



ZERO EMISSIONS

CONVERTING **ALL** FORMS OF WASTE TO ENERGY  
The **Bio Carbon Fuels** Total Solution for the world

# Bio Carbon Fuels Introduction

## The Environmental Education Center

Bio Carbon Fuels incorporates commercially proven technologies in a unique combination designed to eliminate **ALL** of the waste materials created by the cities of the world.

Bio Carbon Fuels is committed to waste elimination and renewing the environment through eliminating greenhouse gas producing waste streams of the world.

We will create thousands of jobs and sustainable communities which will position Brazil as **THE WORLD LEADER** in environmentally responsible renewable energy production through waste elimination.

The focus of Bio Carbon Fuels (BCF) is the creation of clean energy produced from all of the waste that a city creates. MSW can be blended with sewage sludge and the waste from construction debris along with animal wastes and agricultural waste into a consistent homogenous feedstock. We do this through a comprehensive collection of existing equipment and technologies that combined will re-use **ALL** forms of waste into useful renewable fuels or renewable energy both electricity and renewable hydrogen from **ALL** forms of waste along with composite building products.

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The Patented technology that makes this blending of multiple waste streams into one dry homogenous carbon based feedstock possible is the BCF-8,000. This machine is a shredder a mixer and a dryer all in one machine. BCF builds an “Environmental Education Center” (EEC) which teaches the people of the community it serves on the modern all inclusive safe for the environment way to process and **ELIMINATE ALL WASTE** that the community it serves creates. The facility never closes due to weather and **NEVER** fills up like landfills. This is Total elimination of waste.

The community can now be assured that there will **NEVER** be trash or recyclables that they cant sell or any other kind of waste to be stock piled or thrown into a landfill.

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The **Environmental Education Center** will have class rooms for students and for the public to attend classes on the different ways to re-use waste. It will teach the public that all forms of waste are carbon based. The **Environmental Education Center** will also have day care centers for the children of the workers who work in the facility or attend classes. When the system processes the waste it is dried and sterilized for bacteria to kill the odor and it is ready for the down stream conversion to renewable fuels and electricity. The recent crash of the Chinese market for recyclables, The **National Sword** restrictions or the “**Green Fence**” has killed all ability for the communities and waste haulers to profit in the business of recycling.

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BCF has the ability to take all recyclables and convert them along with the daily MSW and other forms of waste and blend them into a high carbon based feedstock for the conversion to renewable diesel and renewable jet fuel. BCF **WILL** screen out any recyclables that can be easily sold. Metal, aluminum, PET bottles and any other waste fraction that has a profit to sustain its collection will be removed and sold. If there is no market 100% of the leftover or residual wastes will be sent to the BCF 8,000 that will blend, dry and homogenize the waste for the renewable fuel production phase. Our process eliminates the need for any future landfills, dramatically reduces greenhouse gasses, renews the environment around us while producing clean, green, renewable energy reducing dependence on fossil fuels.

Bio Carbon Fuels does all of this re-using of ALL waste by designing and constructing a **“Total Recovery Facility”**

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# The Total Recovery Facility “TRF™”

Bio Carbon Fuels and Technip, our worldwide EPCm contractor will design and construct our state of the art facility that will receive all forms of waste in one facility and convert the waste to clean energy. This is a “TRF” a step of from the “MRF” of the 80’s. (Material Recovery Facility). The MRF tries to recover and recycle 51% by law of the waste stream and the TRF Totally Recovers ALL the waste streams and converts them into Renewable diesel, electricity and Renewable Hydrogen.

The Total Recovery Energy Facility will have all of the latest waste handling and conversion equipment systems that are currently offered and are readily commercial available. The facility will be designed to process 100 to 5,000 standard tons per day, 24 hours a day, yearly and in all weather conditions which, unlike landfills are required to close in either snow or rain fall.

The project will be wrapped in a **Technip Performance Guarantee**. Our facility is guaranteed to perform as designed. Technip is a \$10 Billion dollar a year corporation with a presence in over 45 Countries around the world. Technip has a strong presence in the world established in 1976. Technip will provide Engineering and Procurement services for the project, as well as Construction Management.

