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Abstract

Off-road construction equipment is a significant source of the pollutants carbon monoxide (CO), hydrocarbons (HC), particulate matter (PM) and oxides of nitrogen (NOx) in California. A retrofit Continuously Regenerating Technology (CRT®) and other Diesel Particulate Filter (DPF) technologies provided by ECS and HUSS have been verified by ARB for significant reduction of CO, HC and PM from On-road and Off-road vehicles. The focus of this project was to evaluate the combination of a Selective Catalytic Reduction (SCR) system with the CRT to reduce the NOx from off-road equipment. Previous work has demonstrated that installing a CRT upstream of a SCR system can enhance the performance of the SCR catalysts along with the reduction of HC, CO and PM. The proposed retrofit SCR system uses NH_3 stored in aqueous urea to reduce the NOx in the machine's exhaust. The urea is dosed into the exhaust by an air assisted urea dosing pump. The system is very similar to a retrofit system currently being considered by ARB for verification for use in on-road applications. This paper will outline the process of equipping two pieces of off-road equipment operated by the LA Sanitation Department with the retrofit SCRT® system. The SCRT® system is a combination of the CRT filter system and urea SCR (CRT + SCR = SCRT). The SCCRT® is a combination of the CCRT filter system and urea SCR. (SCR + CCRT = SCCRT). Data will be presented that demonstrates the performance of the system along with a description of the challenges unique to adapting this technology to off-road equipment.

Introduction

The objective of this project was to demonstrate the performance of the Johnson Matthey combined retrofit emission control technology known as SCRT on off-road equipment. The SCRT/SCCRT system combines the CRT Filter with a urea based SCR system to reduce PM, NOx, HC and CO. The SCRT/SCCRT systems have demonstrated consistent NOx reductions of 60-80% in on-road applications. In this project the product was