



WEST COAST COMMODITY & TECHNOLOGY CO.

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**EXECUTIVE SUMMARY
OF
WESTCOAST COMMODITY & TECHNOLOGY, LLC
FOR
GASIFICATION PLANT
FOR
COTE/d'IVOIRE
HUMANITARIAN PROJECT**



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Subject: **Humanitarian Project for Cote d'Ivoire:
Conversion of Waste into Energy Using Gasification Power Plant**

TO WHOM IT MAY CONCERN:

West Coast Commodity & Technology, LLC (WCC), a California Limited Liability Company with offices in Los Angeles, California, is committed to engage in the designing and constructing one or more Gasification Power Plants (GPP) and recycling facilities (RF) in the City of Abidjan, Cote d'Ivoire.

A. **PURPOSE OF HUMANITARIAN PROJECT**

The purpose of this humanitarian project is to convert municipal waste and other feedstock, such as rubber, glass, plastics, and wood, etc. into energy. This will be done by analyzing the contents of the waste, designing equipment which will enable the separation of the waste through recycling facilities, and converting the waste via the use of a GPP into various types of energy which (i) can be sold to the Government and its residents at a reduced cost, and (ii) will cause a great reduction in the amount of pollution that goes into the air and water.

B. **NEED FOR HUMANITARIAN PROJECT**

It is universally recognized throughout the world that there is excessive pollution in the air which creates great health risks and there is an urgent need to reduce pollution. The City of Abidjan in Cote d'Ivoire exemplifies an area where humanitarian funds are required to substantially improve the environment, and the health of its residents.

Abidjan is the largest city in Cote d'Ivoire with 5,000,000 residents in the metropolitan area and over 3,000,000 residents in the municipality. The current



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air and water pollution in Abidjan is very dangerous to the health of the people living in that city.

Doctors have linked air pollution to the rising rates of asthma in Abidjan, and the Minister of Health is now warning of a dangerous and costly increase in respiratory-related diseases if action is not taken. There are many thousands of vehicles in Abidjan that emit tons of pollution into the air, in addition to the a large amount of pollutants that come from a significant number of stationary power producing sources.

The pollution problem is so bad that Abidjan has “green cops” who patrol the city to educate the public and penalize polluters who violate the country's environmental code. However, the limited number of such police cannot come close to monitoring over the 3,000,000 people in the municipality. The solution is to be more proactive and innovative in reducing sources of pollution.

C. GOAL OF HUMANITARIAN PROJECT

The goal of the humanitarian project is to greatly enhance the quality of the air and water in Abidjan by substantially reducing the amount of pollution, which in turn will substantially reduce the health risks to its residents.

This will be accomplished designing and constructing one or more Gasification Power Plants, and one or more recycling facilities, which will convert the waste into energy which will be sold to the residents at a price that is lower than they are currently paying.

Abidjan will also realize the following additional benefits:

- (a) The project will result in the creation of over 1,000 new jobs which will not only provide income to persons who are now unemployed, it will also improve the overall economy of Abidjan.



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- (b) There will be a substantial improvement to the infrastructure in the vicinity where the GPP is going to be built as new roads will be built to facilitate the ease with which trucks can access and exit the dump sites.
- (c) Reducing health risks that are associated with a polluted environment, such as cancer, emphysema, asthma, etc. will cause a significant reduction of medical costs provided by the Government and incurred by the residents.
- (d) In addition to building power plants and recycling facilities to convert “new” waste into energy, the project also encompasses converting into energy 35,000,000 tons of existing waste that has been lying around for years emitting pollution into the air and water, and is taking up valuable real estate property.
- (e) The project also includes building homes for many of the persons who will be working on the project.

D. **METHODOLOGY**

Our team of professionals have developed, manufactured, and built technically and economically viable systems for power plants, water reclamation plants, and municipal solid waste recovery plants, using unique architectural combinations of commercially available design, construction, process, equipment, materials, and technology.

Using what we call the “Best of Breed” architectural combinations of commercially available design, construction, materials, fabrication, and manufacturing technology will help achieve the goals set forth above.



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Our proposed systems and approach will eliminate a significant source of air and water pollution; will remediate landfills; and will provide much needed electrical power.

The 120 MW power plant will process approximately 10,000 tons of waste materials, plus a nominal amount of fossil fuel, to facilitate the daily processes of converting waste into energy. Our approach will produce at least 40% more power than that of a comparable Waste to Energy complex.

WCC will use tried and true conventional Waste to Energy Systems such as material screen and separating systems, conventional boilers, pyrolysis, plasma arc, combined cycle gas and steam turbines, with heat recovery steam generators combined with the high torque and efficiency, provided by the adhesive-like molecular bonding of the working fluid with the turbine blades.

The System will operate at efficiencies $\geq 70\%$ with no chimney or cooling tower in the system. In effect, when combined with a heat pump cycle that efficiently recycles the heat of vaporization C_p 20x – 30x, the System effectively operates at low pressure and temperature. Typically, the System operating at 120 psi, will have an exhaust temperature of 40°F, using waste heat inputs ranging from 350°F to $\geq 1000^\circ\text{F}$.

In developing its current capabilities for sustained renewable municipal solid waste (MSW) and fossil fuel-fired electric power generation, desalination / wastewater recovery and related by-product recovery, WCC has placed a very strong focus on combining available commercial technology that is fully compliant with all universal laws of physics and thermodynamics, to eliminate waste heat from its systems.



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All system elements are modular in design, construction, manufacture, and operation. Physical redundancy of all critical system elements, and fully automated, remote, satellite monitoring and control provides for a 24/7 operation.

