CONVERGEN ENERGY FUELS
INDUSTRIAL BOILER MACT COMPLIANCE

General Overview

Convergen Energy (CE) Fuels produces engineered renewable fuel pellets under the U.S. EPA Alternative Fuels Program. These fuel pellets are classified as a "non-waste fuel" by U.S. EPA. They are produced using non-hazardous, non-waste materials that are obtained from industrial manufacturers and are comprised primarily of fiber/paper material (60 to70%) and clean plastics (30 to 40%).

CE has been producing this fuel pellet product for over 5 years and has significant experience in a number of different solid fuel boiler applications including: stoker, circulating fluidized bed, cyclone, and pulverized coal boilers. In addition, CE has significant experience with fuel testing, quality control, air permitting, and equipment modifications to meet the Industrial Boiler MACT requirements as well as to efficiently and effectively utilize the fuel to obtain the best performance and economics.

CE Pellet Fuel Quality

CE's engineered fuel pellets are designed to provide a fuel that is low ash, low moisture, and high energy and works well in many solid fuel type boiler systems. CE's fuel is also low in emissions compared to many other solid fuels: compared to coal, CE fuel is low in CO, lower in NOx, lower in Sulfur, and lower in Mercury (Hg). Acid gas (HCl) compliance can be met with relatively simple dry sorbent injection technology. Due to the very low sulfur content of the CE fuel pellets, the reagent usage for DSI to meet MACT compliance for acid gas (HCl) is very low compared to typical Eastern coal. These attributes allow the CE fuel pellets to achieve Boiler MACT compliance with lower capital costs than retrofit for coal or switching to natural gas typically.

CE Engineered Fuel Pellet Quality	
Energy	11,500 Btu/Lb.
Sulfur	0.25 %
Moisture	5.00 %
Ash	7.00 %
Mercury	8.7E-7 lb./mmBtu max.
Chlorine	0.12%

CE Pellet Fuel Combustion Characteristics

CE engineered fuel pellets are low in fixed carbon and high in volatile content compared to coal. The high volatile content of the CE pellets means that they combust differently in the boiler than coal does. This difference in volatile content typically requires more over-fire air and thus less under-grate air in stoker applications. In addition, CE fuel has some other distinct advantages such as high inherent

oxygen content (28%) compared to coal (around 5%). This added oxygen content coupled with low moisture content allows the CE fuel pellets to be combusted with less external air. The result of less external air is greatly reduced NOx emissions (up to 40% lower compared to coal). The low moisture, high energy content is also an advantage when co-firing with traditional biomass that is typically high in moisture content and low in energy. Boiler efficiency can be improved in traditional biomass boiler applications with the addition of CE fuel pellets.

CE engineered fuel pellets tend to be low in slagging and fouling when burned alone in solid fuel boilers. Blends with other fuels can be done and testing of blends to obtain the optimum mix of fuels to reduce slagging/fouling potentials is preferred.

CE Engineered Fuel Pellet Ultimate Analysis	
Carbon	56.63%
Hydrogen	7.83 %
Nitrogen	0.26 %
Oxygen	27.59 %
Volatile Matter	83.04%
Fixed Carbon	7.33%

CE Pellet Fuel Air Emissions

CE fuel pellets perform well from an emissions standpoint in a properly tuned stoker boiler. The emissions shown below are from an actual stack test situation both with and without dry sorbent injection (DSI) using Calcium Hydroxide (Ca(OH)2) reagent to control acid gas (HCl). While the injection rate of Ca(OH)2 to achieve Industrial Boiler MACT compliance of 0.022 lb./mmBtu was near 100 lb./hr. in this particular boiler, the coal required an estimated +350 lb./hr. of Ca(OH)2 injection rate to achieve MACT compliance.

