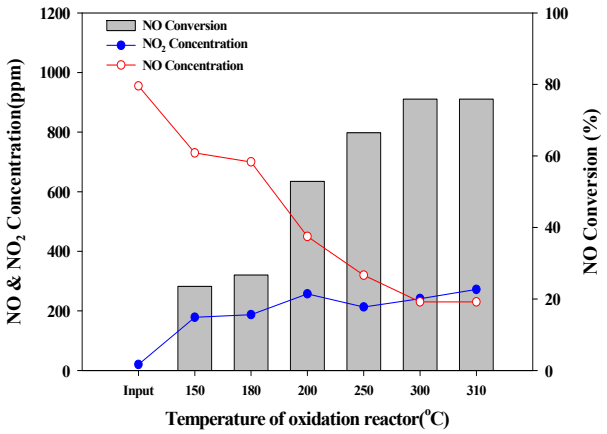

Fig. 2. NO conversion using the dry oxidizing agent produced and depended on the catalytic reaction temperature.

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