The key to the WCC system capable of achieving this improvement in power generation lies in the use of a unique implosion, or suctional mechanism of the cycle, instead of the expansion or explosion mechanism of the conventional Carnot cycle.

As such, the Cycle Radial Turbine is similar to a controlled tornado in a tube, wherein the decreasing radius of the vortex results in a particle velocity increase that approaches infinity with an accompanying increase in G loading that also approaches infinity. Such forces, combined with an adhesive molecular bonding of working fluid with the turbine disc provide an extremely high efficiency of the system. The Cycle Radial Turbines have been evaluated, and have demonstrated operation efficiencies of greater than 80%.

A proposed layout of the Gasification Power Plant is attached as Exhibit 1. Attached as Exhibit 2 is a schematic of the proposed Gasification Power Plant.

The WCC Technical Team

WCC's technical team brings over 350 years of combined interactive / interdisciplinary experience in designing, manufacturing, demonstrating, and operating the tasks necessary for certifying each of the WCC Systems' elements. Individual team members are recognized interdisciplinary authorities dedicated to meeting the technical and economic viability goals of the WCC Systems Project.

Our expert technical team is currently providing their services to other clients and utilities to install, operate, and maintain facilities that will provide the following:



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- Generate 30 to 60 Megawatts (“MWe”) of sustainable (non-interruptible) renewable electricity using conventional power systems with a grafted new Implosion Power Reactor System to generate and sell renewable electrical power, fueled by hydrocarbons, MSW biomass and/or sewage sludge.
- Install an integrated and scalable MSW receiving, grinding, shredding, sorting, drying and biomass pyrolysis system to accommodate the operational needs of the 30 to 60MWe or future scale-up needs to meet power generation feedstock requirements.
- Remediate 21 tons per hour (“TPH”) of carbon dioxide (“CO₂”) using our new Photo Bio-Reactor System to remediate all CO₂ produced by the Power Reactor and produce approximately 10.5 TPH of food-grade protein plus oxygen from algae or bacteria.

These facilities are unique, in that they will provide a 21st Century model improvement in operating efficiency, emissions reduction, and a substantial foot print reduction, all within an aesthetically appealing, park-like setting. Each system incorporates a “Best of Breed” combination of commercially available materials, design, construction, equipment, and operation.

In contrast with conventional MSW waste to energy gasification systems, our System incorporates a conservation of energy approach to maximize the BTU content of the biomass feedstock, using an in-line flash pyrolysis system.

The pyrolysis system is fully automated and controlled to maximize the Btu content of pyrolygneous oil and char by-products while minimizing the generation of intermediate Btu gas and reducing the feedstock volume by approximately 75%. Following pyrolysis, the pyrolygneous oil and char are blended, emulsified with steam and used as feedstock for the vortex reactor to produce process heat for power generation.



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A high energy syngas by-product of the vortex, containing a heating value that is equal to/or greater than that of the reactor feedstock is then burned to drive a second power generation unit to effect a continuous, sustainable renewable energy system.

Estimated Budget Per Facility

Recognizing the technical responsibilities assumed by WCC to develop, install, tune and operates an optimized “Best of Breed” Waste-to-Energy system, WCC estimates a project budget of \$267,000,000.00 (Two Hundred Sixty Seven Million US Dollars) for a 30MWe basic modular unit. The facility will consist of 4 such modular units creating 30MWe, making the total output of 120MWe. Total Initial Project cost is **\$1,068,000,000 (One billion Sixty Eight Million US Dollars)**.

Additional integrated system benefits include the following:

1. Fully integrated state of the art Conventional Combined Cycle Power with the grafted benefit of the our technologies.
2. The only available, integral Power, Water, MSW, and By-Product Remediation capability.
3. Provides “Sustainable” Renewable Power (24/7) availability, using Biomass, wood and/or sewage sludge.
4. Requires only 75% of the feedstock necessary to power an equivalent MWe output.
5. Each Process System element is application specific and designed to be fully compliant with ALL “best available technology” regulations.
6. All Systems are fully modular in construction and capable of providing “Site Specific” performance and operational needs.
7. Provides a “model” change in Process Design to utilize low pressure and low temperature (120 psi / < 400oF) to achieve an operating efficiency of greater than 70% (this is 40% greater than current IGCC and advanced designs that operate at high pressure and high temperature (> 1000 psi / 2500° – 2750°F).



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8. The Pressure and Temperature reductions provide:
 - A 75% or greater reduction in capital cost when compared with traditional high pressure/high temperature systems.
 - Allows for modular construction technology which effectively reduces Site Preparation, equipment installation costs and maintenance.
 - Reduces feedstock costs by 25% and provides FULL CO₂ recovery/remediation to assure a ZERO carbon footprint.
 - Satellite monitoring and control to reduce operational and maintenance costs.
 - CO₂ Remediation of Biomass feedstock provides a NEGATIVE carbon footprint.

9. Modular construction assures a plant footprint of less than 75% that of power or combined facilities of equal or greater capacity.

10. Aesthetically appealing (“Site Specific”), park-like; plant environment eliminates all smokestacks, high rise buildings and cooling towers.

11. Integrated System Element Redundancy assures operating “Up-Time” of 90% or greater



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Recognizing the fragmented differences in approach to meeting the MSW to Energy goals, we will integrate, install, tune, instrument, document, operate and maintain the Systems that are installed.

We anticipate that it will take 30 to 36 months to complete the entire project

Our team looks forward to providing the technology and equipment that will greatly benefit the Government of Cote d'Ivoire and its residents.

Yours truly,

Michael Itaev, CEO

Deborah Earle, President