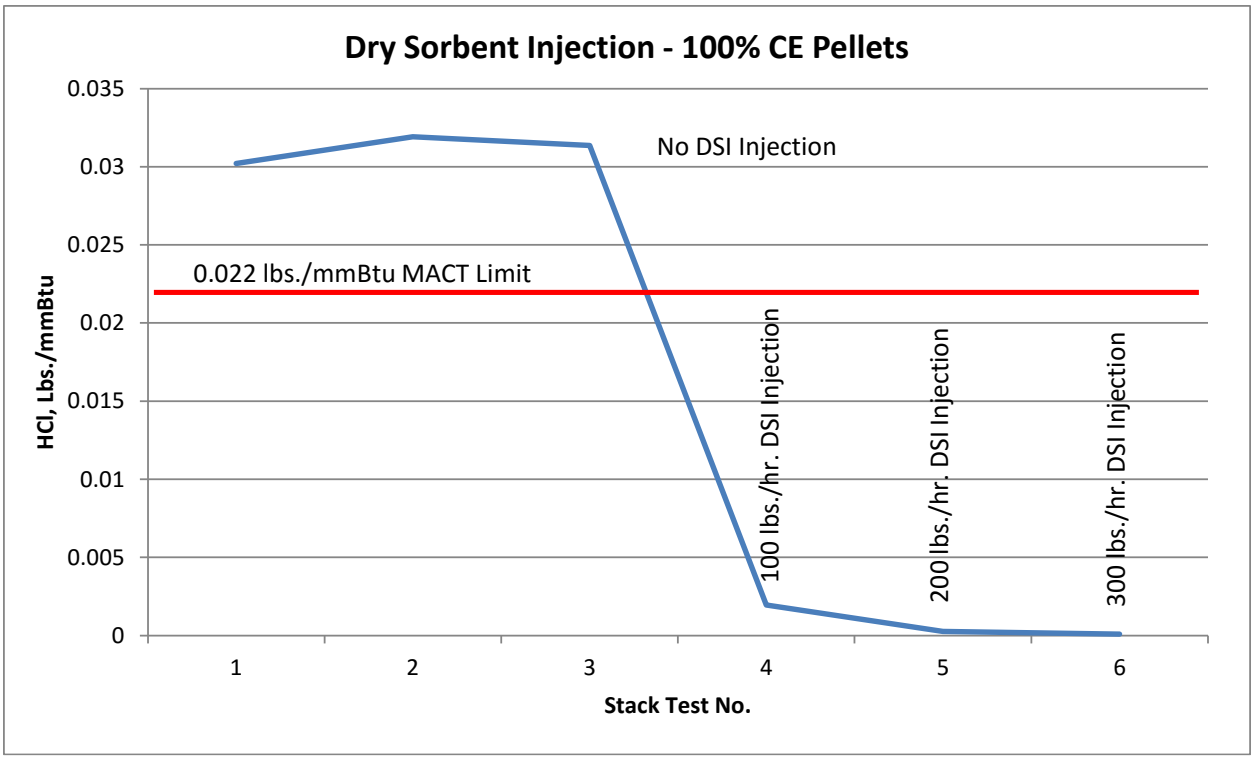
CE Engineered Fuel Pellet Emissions Data			**Eastern KY Low Sulfur Coal**
Carbon Monoxide	20 to 30 ppm	Stack Test Measurement	20 to 30 ppm
Nitrogen Oxides	95 to 105 ppm	Stack Test Measurement	175 to 185 ppm
Sulfur Dioxide	40 to 60 ppm	STM Uncontrolled (no DSI)	520 to 555 ppm
Sulfur Dioxide	15.9 ppm	w/100 lb./hr. DSI injection Ca(OH)2	497 ppm
Sulfur Dioxide	5.8 ppm	w/200 lb./hr. DSI injection Ca(OH)2	488 ppm
Sulfur Dioxide	3.3 ppm	w/300 lb./hr. DSI injection Ca(OH)2	400 ppm
Hydrogen Chloride	95 to 105 ppm	STM Uncontrolled (no DSI)	115 to 125 ppm
Hydrogen Chloride	<1.6 ppm	w/100 lb./hr. DSI injection Ca(OH)2	22 ppm
Hydrogen Chloride	0.26 ppm	w/200 lb./hr. DSI injection Ca(OH)2	13.8 ppm

