Message

From: Gordon, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=689E550DAE8B4233B609488D20B6ADB5-GORDON, MICHAEL_CA1435D930]
Sent: 4/4/2018 3:32:03 PM
To: Peter Thomas [pthomas@manuregy.com]
Subject: RE: Coaltec gasification of municipal biosolids

Hi Peter,

I have some more follow-up questions for you.

1. In your e-mail, you mention "The flame you are seeing in the video is the initial combustion of the syngases arising from the biomass, not combustion of the biomass itself."- It will be helpful if you could point out the location of syngas combustion in the cut-away engineering drawing of the gasifier.

2. I am assuming external burners are used to initially heat the gasification chamber and the burners are completely turned off after the chamber attains the desired temperature. I am also assuming this is indirect heating. In other words, the sludge never comes in direct contact with the burner. Are those assumptions correct?

3. Is the heat from the thermal oxidizer used to sustain the temperature of the gasifier, or it is exclusively used for drying the feed materials?

Mike Gordon
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From: Peter Thomas [mailto:pthomas@manuregy.com]
Sent: Wednesday, March 28, 2018 10:49 AM
To: Gordon, Michael <Gordon.Mike@epa.gov>
Subject: Coaltec gasification of municipal biosolids

Mike,

The flame you are seeing in the video is the initial combustion of the syngases arising from the biomass, not combustion of the biomass itself. In fact, often, you can see a space between the biomass and the flame of this initial syngas. We have thermocouples in the reaction zone, and when we allow them to get covered by the biomass, they consistently read between 200° F and 300° F, as opposed to the air temperature of 1,400° to 1,500° F; showing the difference between combustion of the syngases versus combustion of the biomass.

The vast majority of the syngas combustion takes place in the refractory-lined thermal oxidizer, where we add oxygen (see blue arrows in the attached drawing). The gasifier itself is oxygen-starved, and the only place within the gasifier where air is very carefully introduced (via two small, rotating air pipes) is in the hot reaction zone. Attached is a cut-away engineering drawing of the gasifier, and you can see the two horizontal air pipes in the hot zone.

The very reason we designed oxygen-starved, refractory-lined gasifier / thermal oxidizer this way is to retain as much carbon in the activated carbon or biochar as possible. All of our systems are exactly the same design. In the system we just began operating at the AltEn ethanol plant in Mead, Nebraska, we achieved 67% carbon when processing wet distillers grain. If we were combusting the biomass inside the gasifier, we would be destroying virtually all of the carbon in the biomass, and the only output would be a gray ash, not black, activated carbon or biochar (see attached photo).

Regards,

Peter Thomas
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From: Gordon, Michael <Gordon.Mike@epa.gov>
Sent: Tuesday, March 27, 2018 4:01 PM
To: Peter Thomas <pthomas@manuregy.com>
Subject: RE: Coaltec gasification of municipal biosolids

Hi Peter,

I do have a follow up question for you. At about the 1:34 mark in the youtube video you sent the narration describes it as the reaction occurring in the gasifier. The flames present would seem to be indicative of combustion taking place as opposed to gasification. Can you provide an explanation for the combustion and describe when in the process this takes place and for how long?

https://www.youtube.com/watch?v=sVSRNxrCJWs

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From: Peter Thomas [mailto:pthomas@manuregy.com]
Sent: Thursday, March 08, 2018 6:39 PM
To: Gordon, Michael <Gordon.Mike@epa.gov>
Subject: Coaltec gasification of municipal biosolids

Michael,

Thank you for replying. Attached is a PDF document with our answers to your questions about the use of our automated, closed-loop, oxygen-starved, refractory-lined drying and gasification system for processing municipal sewage sludge, which I had called biosolids. Also attached are several engineering documents. Please don't hesitate to call or write if you have any additional questions. As I mentioned, it certainly would be helpful to have a nationwide decision regarding the application of Section 112 for our oxygen-starved gasification system.

Regards,

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From: Gordon, Michael <Gordon.Mike@epa.gov>
Sent: Thursday, March 8, 2018 4:22 PM
To: Peter Thomas <pthomas@manuregy.com>
Subject: RE: Coaltec gasification of municipal biosolids

Hi Peter,

Following up from your previous e-mail. We are requesting some additional information in order for us to assist you with potential CAA Section 129 and 112 applicability. See attached letter for more details.

-Mike

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From: Peter Thomas [mailto:pthomas@manuregy.com]
Sent: Monday, January 15, 2018 12:04 PM
To: Fernandez, Cristina <Fernandez.Cristina@epa.gov>; Gordon, Michael <Gordon.Mike@epa.gov>
Subject: Coaltec gasification of municipal biosolids

Cristina and Michael,

In late 2016, I wrote to Region 3 requesting that you confirm that when we process poultry litter to produce steam-activated carbon, our high-temperature, refractory-lined, oxygen-starved gasification process falls under Section 112 (Non-Hazardous Secondary Materials) of the Clean Air Act (see your letter dated December 5, 2016). You confirmed that when processing poultry litter, our gasification system and process fall under Section 112 in your Letter Ruling to us dated August 17, 2017 (see attached).

We are now in early-stage discussions with the Allegheny County Sanitation Authority (ALCOSAN wastewater plant), 3300 Preble Avenue, Pittsburgh, PA 15233 about drying and processing approximately 110 wet tons of their biosolids per day using exactly the same Coaltec Energy model refractory-lined, oxygen-starved gasification system (see attached drawing). We also intend to hold discussions with other large municipal wastewater treatment plants about processing their biosolids in order to produce low-cost powder activated carbon. The low-cost Ecochar® powder activated carbon (PAC) would be used on-site by these wastewater treatment plants for adsorbing pharmaceuticals, pesticides, and hormones before these and other organic contaminants are discharged in their effluent. In the labs at Calgon Carbon Corporation (Pittsburgh), we have demonstrated that our low-cost PACs adsorb these organic micro-contaminants, and that when the PAC is produced at 1,800° F, micro-nutrients such as phosphorus are extremely tightly bound and therefore do not leach into the water.

We would appreciate it if you would confirm that drying and processing municipal biosolids at ~982° C (~1,800° F) in our refractory-lined, oxygen-starved gasification system also falls under Section 112 of the Clean Air Act. If you concur, we would appreciate it if you would confirm this in a letter ruling.

Regards,

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