The Technip logo consists of the word "Technip" in a blue, sans-serif font. A red horizontal line is positioned below the letters "i" and "p", extending slightly beyond the width of the letters.

Tools

- Select Type QuickSign PDF Create
- Text Word Excel Convert
- Tools
- Page Layout Review
- Favorite Tools

**To:** Racoosin, Steve ([m5wking1@aol.com](mailto:m5wking1@aol.com))  
**Subject:** U.S. TRADEMARK APPLICATION NO. 87389047 - TRF - N/A  
**Sent:** 11/7/2017 6:03:13 AM  
**Sent As:** ECOM115@USPTO.GOV  
**Attachments:**

**UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)**  
**OFFICE ACTION (OFFICIAL LETTER) ABOUT APPLICANT'S TRADEMARK APPLICATION**

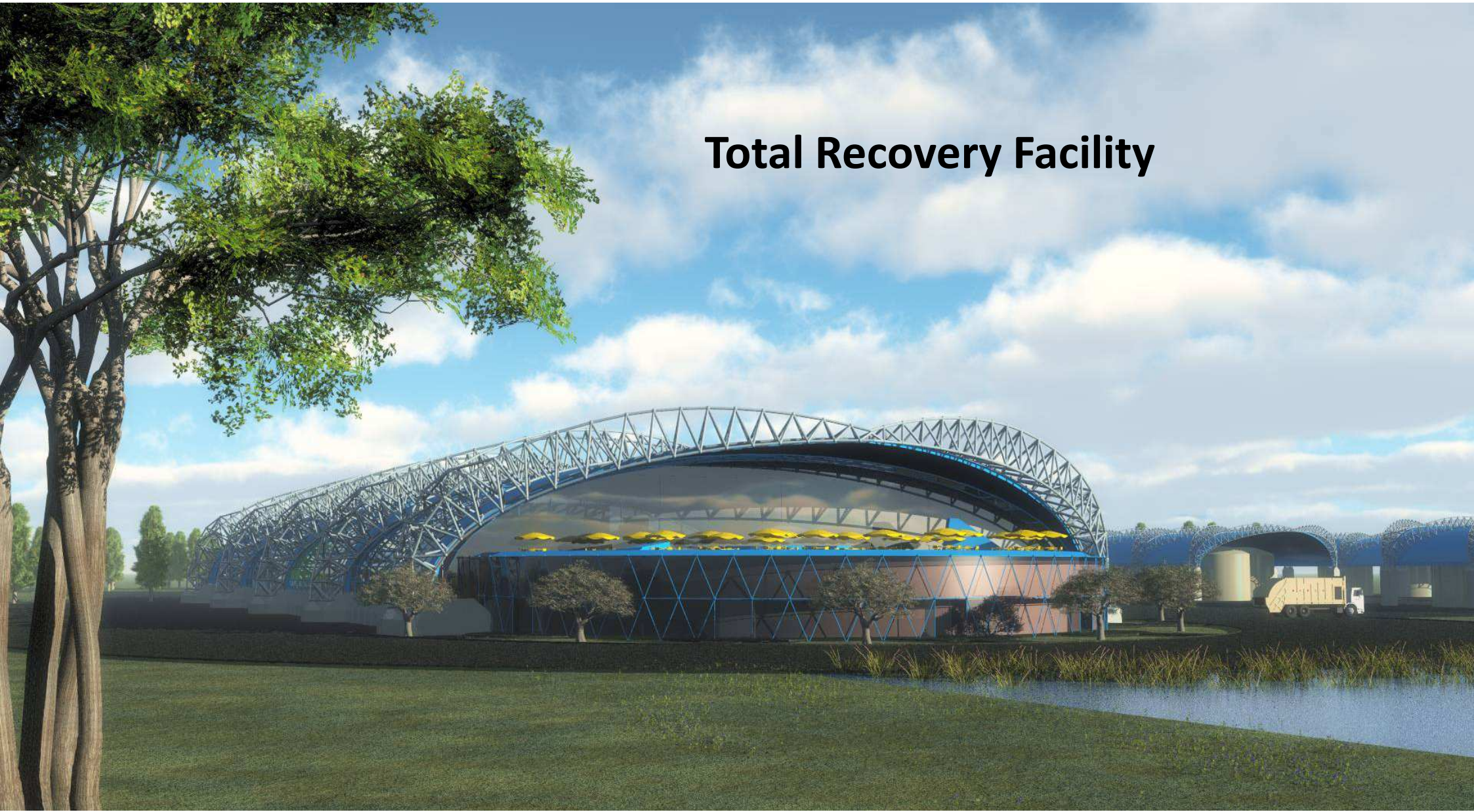
**U.S. APPLICATION**  
**SERIAL NO. 87389047**