Hydrogen Chloride	0.26 ppm	w/300 lb./hr. DSI injection Ca(OH)2	8.54 ppm
Mercury	8.7E-7 lb./mmBtu	Fuel Calc. – assumes no capture	2.3E-6 lb./mmBtu

- Carbon monoxide and nitrogen oxide emissions are for correct air adjustment in a well-tuned boiler

CE Engineered Fuel Pellet Emissions Data			
Carbon Monoxide	20 to 30 ppm	Stack Test Measurement	Meets Ind. B. MACT
Nitrogen Oxides	95 to 105 ppm	Stack Test Measurement	NR for B.MACT
Sulfur Dioxide	40 to 60 ppm	STM Uncontrolled (no DSI)	NR for B.MACT
Sulfur Dioxide	15.9 ppm	w/100 lb./hr. DSI injection Ca(OH)2	NR for B.MACT
Sulfur Dioxide	5.8 ppm	w/200 lb./hr. DSI injection Ca(OH)2	NR for B.MACT
Sulfur Dioxide	3.3 ppm	w/300 lb./hr. DSI injection Ca(OH)2	NR for B.MACT
Hydrogen Chloride	95 to 105 ppm	STM Uncontrolled (no DSI)	Requires Control
Hydrogen Chloride	<1.6 ppm	w/100 lb./hr. DSI injection Ca(OH)2	Meets Ind. B. MACT
Hydrogen Chloride	0.26 ppm	w/200 lb./hr. DSI injection Ca(OH)2	Meets Ind. B. MACT
Hydrogen Chloride	0.26 ppm	w/300 lb./hr. DSI injection Ca(OH)2	Meets Ind. B. MACT
Mercury	8.7E-7 lb./mmBtu	Fuel Calc. – assumes no capture	Meets Ind. B. MACT

- Actual Mercury emissions will be lower than the fuel basis since Chlorine is present and capture via bag house accomplishes some level of removal



- Data in the above graph is from preliminary testing and results are not final. Some calculation parameters are estimates based on preliminary data.

CE Alternative Fuel Classification/Industrial Boiler MACT Classification

CE engineered composite fuel pellets are classified as a "non-hazardous, non-waste" fuel under the U.S. EPA Alternative Fuels Program (see U.S. EPA Alternative Fuels website for a copy of CE's fuel designation letter currently still listed under our previous name: Greenwood Energy). This classification means that combustors of the CE fuel fall under Section 112 of the Clean Air Act Regulations for purposes of evaluation of Hazardous Air Pollutants (HAPS). This is the same classification as traditional solid fuels such as coal, tire-derived fuel, biomass, construction/demolition waste, and pet-coke. The users of CE fuel do **not** fall under the Commercial Industrial Solid Waste Incinerator Regulations (Section 128 of the Clean Air Act).

In addition, boilers burning over 10% of CE fuel will be classified as a biomass plant for the purposes of the Industrial Boiler MACT Regulations.

Summary

CE engineered composite fuel pellets:

- Are a low ash, low moisture, high Btu fuel for solid fuel boilers
- Are an approved EPA alternative fuel and are classified as "non-hazardous, non-waste"
- Work efficiently in many existing industrial solid fuel boilers

- Have lower emissions compared to many traditional solid fuels
- Can meet the Industrial Boiler MACT with a minimum of capital and operating costs
- Can provide better economics than coal or natural gas in many cases

APPENDIX

Eastern Bituminous Coal Used in Tests	
Energy	13,100 Btu/Lb.
Sulfur	0.7 %
Moisture	6.0 %
Ash	7.0 %
Mercury	2.3E-6 lb./mmBtu
Chlorine	0.20%