

ETV Canada Verified



SaniFlame Model 300P Gasification Unit

Technology Fact Sheet for SaniFlame Inc.

Performance Claim

SaniFlame Inc. with its two chamber model 300P gasification unit conducted a series of stack emission (flow rates) and operating temperature tests at a turkey farm with deadstock weight ranging from 554 to 646 lbs in the primary chamber.

Operating temperatures were maintained above 850°C with a minimum 2 second retention time. This result is in compliance with the new Ontario Reg. 106/09 under the Nutrient Management Act for the “Disposal of Dead Farm Animals” effective April 1st, 2012.

Stack emission results also showed compliance with Ontario Reg. 419/05 with organic matter having a carbon content less than 100 parts per million by volume (ppmv).

Technology Description

The SaniFlame 300P is a batch gasification unit. It is equipped with two chambers, a primary chamber and secondary chamber, “the afterburner”.

The primary chamber has a full width door for the material to be placed on the grooved replaceable hearth tiles. Once the poultry waste has begun to gasify, the start-up burner is switched off as there is sufficient energy in the material being processed to maintain the preset operating temperatures.

The afterburner is an advanced design. The position of the burner and the design of the transfer duct for the primary chamber off-gas, ensures that the flame and off-gases are mixed as they enter the afterburner chamber. This design eliminates the possibility of unprocessed off-gas exiting the afterburner. It also increases the retention time and destruction efficiency of the SaniFlame system.

Technology Application

The SaniFlame 300P has been designed to process waste streams generated by the agricultural sector and other industries such as municipal and medical wastes. The unit has a nominal load capacity of 600 lbs.

Performance Conditions

Testing was conducted at a turkey farm near Ayr, Ontario. Three tests were completed on June 4, 5 and 6, 2012. Feedstock weights during testing ranged between 554-646 lbs, therefore, the gasification unit was operating at capacity or a little above capacity. During the claim assessment period, the temperature in the second chamber was 948°C for the three tests and retention times were 2.26, 2.15 and 2.39 seconds. The average actual undiluted total hydrocarbons (THC) concentration in the stack gases was 2.3 ppmv as methane.

Additional testing was carried out for particulate matter (33.5 mg/Rm³)*, oxygen (10.3%), carbon dioxide (9.1%), and carbon monoxide (33 ppm).

*R – reference flue gas conditions, defined as; 25°C, 101.3 kPa. Particulate matter data is the average of two tests.

Verification

Performance claim verification was conducted by ORTECH Environmental, as the Verification Entity, using ETV Canada's General Verification Protocol. The verification was based on information supplied by SaniFlame Inc., and the performance tests conducted by RWDI Air Inc.

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