**MARK: TRF**  
**\*87389047\***

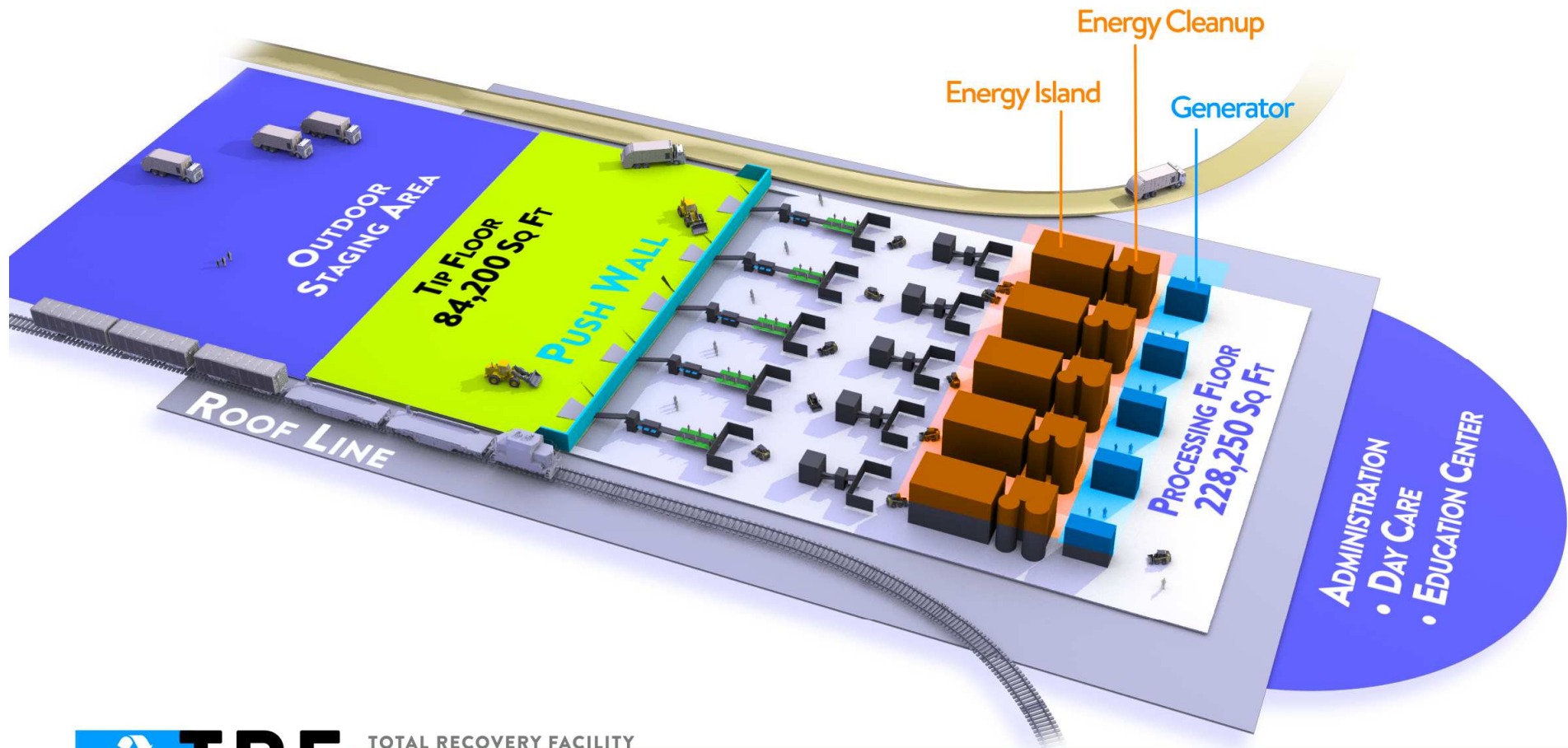
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**ADDRESS:** [CLICK HERE TO RESPOND TO THIS LETTER:](http://www.uspto.gov/trademarks/teas/response_forms.jsp)  
 RACOOSIN, STEVE  
 3849 PALA MESA  
 DR  
 FALLBROOK, CA  
 92028  
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# Total Recovery Facility





