

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology (BACT) Guideline

Source Category

Source:	IC Engine – Biogas Fired	Revision:	1
		Document #:	96.2.4
Class:	≥ 50 Hp Output	Date:	5/30/2013

Pollutant	BACT 1. Technologically Feasible/Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. 0.12 g/bhp-hr ^{a, c, e, f, g, k} 2. 0.16 g/bhp-hr ^{l, k}	1. Gas Pre-Treatment (filtration, refrigeration & carbon adsorption) + Oxidation Catalyst ^{a, c, e, f, g, k} 2. Low POC Waste Gas or Gas Pre-Treatment or Gas Pre-Treatment + Oxidation Catalyst ^{l, k}
NO_x	1. n/s 2. 0.15 g/bhp-hr ^{a, c, d, e, f, g, i, j, l}	1. Gas Pre-Treatment + Selective Catalytic Reduction (SCR) ^{f, g, l} 2. Gas Pre-Treatment + Selective Catalytic Reduction (SCR) ^{a, c, d, f, i, j, l} or NOxTech ^{e, i, j}
CO	1. 0.89 g/bhp-hr ^{b, c, f} 2. 1.8 g/bhp-hr ^a	1. Gas Pre-Treatment + Oxidation Catalyst ^{b, c, f} 2. Gas Pre-Treatment + Oxidation Catalyst ^a
SO₂	1. 100 ppmv of total sulfur in Biogas ^{c, g} 2. 150 ppmv of total sulfur in Biogas ^{a, b, h}	1. Low Sulfur Biogas ^c or Gas Pre-Treatment with >80% H ₂ S Removal ^g 2. Low Sulfur Biogas or Gas Pre-Treatment ^{a, b, h}
PM₁₀	1. 0.07 g/bhp-hr ^b 2. 0.10 g/bhp-hr ^{a, c}	1. Gas Pre-Treatment (filtration and condensation) ^b 2. Gas Pre-Treatment ^{a, c}
NPOC	1. n/d 2. n/s	1. n/d 2. Same as POC

References and Notes for BACT Determination

- a. BAAQMD Application # 12649 (Ameresco Half Moon Bay, LLC)
- b. BAAQMD Application # 23333 (Potrero Hills Energy Producers)
- c. BAAQMD Application # 24388 (Zero Waste Energy)
- d. San Joaquin Valley APCD: Ameresco Foothill and Forward Energy Projects
- e. San Joaquin Valley APCD: Cambrian Energy Woodville, LLC Energy Projects
- f. South Coast AQMD: Orange County Sanitation District Demonstration Project
- g. Georgia Dept. of Natural Resources: MAS ASB Cogen, LLC CHP Facility
- h. South Coast AQMD: Rule 431.1, amended 6/12/98.
- i. South Coast AQMD: Rule 1110.2, Table III-B, amended 9/7/12.
- j. San Joaquin Valley APCD: Rule 4702, Table 2, amended 8/18/11.
- k. Formaldehyde is both a POC and a toxic air contaminant (TAC) and is typically the largest contributor to the health risks resulting from biogas fired engines. Oxidation catalysts typically achieve 50% or greater control of formaldehyde emissions. Use of an oxidation catalyst will satisfy the Regulation 2-5-301 TBACT requirement.
- l. For SCR systems, ammonia emissions are typically limited to an exhaust concentration 10 ppmv of NH₃ at 15% O₂ or less. ^{c, f}