

Summary of Engine Projects

Completed By Avogadro Environmental Corporation

Engine Testing Projects

PPL Distributed Generation (PPL) - Lancaster County Solid Waste Management Authority, Frey Farm/Creswell Landfill (LCSWMA) (Manor Township, Lancaster County, PA.)

Avogadro performed a compliance test program at the above site on one Perennial Energy flare and on two Caterpillar engines. Each of the two engines is a Caterpillar G3520C genset rated at 2,224 brake horsepower at 100% load. The approximate measured stack temperature and flow rate are 900 degrees Fahrenheit and 4,700 scfm, respectively. Test parameters on the engine included carbon monoxide, nitrogen oxides, non-methane hydrocarbons (VOC) and formaldehyde using USEPA Method 323.

PPL Distributed Generation (PPL) – Pennsauken Sanitary Landfill; Pennsauken, PA.

Avogadro performed a compliance test program at the above site on two Caterpillar engines. Each of the two engines is a Caterpillar G3516 genset rated at 1,100 kW at 100% load, while fired with landfill gas. Test parameters on the engine included carbon monoxide, nitrogen oxides, sulfur dioxide, non-methane hydrocarbons, and total particulate matter.

Alliant Energy – Three Reciprocating Engines; Homasote Company; West Trenton, NJ

Avogadro performed a compliance test program at the above site on three reciprocating engines. Testing was conducted to demonstrate compliance with both the MACT Rule Subpart ZZZZ and the state permit. Test parameters on the engine included carbon monoxide, nitrogen oxides, non-methane hydrocarbons, suspended particulate matter, formaldehyde using SW846-0011, and acrolein using TO-15.



Merck & Co, Inc.; West Point, PA. Facility

Merck & Co, Inc. received approval for the temporary operation of a 1,040 kilowatt (kw) natural gas-fired emergency generator. The generator is manufactured by Caterpillar. It is a lean-burn type engine, model number G3516LE. The emissions of carbon monoxide and VOC from the engine are controlled by a catalytic converter. Avogadro performed an emissions evaluation on the engine exhaust for carbon monoxide, nitrogen oxides, and non-methane hydrocarbons.

Enerdyne Power Systems; Waverly Gas Producers; Waverly, VA; Caterpillar Engines #1 & #2

Avogadro performed a compliance test program at the above site on two Caterpillar model 3508 landfill gas-fired engines. Testing was conducted to demonstrate compliance with the VADEQ Stationary Source Permit to Construct and Operate. Test parameters on the engines included carbon monoxide, nitrogen oxides, non-methane hydrocarbons, and opacity.

Hugo Neu Schnitzer East; Long Island City, New, NY

Avogadro performed an emissions test program at the above site on one Cummins, one Caterpillar and on one 6.5-megawatt, diesel, Fairbanks Morse engine to demonstrate compliance with the New York State NO_x RACT rules (6 NYCRR, Part 227-2). Testing was conducted during another mobilization on the Fairbanks Morse engine and one of two new, 300-kW, diesel Cummins engine to demonstrate compliance with the facility Title V Operating Permit limits. Test parameters on these engines included nitrogen oxides, suspended particulate matter, and opacity.

Keyspan Energy; Long Island Power Authority; Shoreham, NY and Holtsville, NY Mobile Generating Facilities

The Long Island Power Authority (LIPA) operates two mobile generating stations located in Shoreham, NY and Holtsville, NY. The facility in Shoreham, NY consists of eighteen Cummins diesel-fired engines, and the facility in Holtsville, NY consists of twenty-four Cummins diesel-fired engines. These diesel engines are designed to supply power to the LIPA electrical system. Emissions of nitrogen oxides from each engine were controlled by an SCR system using urea injection. Avogadro conducted a compliance emissions test program on six of the eighteen units at the Shoreham facility (Engines 6-11) and eight of the twenty-four units at the Holtsville facility (Engines 1-8) to determine emissions for nitrogen oxides.

Summit Plaza Associates Power Plant – Jersey City, NJ

Avogadro performed an informational test program at the above site on one 1974 Caterpillar D-398 diesel engine. The engine has a 600 kW nameplate rating, but the prime service operating range is 300 to 450 kW. Test parameters on the engine included suspended particulate matter and non-methane hydrocarbons.

Covanta Power Pacific Inc. – Gude Facility; Rockville, MD. Landfill Gas-Fired Engine Emissions

For six consecutive years, Avogadro performed an annual emissions test program on two internal combustion engines at the Covanta Power Pacific, Inc. - Gude Facility. The engines are fired with landfill gas from a nearby landfill. In summary, the emissions evaluation consisted of performing consecutive, triplicate one-hour test runs on the engines for nitrogen oxides, non-methane hydrocarbons, and carbon monoxide.

Engine Permitting Projects

Glaxo Smith Kline – Collegeville, PA – Emergency Generator Permitting

In order to complete registration of new emergency generators in association with the existing Title V Operating Permit, Avogadro Environmental completed and submitted an Administrative Amendment Request to PADEP Southeast Office New Source Review Section.

Sims Hugo Neu – Queens, NYC – NO_x RACT Plan – Diesel Engines

Avogadro Environmental prepared a NO_x RACT Compliance Plan and Operating Plan for internal combustion sources in accordance with NYSDEC Air Regulations Subpart 227-2.3 (b) and (c) accordingly. The main generator at Hugo Neu Queens Yard is rated at 9,630 HP (6.5 MW). As well, (2) 300 KW Cummins engines, fired on low-sulfur diesel fuel are operated on site. Avogadro Environmental obtained a Variance from the RACT NO_x limit for lean burn engines (2.3 grams/BHP-hr) by demonstrating that it is not economically feasible using the methods described in Air Guide 20 (published January 24, 1996). A case specific RACT determination including use of low-sulfur fuel and other strategies implemented to date was utilized.

Sims Hugo Neu – Queens, NYC – Title V Operating Permit Renewal – Diesel Engines

Avogadro Environmental prepared a renewal application for Generators at the Queens Yard facility. The application included revising operating hours of the main generator and two backup generators, and inclusion of emission reductions from NO_x RACT controls as offsets for the addition of a new 1000 KW Peak Load Cummins Diesel Generator for a new Plastics Recycling Operation on site.

Cummins Power Generation – Warren Hospital, Phillipsburg, NJ – Co-Gen Facility

Avogadro Environmental provided assistance to submit application and obtain an air permit through the Preconstruction Permit Program at NJDEP. Warren Hospital is an existing site in the NJDEP Air Pollution Control Permit Program site. Cummins Power Generation is planning to construct and operate a new 1250 KW natural gas-fired engine as referenced above for Warren Hospital.