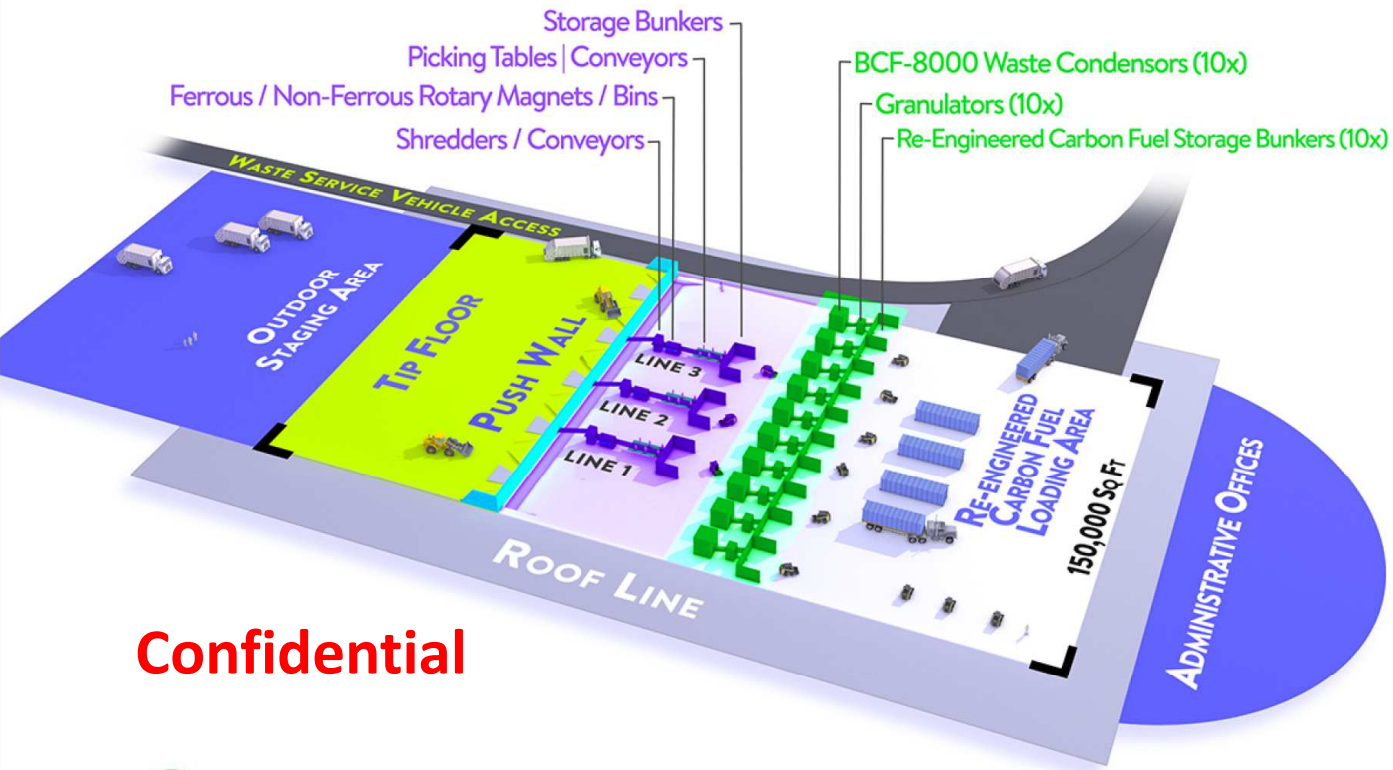


TOTAL RECOVERY FACILITY  
SCHEMATIC V2.0 - 16 MARCH 2017

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Hand Edit Zoom Select Type QuickSign PDF Combine To Word To Excel Highlight Insert Rotate Delete Extract Add Tools Favorite Tools

GREENWAYS FACILITY\_v2\_11x17



**Confidential**



# Bio Carbon Fuels BCF-6,000

## The Municipal Solid Waste Mixer



Clipboard Paste

Format Painter

Font: Times New Roman, 11

Paragraph: AaBbCc, cover title

Styles: Cover su..., Heading 1, Heading 2, Heading 3, Title 2

Editing: Find, Replace, Select

Share

**Technip**

December 19, 2016

Steve Racoosin  
 Project Manager  
 Bio Carbon Fuels, LLC  
 3849 Pala Mesa Drive  
 Fallbrook, California 92028

Re: **FEED Study Scope and Pricing for Bio Carbon Fuels, LLC  
 Project with D4 Energy - Greenville, South Carolina**

Dear Steve,

We understand that Bio Carbon Fuels, LLC ("BCF") is collaborating on a project with D4 Energy Group, Inc. ("D4") to produce syngas from woody biomass and municipal solid waste using a proprietary technology built upon the process streams of pyrolysis (devolatilization in an inert atmosphere) and hydrogenolysis (devolatilization in a hydrogen-rich atmosphere) to produce either a renewable gas product or renewable diesel.

The Project will process approximately 500 tons per day of woody biomass and municipal solid waste to produce syngas (600-750 Btus/scf) and carbon. The syngas will be fed to an on-lease pipeline via on-duty transfer metering.

The purpose of this document is to (1) convey Technip's commitment to work with BCF and D4 as your engineering, procurement and construction ("EPC") provider and (2) outline the scope of work. Technip will commit to perform the Front-End Engineering and Design ("FEED") phase of the Project for BCF and D4.

Technip will use the following information provided by BCF and D4 as the basis for the FEED estimate: general arrangement drawings, chemical one-line drawings, and control system architecture drawings.

Technip will utilize and validate the D4 information in order to generate the following preliminary engineering drawings in the development of the pre-FEED study with a corresponding +/- [50%] estimate: process flow diagram, basis of design, mechanical equipment lists, general arrangement, and bulk commodity pricing.

Additionally, Technip will function as the engineering integrator by bringing together the cost and design information from the D4 and BCF teams to produce a preliminary process flow diagram and equipment specifications with the balance of plant design. Furthermore, Technip will develop performance specifications for the following items listed below based on the basis of design capacity. The items underlined are seen as identified as Key Equipment and Technip will concentrate our costing effort on these items during this FEED effort:

- Recessed Inclined Feed Conveyor
- PET Bliler
- Shredder
- Eddy-Current Separator
- Cross-Belt Magnet

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**Technip**

- Flat 6 Man Picking Conveyor
- Flat 12 Man Picking Conveyor
- Biomass Conveyor
- Extension Conveyor
- Pre-Screened MSW Bunker
- Primary Dryers - Bio Carbon Fuel - BCF 6000
- Water Purification System
- Granulator
- Re-Engineered Fuel Supply Bunker
- D4 Unit
- Hopper/Topsoil Unit (or equal)
- Syngas Cleanup

**FEED STUDY SCHEDULE**

Task	Duration
Doin Collection & Validation	[3 weeks]
Engineering & Specifications	[10D weeks]
Equipment and Construction Pricing	[10D weeks]
Pre-Procurement and Procurement	[10D weeks]
Procurement gate review and final phase scoping	[10D weeks]
Total	[10D weeks]

**FEED STUDY PRICING**

Technip proposes to perform this FEED study for the total fixed price cost of \$1,000,000.00 broken into two parts: (1) \$150,000 for the pre-FEED study and (2) \$850,000 for the subsequent full FEED study. Technip confirms that after the completion of the work above and the following phases of engineering, procurement and construction, we shall provide a full EPC wrap as well as other traditional project finance terms, including:

- Guaranteed maximum price with date certain delivery;
- Liquidated damages for late delivery (i.e., "substantial completion");
- Performance and mechanical guarantee at final completion and commissioning;
- Bonding requirements to be discussed.

We appreciate the opportunity to present this proposal to you and look forward to working with you on the Project.

Sincerely,

**Jason Stajler**  
 Vice President & Managing Director  
 Technip Stone & Webster Process Technology, Inc.

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 Tel.: +1 520.476.5900



**After a Material Recovery Facility or MRF BCF can blend the leftover residual waste with**





**Sewage Sludge or any animal waste is blended and dried in the BCF-8,000**



**ALL green waste and food is blended**





**Recyclables that cant be sold are blended with the other waste streams**



**None sellable plastics are also blended**





All the above waste streams that are being blended and dried are put into the BCF mixer/dryer machine



The waste is now dried so it no longer smells and is exiting the BCF mixer. It is no longer considered waste. It is renewable Re-engineered Carbon Fuel.





**This Super RDF (Refused Derived Fuel) is now ready to be conveyed to the conversion systems that produce renewable diesel fuel, renewable jet fuel and or renewable Hydrogen from this dry carbon based feedstock.**



# All forms of waste after it is mixed and dried is now re-engineered carbon for the conversion to renewable diesel, jet fuel and clean electricity and hydrogen.



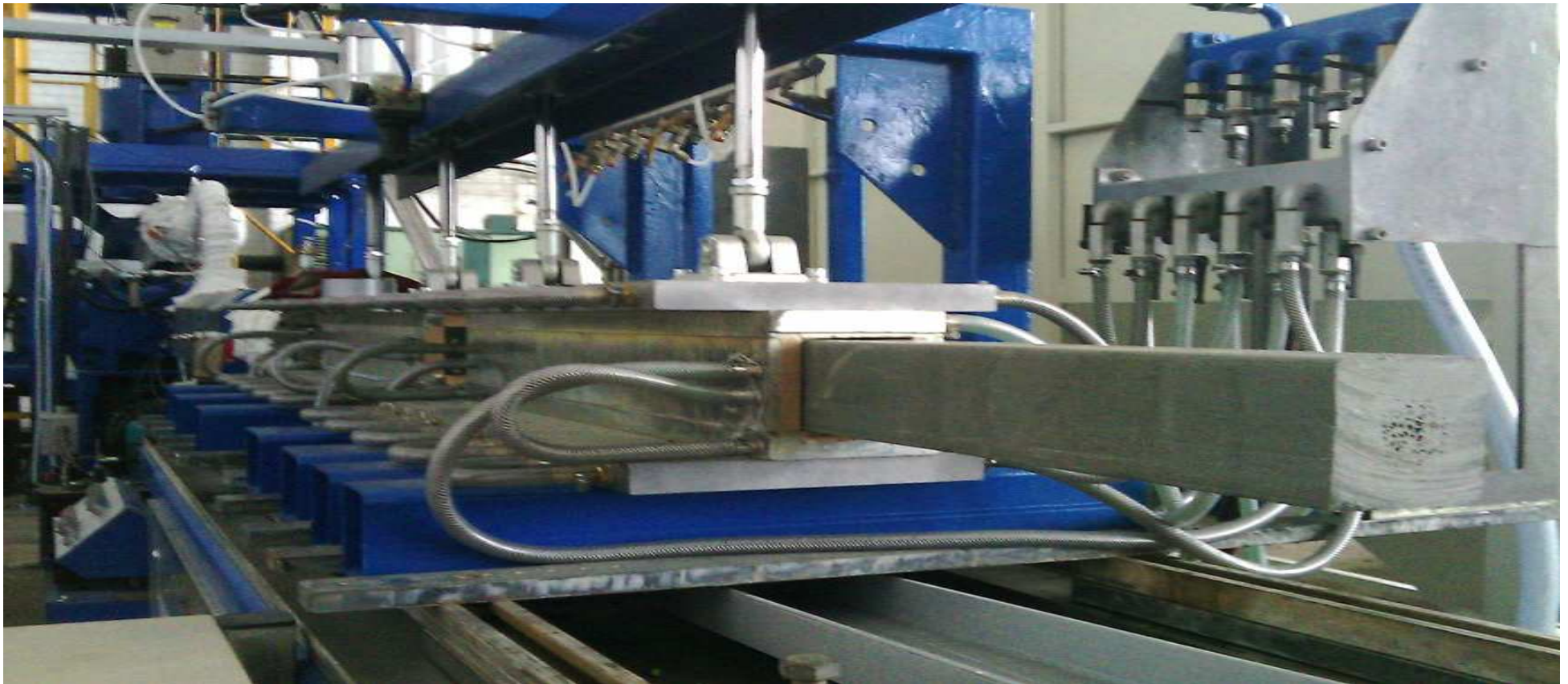
- Our front end employs this sorting and separating equipment, but we can also process all of the organic waste and the dirty paper, cardboard and soft plastics that a MRF ignores.
- We then take this sorted and separated waste and dry it, shred it, and condense it using our patented Bio Carbon Fuels units to create a high energy density, low-moisture, granulated engineered fuel (see sample on right).
- This engineered fuel is conveyed or deposited into pyrolysis reactors that indirectly heat it (no flame) and convert it into synthetic gas or syngas.
- The syngas is then enhanced to optimize the methane content, and is then liquefied and refined into on-road transportation fuels, such as renewable ultra-low sulfur diesel and gasoline (see sample on right).





**The now dried mixed waste can be put directly into off the shelf plastic lumber extrusion machines and produce very profitable building products bringing high value to the waste and all plastics.**

# Plastic Lumber made from the MSW dried through the BCF-6,000

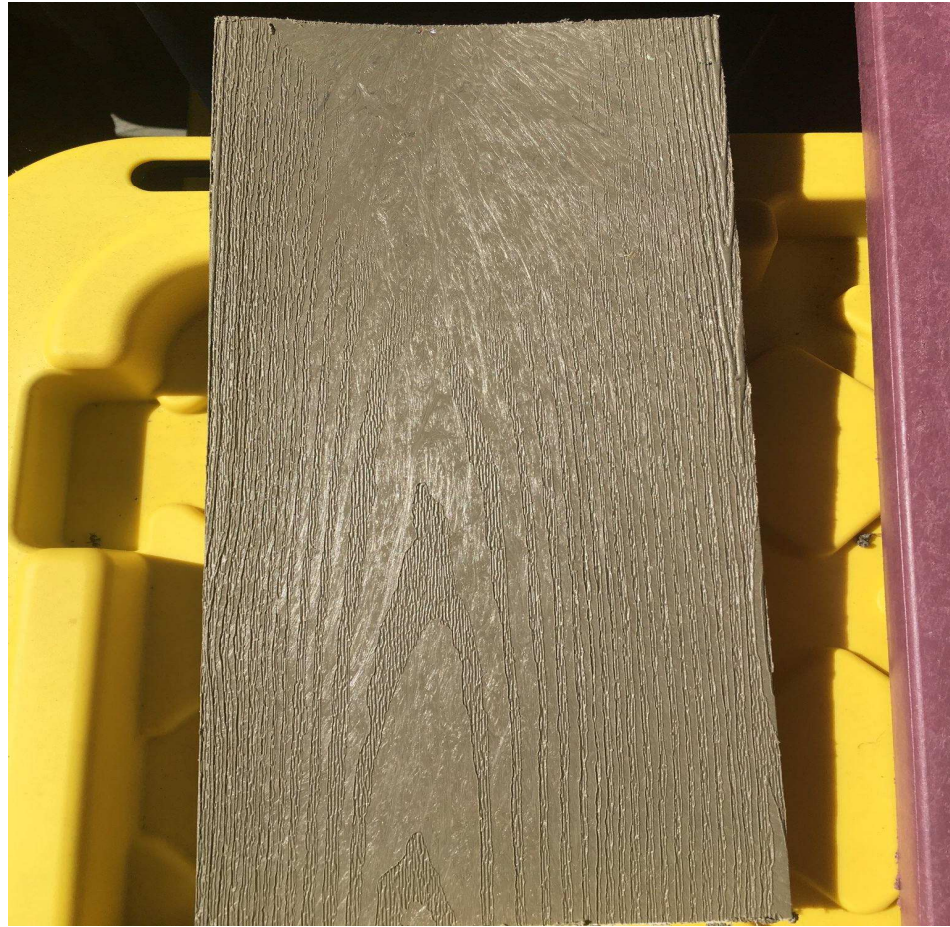


# Sustainable Composite Plywood Sheeting





**Composite building products. Water wont rot and bugs wont eat. No splinters no painting.**

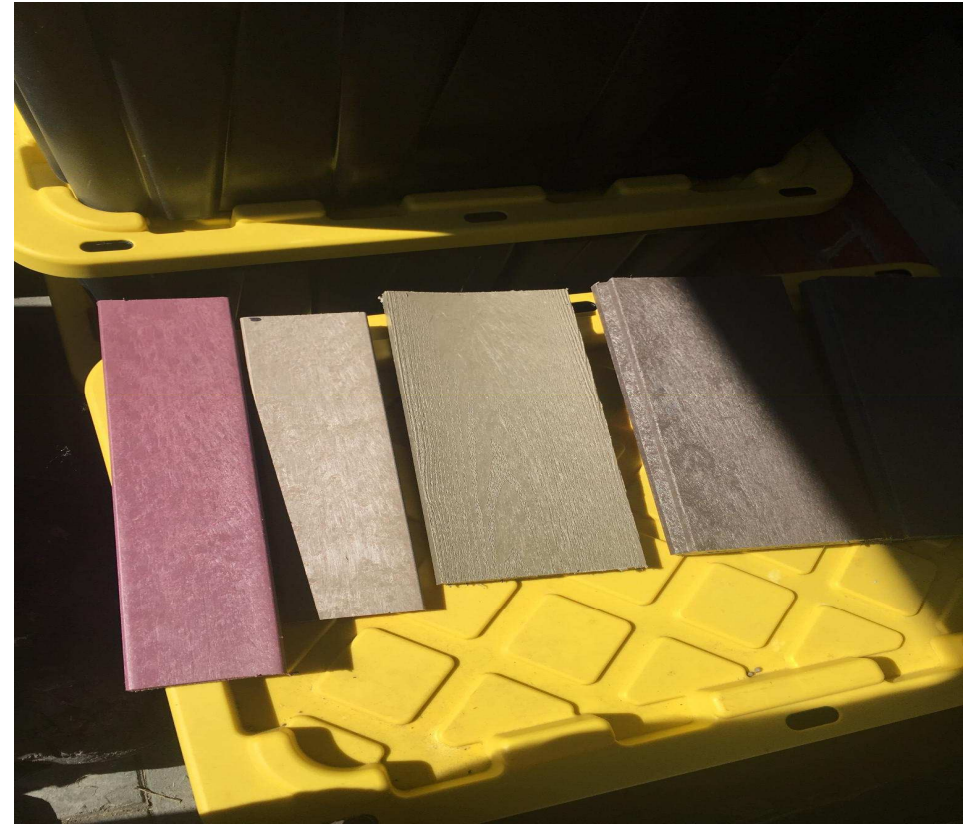


**The BCF Re-engineered carbon is being poured into the off the shelf plastic lumber extruder.**





## Composite building products from ALL forms of waste.



# Total Recovery Facility Design

Bio Carbon Fuel's Total Recovery Facility (TRF) is designed to receive and process **ALL** of the waste streams that the city is producing :

- Municipal Solid Waste
- Construction Debris
- Green Waste
- Tires
- Medical Waste
- Animal Waste
- Human Sewer Sludge.

Bio Carbon Fuels will Totally Recover **ALL** waste streams under one roof, process the waste streams and convert them into clean Electrical Energy with next to Zero Emissions, NO Dioxins, NO Furans, NO Water or Ground pollution and NO residuals left over.



# D4 Energy Group

Clean Energy Solutions | Modular Energy Technology



Bio Carbon Fuels LLC  
Clean Fuels & Energy



BCF



D4 Energy



Generating 27 MW (643 MWh)  
of renewable energy per day.

**500 TPD of MSW**  
@ 6,000 Btu per pound  
+ 40% moisture =  
6,000 MMBtu per day

**Reduced to 375 TPD**  
@ 8,000 Btu per pound + 10%  
moisture = 6,000  
MMBtu per day  
[electrically powered]

Thermochemically converted to 23.7  
million cubic feet of syngas = 6,270  
MMBtu per day

**[Each ton of MSW treated with BCF  
technology will yield either 1.7 MWh  
of energy or 105 gallons of  
renewable fuels per day.]**



**Producing 35,000 gallons of  
diesel and 1,800 gallons of  
gasoline per day**